

*From the Desk of R. Lewis Dark...*

# THE **RD** **DAIRK** **REPORT**

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

*R. Lewis Dark:*

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*Commentary & Opinion by...*

**R. Lewis Dark**

**Founder & Publisher**



## ***Medical Errors Reporting Will Impact Labs***

CERTAINLY HIPPA SEEMS TO BE GETTING LOTS OF ATTENTION by all categories of healthcare providers, including laboratories. But I think the movement to disclose medical errors may eventually prove to be the more serious issue for clinical laboratories and anatomic pathology groups.

Our members and clients know that just last month JCAHO began requiring hospitals to disclose to patients whenever their care did not measure up to standards. Recently, two hospitals disclosed such incidents. In Valhalla, New York, 996-bed **Westchester Medical Center** released a statement to the press on July 30 taking responsibility for an accident in the hospital which killed a six-year-old boy. Michael Colombini was undergoing an MRI. He was struck in the head by an steel oxygen canister which was pulled toward the 10-ton MRI when it was turned on to start the scan. The oxygen canister, about the size of a fire extinguisher, was not supposed to be in the MRI room. The next day, on July 31, 172-bed **St. Agnes Medical Center** in Philadelphia issued a statement to the press acknowledging that laboratory tests supporting coagulation therapy had been miscalculated, leading to the wrong dosages of Coumadin, a blood-thinning drug. The hospital said 932 patients had been affected, and this problem may have contributed to the death of two elderly patients. (*See pages 5-6 in this issue.*)

All of us know about lab errors and the ever-present human element. Just a few years ago in Chicago, there was a case where a pathologist lost the specimen before it was evaluated, but concealed the fact and issued a diagnosis anyway. When the real facts were discovered, the referring hospital yanked its business relationship with the clinical lab and there was a major reorganization of the pathology group which had issued the diagnosis.

The movement to openly disclose medical errors is gaining political and cultural support. Labs and pathology groups have different exposure than other categories of providers. All laboratorians know the complexities of performing a lab test. Look at the variables that can affect a test result: specimen collection, transport, in-lab specimen handling and labeling, reagent lot variability, a particular test's sensitivity and specificity, performance of the instrument, et al. Will the lay public understand all the subtleties of the lab testing process? Certainly not! I think that is why the movement to report medical errors may eventually have a far-reaching impact on the laboratory industry. **TDR**

# British Firm Acquires Sunquest Info Systems

*Healthcare software companies undergoing further consolidation*

**CEO SUMMARY:** *Sunquest Information Systems was recently acquired by Misys Plc, a software company based in the United Kingdom. The transaction is another example of consolidation within the healthcare software sector. It also demonstrates that software products developed in the United States are seen to have good potential in overseas markets, particularly Europe.*

**P**ERSISTENT RUMORS THAT **Sunquest Information Systems, Inc.** was up for sale finally proved true with the announcement on June 25, 2001 that Sunquest would be acquired by **Misys PLC**, based in Worcester-shire, England.

The British company paid approximately \$404 million to acquire all outstanding shares of Sunquest. Sunquest is now a division of Misys and will continue to operate from its headquarters in Tucson, Arizona.

The acquisition is the latest example of consolidation within the healthcare software sector. Only 14 months ago, **Shared Medical Systems, Inc.** (SMS) was purchased by **Siemens Corporation**, the huge German-based multinational.

For American laboratories using Sunquest products, there will be no change in the company's announced business strategy and product mix. "Post-merger, it will be the same Sunquest," stated Mark Emkjer, President of Sunquest. "All our business initiatives and product development efforts remain the same.

"What does change at Sunquest is our access to a deeper pool of capital and talent, along with opportunities to make our existing products work more effectively with Misys' Medic™ software, used in physicians' offices throughout the United States," noted Emkjer.

Long-standing rumors of Sunquest's sale began in August 2000 when it was disclosed that **Deutsche**

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**Bank Alex Browne** had been retained by Sunquest to explore various business options. Emkjer said two factors shaped Sunquest's interest in looking for the right corporate partner.

### **Consolidation Process**

"The first factor is consolidation in our industry," he stated. "I believe that consolidation will continue until the field is dominated by two or three very large firms. Of course, there will always be a number of smaller health-care software firms and start-ups that incorporate new technology, but the growing size of integrated health systems requires the business sophistication and a broad array of software products that are provided by large software companies. Our goal was to position Sunquest to be one of these market leaders.

"The second factor was the financial structure of Sunquest. Many laboratorians remember our public offering in 1996," said Emkjer. "At that time, one major shareholder retained an 80% stake in Sunquest. With only 20% of our shares in public hands, there were an insufficient number of shares to support investor interest.

### **Cash Flow Doubles**

"Between 1996 and 2000, Sunquest doubled its cash flow and retained 98% of its clients. Despite this strong performance, the stock price had remained virtually flat," he explained. "Sunquest's owners wanted to realize the increased value of the company and partner with a company that could help it grow to the next level."

Emkjer's enthusiasm about the merger and future prospects for Sunquest included some intriguing perspectives on the changing clinical laboratory marketplace. He believes that diagnostics will play a growing role in the near future. "I see our [diagnostix.com](http://diagnostix.com) product as the link

between inpatient and outpatient clinical information," he noted. "Sunquest has made diagnostics a priority because it sees early signs that laboratory test results will play increasingly greater roles in guiding therapy.

"Of course, consumerism is also causing patients to become more active in their own healthcare, as well as that of their family members," he said. "Sunquest must be ready to respond with information services that enhance the patient's working relationship with his physician and other types of providers."

### **Full Internet Capability**

Emkjer noted that Sunquest is building Internet capability into its full menu of products. "We want to offer our products so that any client can either purchase the software and maintain it in the traditional manner or work with us on an ASP model, whether hosted remotely by us or maintained on-site by the client.

"Currently we have 25 sites using our Clinical Event Manager," he continued. "We're working to make the lab results complementary with pharmacy. In fact, we installed our first lab-based ASP-model of the Clinical Event Manager about three months ago.

"Wireless PDAs will play a role in this," added Emkjer, "but we see lots of watchful-waiting at this stage. There is much interest in wireless connections to our Clinical Event Manager as clients prepare to move to wireless technology."

Emkjer also expects point-of-care testing (POCT) to undergo far-reaching changes in the next few years. "Among our clients, we see steadily-increasing use of POCT. If you follow these trends out into the future, it becomes easy to see the importance of capturing POCT data into the LIS."

THE DARK REPORT believes that current trends in the laboratory mar-

ketplace will motivate diagnostic vendors to become more involved in managing the laboratory test data generated by their instruments. When asked if Sunquest was having talks with various diagnostic vendors on this topic, Emkjer carefully framed his answer.

### Diagnostic Vendor Talks

“Conversations with diagnostic vendors have occurred,” he responded. “It would be fair to characterize these discussions as very exploratory. Some visionaries within these companies see the downstream potential of information management services. But the concept of somehow merging lab information functions currently handled by LIS with diagnostic instruments is still futuristic, at best.”

THE DARK REPORT identifies three important insights from the Misys-Sunquest transaction. First, consolidation among healthcare software and LIS vendors continues. Expect to see other acquisitions, at least one or two important deals each year.

Second, the American healthcare market continues to be “where the action is” because of two elements. One, spending on healthcare in the United States is growing at a much faster pace than in any other country. For that reason, the profit potential of this market attracts European companies. Two, American technology continues to be cutting edge. That also attracts European companies, many of which are struggling to develop their own state-of-the-art products.

Third, fundamental differences between healthcare systems of developed countries are steadily diminishing. This means advanced technology will be accepted and used with little customization from one country to the next. This situation encourages healthcare companies to acquire businesses in almost any country around the world.

## Lab Consolidation Starting In England

LABORATORY CONSOLIDATION and regionalization is now underway among hospitals in Great Britain.

Even before the merger with Misys, Sunquest Information Systems was actively selling its products in the British Isles. According to Sunquest President Mark Emkjer, widespread consolidation of hospital laboratories is only now starting to occur in Great Britain.

“It’s interesting to see this trend unfold in England,” said Emkjer. “Like the provinces in Canada did during the 1990s, the British Healthcare Authority is developing projects that regionalize and consolidate laboratory testing among clusters of hospitals.

“Sunquest is participating in a number of ‘tenders’ (requests for proposals) involving these laboratory consolidation projects,” he explained. “The term they use is ‘pathology modernization.’ Although the healthcare model is much like how the individual Canadian provinces proceeded with lab consolidation, the operational models being studied involve the lab consolidation projects in the United States, most of which happened in the second half of the 1990s.

“Having experienced the consolidation trend already in the United States and Canada, Sunquest is certainly able to bring relevant experience and expertise to these British laboratory consolidation projects,” added Emkjer.

In this context, the Misys-Sunquest merger, along with last year’s Siemens-SMS merger, represent examples of the steadily-approaching globalization of healthcare. **TDR**

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# Big Jump Predicted In Health Insurance Costs

*Early indications are that premium price increases for 2002 will be as much as 20%*

**CEO SUMMARY:** *Spiraling health costs are about to become a headline issue once again. There is widespread evidence that health insurers are seeking premium increases of 20% from the nation's biggest employers. Aetna recently announced a second quarter 2001 operating loss of \$95.9 million. Increased utilization was a major factor in this loss. Labs may find it tougher to negotiate higher test prices.*

**H**EALTHCARE COSTS ARE ABOUT TO become a high-profile issue in the nation again. Many HMOs are pushing for 2002 premium increases of 20% or more.

It's been several years since American businesses faced double digit year-to-year increases in healthcare costs. Despite its many failings, the managed care industry was able to reduce the annual rate of healthcare costs for most of the 1990s.

That situation appears to be ending. **William M. Mercer, Inc.**, a major human resources consulting firm based in New York, reports that almost 500 HMOs and other types of health plans have offered initial premium proposals to employers with an average increase of 20%. Mercer believes that, following negotiations, most employers will agree to increases of between 15% and 20%.

## Lab Test Reimbursement

For laboratories seeking higher reimbursement for lab testing, this is an unwelcome development. HMOs are pushing double digit price increases

because they are experiencing higher rates of utilization by their beneficiaries. This situation is not expected to change.

Higher utilization of healthcare services is one reason why **Aetna, Inc.**, the nation's largest health insurer, posted a second quarter operating loss of \$94.9 million. For second quarter, Aetna's commercial HMO medical cost ratio (MCR) was 91.3%. In contrast, its MCR for second quarter 2000 was 86.8%.

## Increased Utilization

Aetna attributes increases in healthcare utilization to three factors: 1) Aetna members made more visits to specialists and hospitals; 2) there were significantly more radiology tests performed; 3) pharmacy prescriptions exceeded Aetna's predictions.

Aetna's experience is mirrored by several other health plans. **Kaiser Permanente** reported an 11% drop in income for the second quarter. Kaiser attributed some of this change to higher utilization and disclosed that strong demand for hospital services was forc-

ing it to send members to community hospitals outside its own system.

It's a similar story at **Pacificare Health Systems, Inc.**, which is trying to evolve away from its former provider contracting model of 100% capitation, which pushed all the risk on the providers. Pacificare reported a decline in net income of 78%, from \$69.2 million in second quarter 2000 to just \$15.3 million in second quarter 2001.

Like Aetna, Pacificare saw a significant increase in the medical claim ratio of its commercial HMO. The MCR jumped from 82.9% in second quarter 2000 to 89.2% for second quarter 2001.

### **Fundamental Market Shifts**

THE DARK REPORT believes these developments within the managed care industry signal several fundamental shifts in the healthcare marketplace. Each will have different consequences for the clinical laboratory industry.

First, a review of utilization patterns indicates that the medical claims ratios of Medicare HMOs did not increase by as much as the MCRs of commercial HMOs. One interpretation of this is that, as increasing numbers of baby boomers turn 50, their healthcare utilization increases, but they are not yet old enough to be in the Medicare program.

Assuming this demographic fact is driving increased utilization in commercial HMOs, laboratories should be studying, in advance of contract negotiations, in what ways the demographics of the aging baby boomers will change lab test utilization.

Second, compared to 10 and 15 years ago, there are more therapeutic drugs which have significant and positive effects. It is reasonable to expect steady increases in both the number of prescriptions written and in the length of time that the patient is required to take these therapeutic drugs. For example, it's estimated that

the new cholesterol management guidelines might require as many as 30 million Americans to participate in drug therapy.

### **Favors Laboratories**

This trend can favor the lab industry, as more diagnostic tests linked to specific prescriptions (the concept of pharmacogenomics) enter the marketplace. However, in the short term the impact will probably be minimal.

Third, THE DARK REPORT predicts that both employers and managed care companies, responding to double digit increases in healthcare costs, will expand deductibles, co-pays, and out-of-pocket requirements in coming years. This can have both a negative and a positive effect on laboratories.

On the negative side, collecting deductible and co-pays directly from patients has always been a frustrating and expensive process. Any increase in these types of arrangements will eventually lead to larger write-offs of uncollectible accounts by labs.

On the positive side, if employers and insurers increase deductibles, co-pays, and out-of-pocket requirements, they will also have to offer patients more choice of laboratory providers. THE DARK REPORT believes this fact, combined with increased consumer interest and knowledge about laboratory testing, will benefit those clinical laboratories and pathology group practices which understand this trend and market themselves directly to the public.

### **Variety Of Consequences**

Taken cumulatively, the return of sustained, year-to-year double digit increases in the cost of healthcare will have a variety of different consequences for the laboratory industry. For these reasons, labs and pathology groups will be well-served to review and rethink their managed care business strategies. **TDR**

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## Dark Index

# *Dynacare Expands Into Chicago With Purchase of 2 Small Labs*

*Slow pace of independent lab acquisitions demonstrates that few lab prospects remain*

IT'S A BUSINESS STRATEGY BUILT AROUND "go where they ain't!" In recent years, **Dynacare, Inc.** has found its best growth comes from acquiring laboratories in areas somewhat underserved by larger national competitors.

It then uses that regional base to expand outward into nearby regions. Examples of this market strategy have been Seattle, with expansion into the northwest; and East Texas, with expansion into Arkansas, Oklahoma, Louisiana, Mississippi and Alabama.

This strategy seems to be in play again. Last week Dynacare disclosed that, through its joint lab venture with **Froedert Health System, Inc.** of Milwaukee, it had acquired two relatively small laboratory operations in the Chicago area.

Both acquired labs, **Midwest Regional Laboratory Consultants** and **Almar Molay Clinical Laboratories Inc.**, are located north of downtown Chicago. Combined, their annual revenues are approximately \$5 million.

### **Expanding From Milwaukee**

For several years, Dynacare has maintained a joint venture with Froedert in Milwaukee. Downtown Chicago is only about 100 miles from Milwaukee, so these two new lab acquisitions are a sign that Dynacare is prepared to begin

a serious sales and marketing campaign in the Chicago area.

Since there have been a relatively small number of independent lab acquisitions by other potential buyers during the past year, it can be reasonable to conclude that few large independent laboratories remain. Those that do seem to be fiercely guarding their independence and resist regular offers to sell.

### **Stock Price Climbing**

Evidently the investment community is regaining its interest in Dynacare. The company recently reported second quarter revenue increases of \$101.9 million, a 10.9% increase over same quarter 2000. Its share price, which had fallen to as low as \$3.50 within weeks of the November initial public offering, is now trading back in the \$11.00 range.

Dynacare's arrival in the Chicago market is sure to trigger some interesting changes in the competition for physicians' office testing. Currently **Quest Diagnostics Incorporated** dominates this market. However, a number of hospital laboratory outreach programs tell **THE DARK REPORT** that they are having substantial success competing against commercial laboratories in Chicago. This would indicate that physicians are still willing to "buy local" when it comes to lab testing services. **TDR**



## Lab Industry Trends

# Lab Testing Problems Attract Unfavorable Media Attention

**D**URING THE PAST TWO WEEKS, problems with laboratory tests received national media coverage, both on television and in print.

The national publicity demonstrates the downside to growing consumer interest in laboratory testing. Journalists are willing to capitalize on public fears about the potential for medical errors.

### Early Warning To Labs

Laboratory executives and pathologists should consider this an early warning sign that every laboratory is now at risk for high-profile publicity if there is a perception that test results generated by it were inaccurate and negatively affected patient care.

First was ABC's *PrimeTIME* program. On its July 26 broadcast, ABC gave considerable coverage to the \$16 million legal settlement won by plaintiff Jennifer Rufer against defendants **Abbott Laboratories, Inc.** and the **University of Washington Medical Center (UWMC)** in Seattle.

In a complicated lawsuit, Mrs. Rufer prevailed on her claims, including one that Abbott's BHCG (beta human chorionic gonadotropin) laboratory test, performed by UWMC, was flawed. UWMC physicians, responding to her high BHCG score, misdiagnosed her as having cancer and put her through an aggressive program of chemotherapy. She also had a hysterectomy as part of the prescribed anti-cancer regimen.

Only three days later, officials at Philadelphia's 172-bed **St. Agnes Medical Center** issued a statement to the news media. It reported that two patients may have died because of "a miscalculation in coagulation studies related to administration of Coumadin, a blood-thinning drug." Between June 4 and July 25, 932 patients had lab tests affected by the lab's ongoing error. This story was picked up by the international wire services and received extensive national media coverage.

Physicians responding to the incorrect lab results prescribed higher doses of Coumadin than were actually necessary. Of particular interest is how the error was discovered. One patient, after studying his lab test results, questioned the number and called his physician to bring it to his attention!

### Extensive Media Coverage

It is obvious to trained laboratorians that both stories involving misleading test results are rooted in a complex web of technology, work flow processes, and clinical decisions by the referring physician. There are many variables which affect the quality and accuracy of the test result, as well as the interpretation of the test results by the referring doctor.

That matters little to the public, however. They want total trust in their personal lab test results. Anything less is cause for concern! For labs and pathology groups, these two cases provide an example of how quickly a lab's credibility can be threatened.

## Mass General Hospital Supports POC Testing

# Point-of-Care Kiosk Improves Outcomes In Emergency Dept.

**CEO SUMMARY:** *Steadily increasing numbers of patients at Massachusetts General Hospital exceeded the capacity of its emergency department. Challenged to help with the situation, lab administrators created a point-of-care testing kiosk within the emergency department (ED). This unique lab project proved to be a home run. Length of stay in the ED was reduced and the admissions rate was lowered by a significant amount, more than covering the added cost of point-of-care testing. It's another demonstration that added-value lab services can change the cost/quality paradigm for the better.*

**A**FTER YEARS OF RELENTLESS pressure to slash costs, a growing number of hospital administrators are now challenging their laboratories to develop and implement new value-added testing services.

This shift is an important development. It gives laboratory administrators an unprecedented opportunity to become the catalyst for significant and far-reaching clinical changes within a hospital or integrated health network (IHN).

At **Massachusetts General Hospital**, in Boston, Massachusetts, ever-growing numbers of patients were exceeding the capacity of the emergency

department to accommodate them. Lab administrators decided that the laboratory could play a key role in improving this situation by expanding point-of-care testing (POCT).

"In a nutshell, our emergency department was seeing a larger volume of patients than it was capable of accommodating," stated Kent Lewandrowski, M.D., Associated Director of Clinical Laboratories at Mass General Hospital. "The need to divert patients arriving at overcrowded emergency rooms is a widespread problem among many hospitals in the Northeast and the *Boston Globe* was publishing stories about this situation.

"Emergency departments were full either because they did not have enough capacity to see the patients or beds were not available if they needed to be admitted," explained Dr. Lewandrowski. "Patients were being diverted to other hospitals, many of which had similar issues.

"The emergency department is the gateway to our hospital," he added. "A significant percentage of our admissions come through that door. So, if our emergency department is bogged down attempting to deal with ever-growing numbers of patients, this has many consequences for the rest of the hospi-

tal and the quality of care. For these reasons, any suggestions on how to improve the situation within our emergency department at Mass General got plenty of attention from administration."

### Boost Value Of Lab Testing

For Dr. Lewandrowski, this was an opportunity to boost the value of lab testing services. "Through most of the 1990s, we were in a commodity mode, where reducing the unit cost of laboratory tests was almost a fanatical obsession," he stated. "But every lab eventually reaches the point where marginal gains from progressive cost reductions get smaller and smaller.

"We realized the laboratory is only about 4% of the hospital's operating budget; yet it plays an essential role in almost all clinical activities," noted Dr. Lewandrowski. "So we viewed the challenges in the emergency department as an opportunity for our lab to move beyond 'commodity' services and develop new ways to provide added-value for our doctors, nurses and patients."

To accomplish this, lab administrators at Mass General recognized that the differential in cost-per-test of point-of-care and main lab testing was not the issue. "Obviously, core labs with high volumes have economies of scale and the unit cost tends to be low," observed Dr. Lewandrowski. "In contrast, POC tests are done one at a time, yielding few economies of scale. So, what is POCT's big advantage? Speed—reduced time to result.

### Lab Info is Time-Sensitive

"Laboratory information has value which decays with time," he noted. "What's today's value of my sodium when I had an appendectomy at the age of 12 years old? It's almost nothing. Whereas, if I am an acute presentation in the emergency department, the value of that same test is relatively high.

"For our laboratory to support the emergency department, we felt the highest value we could offer would be to provide

## Caveats in POCT Testing Programs

**E**XPERIENCE HAS GENERATED important lessons about point-of-care testing (POCT) at Massachusetts General Hospital (MGH). Kent Lewandrowski, M.D., Associate Director of Laboratories at Mass General offers these five caveats:

**1 Sufficient Test Volume:** It's important to generate enough tests to properly utilize the labor dedicated to POCT. MGH's lab is looking to expand the POCT menu as one way to increase test volume.

**2 Select the Right Technology:** Space is an issue. The kiosk doesn't have room for supplies, reagents, and other items. Some good test technology is unusable because it requires too much space within the kiosk.

**3 Vendor Support:** Many POCT vendors lack the experience to offer sophisticated support for POCT applications, plus MGH is using POCT differently than in most other hospital settings.

**4 Complicated to Match POCT Results With Main Lab Results:** Different test technologies used in the POCT kiosk and main lab generate numbers which are often different, such as cut-off points. To avoid confusion with the medical staff, POCT results which are negative are reported simply as negative. In some cases, a positive POCT test result, such as a cardiac screen, is reflexed to the main lab so the patient's test record has consistent numbers.

**5 Team Approach is Mandatory:** POCT requires input from the lab, physicians, nurses, and administration. A project manager is essential.

extremely fast turnaround time on selected test results," said Dr. Lewandrowski. "One of our primary goals was to affect length of stay. If we could successfully reduce length of stay, then

this benefit would far outweigh the additional costs associated with POC testing versus the core lab."

In the spring of 2000, Mass General developed a task force to address the issues of emergency department "divert." This task force included physicians, nurses, laboratory, radiology, and other functional areas. "The laboratory seemed the easiest place from which to start," said Dr. Lewandrowski. "It has a defined test menu to support specific clinical applications, along with associated turnaround times (TAT).

### Defined The Mission

"So we defined our mission," he continued. "It was to eliminate the laboratory as a contributor to emergency department divert and to decrease emergency department length of stay. If we could succeed in this mission, then other departments, such as radiology and inpatient units, could come along and do their part.

"Our next two steps were relatively simple. First, we established a limited test menu based on interviews with the emergency department (ED) physicians and nurses," noted Dr. Lewandrowski. "Second, we looked at the workflow processes in the ED which involved ordering lab tests and responding to the test results.

### Complex Source Of Delays

"Here is where we learned a surprising lesson. I had assumed that the lab was probably responsible for most delays in TAT," he observed. "However, it proved to be more complicated than that.

"Our process flow studies revealed that five discrete activities affected turnaround times: 1) it averaged 40 minutes between the time an ED patient was registered and a test was ordered; 2) it was an additional 20 minutes between order and collection of specimen; 3) transport to the lab averaged 30 min-

utes; 4) the core lab generally delivered results in about 60 minutes; and 5) we discovered that it averaged about 60 minutes for physicians to review the results once they were available,” Dr. Lewandrowski said.

## Need To Revise Work Flow

“These facts framed our challenge. We estimated that 25% of patients seen in the emergency department would receive one of those target tests we had identified earlier,” he noted. “For our POCT kiosk to serve this substantial number of patients, we would need cooperation to revise certain work processes in the ED. To minimize such changes, we decided to concentrate on specific clinical areas where a change in laboratory testing technology could generate positive changes in patient outcomes, with further positive impact on the problem of ED divert.

“To achieve this goal in specific clinical areas, we quickly realized that only a limited number of diagnostic technologies would reduce the turnaround time of our targeted tests,” recalled Dr. Lewandrowski. “After boiling it all down, we were left with point-of-care or nothing. Further, we also knew that, even if we reduced the lab turnaround time to zero, existing ED work processes still accounted for an average of 154 minutes of total TAT.

“Obviously this mission could not be achieved by the lab alone,” he added. “Given the many dysfunctions of the current system, I felt we really needed a radical solution if we were to succeed.”

## Prototype POCT Program

The decision was made to implement the emergency department POCT kiosk on a demonstration basis. The project was scheduled to last at least four months. “Funding for this demonstration project came, in part, from several vendors,” he added. “In particular, **Abbott Laboratories** was very

supportive of our efforts, even though it did not involve Abbott test kits. We budgeted for a higher number, but only spent about \$40,000 during the demonstration phase.”

To ensure that it was professionally handled, a dedicated POCT lab team of five was created. “Our objective was to speedily implement this concept and at the same time maintain a high quality of test results and operate in full compliance with all regulations,” observed Dr. Lewandrowski. “Our POCT staff would concentrate full-time on implementing this project and did not have duties in the main lab.

## Measure Five Outcomes

“We decided to measure four outcomes: 1) length of stay in the emergency department; 2) turnaround time of tests; 3) physician satisfaction with turnaround time; and 4) accuracy,” he added. “We carefully collected data before and after this POC testing project.”

Dr. Lewandrowski also realized the importance of getting favorable attention to the POC test project. “We hooked people’s interest around the hospital by calling this new concept a ‘point-of-care testing kiosk.’ Hospital staff quickly became intrigued with what we were proposing to do.”

During a recent tour of Massachusetts General Hospital, THE DARK REPORT saw the point-of-care kiosk, located in the ED. It is a small room, approximately ten feet deep and six feet wide. A countertop with sink runs along one wall. Several POCT instruments, with tiny footprints, are lined up on the counter. At any one time, two individuals man the POCT kiosk. This arrangement insures that one individual is always available to perform a test even if the other staffer is circulating within the ED in support of POC testing activities.

“Our POCT kiosk is small and cozy,” noted Dr. Lewandrowski. “There’s not much room for equipment, given the limited space and target turnaround times we have to meet. So we had to select ‘fast and small’ technology. Whenever possible, we chose single-use, disposal types of test technologies. In our experience, many products are good and work according to the manufacturer’s specifications.”

### Identifying Source of Costs

The good news is that the POCT kiosk demonstration project delivered tangible results. “The net effect was that length of stay for ED patients who received POCT testing was reduced by an average of 45 minutes,” explained Dr. Lewandrowski. “Equally significant, the measurement of physician satisfaction doubled, on a ranking of one-to-five, to 4.5. Test accuracy was rated as equal to the main lab.

“Some areas produced particularly impressive results,” he continued. “For example, POC testing for cardiac patients sliced 70 minutes from their ED visit for those patients who were discharged and 37 minutes off the ED visit for those who were admitted.

“Without adjusting for acuity, we also saw the rate of discharge for patients with chest pain go from 13.3% before the POCT kiosk to 31.9% after the POCT kiosk,” he said. “However, confirming this result would require us to evaluate patient acuity, which we have not yet done.”

### Declining Divert Rate

“Most significantly, about this time the divert rate in the emergency department began to decline,” he added. “Even as the lab was making a contribution with the POCT kiosk, other areas like radiology were streamlining their procedures and emergency department physicians were implementing work flow improvements. Taken collectively, all these

efforts reduced the divert rate by 27% as of this month and it has stayed down.”

Administration judged the POCT kiosk to be a success and now funds it full-time. “This is a classic example of quality improvement,” noted Dr. Lewandrowski. “The POCT’s testing costs are higher than if these same tests were done in the main lab. But, POC testing is contributing to improved quality of patient care in the ED while also contributing to a lower overall cost-per-encounter. The added value of POCT is much greater than its additional cost.”

Hospital administrators recently decided to make the point-of-care testing kiosk an ongoing service within the emergency department. This presents Dr. Lewandrowski with a new challenge. “To support a permanent POCT kiosk, we now have to develop formal guidelines for maintaining ongoing competence, accreditation, and quality. That’s not so sexy and exciting as a pilot project and requires hours of arduous work to develop the procedures and documentation necessary to run this as an ongoing laboratory function.”

### Added-Value By The Lab

Emergency department divert provided laboratorians at Massachusetts General Hospital (MGH) with an opportunity to increase the value of the laboratory to both clinical and operational activities within the hospital. This is a good demonstration of how progressive hospital laboratories are moving beyond simply reporting an accurate test result in a timely fashion.

Specifically, the problem needing resolution within the emergency department at Mass General required a sophisticated management response by the hospital’s laboratory. The calculation of cost-versus-benefit went beyond a simple cost-per-lab-test assessment and involved measuring performance variables that included

## Mass General's Lab Hits Home Run With POCT Kiosk In Emergency Dept.

Since the creation of a point-of-care testing kiosk within the emergency department of Massachusetts General Hospital, average length of stay has been cut by 45 minutes for patients that receive testing, contributing to a reduction in the divert rate

at Mass General. The bar chart below shows the positive impact of POC testing on cardiac patients in the ED and the table demonstrates the typical monthly reduction in potential bed hours generated by POC testing in the emergency department.

### MGH's POCT Testing Menu

#### Existing

- Bedside Glucose
- Urinalysis
- Fecal Occult Blood
- Gastric Occult Blood
- Blood Gas Analysis
- Provider Microscopy
- Urine Pregnancy
- Rapid Strep A

#### New POCT Kiosk

- Rapid Cardiac Markers
- Influenza A/B
- Urinalysis
- Whole Blood Glucose
- Liver Function Testing
- Drugs of Abuse

#### Discontinued POCT

- CLO Testing
- Fetal Scalp pH
- Urine pH (paper method)
- Urimetry
- Urine SG (By RI)

### ED Cardiac Length of Stay

#### Admitted Patients

Before POCT: 388 minutes

After POCT: 351 minutes

Difference:  
37 minutes

#### Discharged Patients

Before POCT: 367 minutes

After POCT: 297 minutes

Difference:  
70 minutes

### ED POCT Kiosk:

#### Typical Monthly Test Volumes

<u>Test</u>	<u>Volume</u>	<u>Potential Bed Hours</u>
Cardiac	.542	.425.5
Urinalysis	.801	.494
HCG	.155	.103
Influenza	.35	Unknown
Glucose	.111	—
<b>Total</b>	<b>1,644</b>	<b>*1,022</b>

\* Equals 6.1 bed days

ED patient length of stay, ED patient admittance/discharge rates, physician satisfaction, and the overall cost of the patient's ED encounter.

The POCT kiosk represents the emerging paradigm in hospital laboratory organization and management. Increasingly, multi-hospital integrated health networks want the clinical laboratory to become part of a comprehensive solution to a system-wide effort to improve clinical care pathways.

Laboratory administrators and pathologists will need to adapt to this shift in management expectations. Laboratory testing is gaining increased importance in the success of integrated health networks. This means increased clout for lab administrators and pathologists. It also requires additional management skills and a willingness to support the full "episode of care."

**TDR**  
Contact Kent Lewandrowski, M.D. at 617-726-2275.

## TDR Story Update

# Northwestern Hospital Laboratory Supports Reduced Infection Rate

*On-site microbiology molecular typing lab now tracking antibiotic-resistant bacteria*

**T**HIS MONTH, ONE OF THE NATION'S most unique and effective nosocomial infection programs completes its seventh year of operation at **Northwestern Memorial Hospital** in Chicago.

This one-of-a-kind infection control effort is organized around the laboratory—specifically, in-house molecular typing within the microbiology department. Functioning as part of a multi-disciplinary team chartered to cut the rate of hospital infections, on-site molecular typing plays a key role in helping Northwestern achieve a nosocomial infection rate that is 57% below the national average.

Of equal importance, this lab-driven program is generating savings of \$2.15 million per year from reduced infections, against annual lab costs of about \$400,000! It's a great demonstration of how hospital-based laboratories can add value that far outweighs the incremental cost of enhanced lab testing services.

### Compelling Success Story

Ever on the prowl for examples of management excellence, THE DARK REPORT was first to bring this compelling laboratory success story to the attention of the lab industry (*see TDR, February 1, 1999*). A presentation at the 1999 EXECUTIVE WAR COLLEGE by Northwestern's Prevention Epicenter Director

Lance R. Peterson, M.D. was followed by extensive coverage in *CAP Today*. Lab administrators and pathologists were both impressed and excited about the way Dr. Peterson's team used lab testing to improve a major benchmark of hospital quality while substantially reducing unnecessary costs.

### Visit To Northwestern

To update this story, THE DARK REPORT recently visited Northwestern Memorial Hospital for a first-hand look at the infection control department and to learn about other hospitals which were emulating this groundbreaking nosocomial infection control program.

The visit was both encouraging and discouraging. The encouraging news was that, following the original five-year trial of the program, administration at Northwestern authorized this program to continue on a permanent basis. Additional resources have been funded and the micro lab is now also participating in studies with the **Center for Disease Control (CDC)** to track antibiotic-resistant bacteria.

The discouraging news is that only a couple of other hospitals in the United States use, like Northwestern, on-site molecular typing as part of a multi-disciplinary team effort to control nosocomial infections. According to Dr. Peterson, **University of Iowa Medical Center** in Ames, Iowa and

**Evanston Hospital** in Evanston, Illinois are using on-site molecular typing to aggressively manage nosocomial infections.

### Lab Industry's Reticence

That short list of active nosocomial infection programs illustrates how reticent the laboratory industry is to proactively study the "best practices" of other labs and import those successful management innovations into their own institutions, particularly in an area as important as nosocomial infections.

"I believe one important factor which stifles innovation within our profession is the existing economic model of healthcare," observed Dr. Peterson. "Because of the way costs and revenues are assigned, it makes it difficult for innovators to get funding to study their ideas in clinical settings, particularly if the study crosses clinical departments.

"For example, our nosocomial infection control program created additional costs for the laboratory," he continued. "However, most of the direct expense reductions were realized in pharmacy and nursing. This situation is similar to other healthcare settings. Often it is difficult for one clinical service to 'volunteer' to add costs if the economic benefits actually flow into other clinical areas."

### Medical Errors Meeting

However, the current economic model of healthcare is under pressure to change the way it supports innovation. "In June, there was a national meeting in Chicago on the topic of medical errors in infectious disease," stated Dr. Peterson. "Included among the participants were representatives from the **Institute of Medicine (IOM)** and **General Motors Corporation's** health management team. There was keen interest by business and the IOM to address deficiencies in the existing

## Performance Measures At Northwestern Hospital

**N**ORTHWESTERN'S INFECTION CONTROL program is organized around a weekly planning meeting that includes representatives from infection control, diagnostic microbiology (molecular epidemiology), pharmacy, and infectious diseases. Here are selected performance measurements:

- National hospital infection rate in 1995: 9.97 per 1,000 patient days.
- Northwestern Hospital infection rate in 1993-1994 (Pre-infection control project): 6.49 per 1,000 patient days.
- Northwestern Hospital infection rate from 1994 to present (During and after infection control project): 5.60 per 1,000 patient days.
- Northwestern calculates that, from 1994-99, the sustained rate reduction to <2.6% yearly suggests that predicted nosocomial infections were prevented in at least 2,600 patients during this time as compared to the average 700-bed U.S. hospital.
- Within Northwestern, the lower incidence of infections reduced inpatient days by 1,100 per year, triggering annual savings of \$2.15 million (calculated using an average weighted daily cost per care of \$1,907 for FY99).

*Data taken from "New Technology for Detecting Multi-drug-Resistant Pathogens in the Clinical Microbiology Laboratory"; Peterson, Lance R. and Noskin, Gary A.; Emerging Infectious Diseases, Vol. 7, No. 2, March-April 2001, pages 306-311. Members of THE DARK INTELLIGENCE GROUP can request a copy of the February 1, 1999 issue of THE DARK REPORT which contains the story about Dr. Peterson and the Northwestern nosocomial infection control program.*



economic model in healthcare and create more incentives and support for innovation that improves the quality of health services.

“Based on discussions and comments made at this recent meeting, I see signs that big employers intend to encourage more innovation among healthcare providers,” he added. “Now that medical errors have become a high-profile issue, there is greater awareness of barriers within the healthcare system which discourage innovation.”

### Continuous Evolution

Within Northwestern Memorial Hospital, there has been a continuous evolution of the nosocomial infection control program. It was started with the goal of reducing the overall incidence of nosocomial infections by using on-site epidemiologic typing in collaboration with the infection control team.

As originally organized, the team “fingerprinted” bacteria by extracting genomic DNA. Using a gel-based methodology, results are available within 16-24 hours. “We originally learned that genomic typing could readily separate possible episodes of nosocomial infection into groups of those that were likely, possible, and unlikely due to patient-to-patient transmission,” noted Dr. Peterson. “This allowed us to more quickly determine what type of intervention was likely to control an apparent outbreak.”

With the capability of doing on-site molecular typing, the microbiology lab is participating in other studies to identify and track infection-resistant bacteria. In particular, vancomycin-resistant enterococci (VRE) and methicillin-resistant staphylococci (MRSA) are seen with increasing frequency at referral centers like Northwestern.

In conjunction with the CDC, Northwestern’s Prevention Epicenter is now tracking patients known to have

these bugs. The goal is to use molecular typing to learn how strains of the bacteria mutate and change over time. This is done in conjunction with the existing program to track and control infection outbreaks within the hospital. CDC grant money provides funding for this activity.

“It’s been seven years since we began to use on-site molecular testing to support Northwestern’s nosocomial infection control program,” stated Dr. Peterson. “Probably the single most important lesson we’ve learned is that reduced rates of infection are sustainable.

“As most healthcare providers know, it is common, once lots of attention is focused on a specific area of clinical service, to see significant improvement. However, as often as not, over time this improvement cannot be sustained. Our ability to sustain, over seven years, a consistently lower level of nosocomial infections is solid evidence that this is a valid approach that can be copied by other hospitals seeking improvement in this area.”

### Labs Can Improve Value

The experience of on-site molecular typing at Northwestern Memorial Hospital provides a tangible demonstration of how laboratories can improve the quality/value/cost equation of healthcare.

Its laboratory was willing to innovate. It offered enhanced lab services designed to support specific clinical improvements. The result was a substantial reduction in the number of nosocomial infections. Besides savings that exceeded costs by 5-to-1, literally thousands of patients were spared the experience of an infection. That’s a win for the hospital, lab, physicians, nurses, and patients! **TDIR**  
Contact Lance R. Peterson, M.D. at 312-926-2885.

# INTELLIGENCE

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



In recent years he's become an influential "behind the scenes" guy within the lab industry. Now Heywood D. Cochrane, Jr. is joining the Board of Directors at **AmeriPath, Inc.**, based in Riviera Beach, Florida. Most laboratorians know Cochrane from his tour as President and CEO of **Allied Clinical Laboratories** before it was acquired by **National Health Labs (NHL)** in 1994. He held several executive positions at **Laboratory Corporation of America** after its acquisition of NHL.

## **MORE ON: COCHRANE**

Since leaving **LabCorp** in 1997, Cochrane has been CEO of **CHD Meridian Corporate Healthcare** in Nashville. But he's kept active in the lab business. He currently sits on the board of **TriPath Imaging, Inc.** and was a director of **Unilab Holdings** before its sale to **Kelso** in 1999 and a director at **InformDX** prior to its sale in 2000 to **AmeriPath**.

## **NEW TECHNOLOGY TO SPEED PROTEIN DISCOVERY PROCESS**

In the spring of 1998, the introduction of **Perkin-Elmer Corp.**'s newest generation of genetic analyzers accelerated the mapping of the human genome. Now the goal is to map the human proteome. Just weeks ago, **Oxford GlycoSciences Plc**, based in Oxford, England, announced the introduction of new protein-detecting technology that it claims is many times faster than existing methods. The company says it can identify proteins in cells ten times faster than the company's existing equipment.

## **ADD TO: OXFORD GLYCO**

Oxford Glycogenics is a company to watch in the field of proteomics. It is estimated there are about 30,000 human genes and these genes produce between 200,000 to 300,000 proteins or protein variants. During the past year, Oxford, along with rivals **Myriad Genetics, Inc.**, **Celera Genomics**, and others, have identified at least 100,000 proteins. Oxford's goal is to develop drugs

based on proteins. "The real goal of molecular medicine is to pinpoint the protein differences," stated Raj Parekh, Chief Scientific Officer. "It's to find the protein target for treating disease." Oxford's new protein discovery technology may radically accelerate the race to map the human proteome.

## **TRICOR'S CEO RETIRES**

After almost five years of leadership at **TriCor Laboratories** in Albuquerque, New Mexico, CEO Linda Cole is retiring. Plans are for her to work through September. A search is under way for her successor. TriCor recently hired Toby Simon, M.D. to be the lab's first Corporate Medical Director/Chief Operating Officer. TriCor Labs is one of the more interesting lab outreach organizations. It is owned by three hospital/hospital system partners and has undergone some difficult management challenges as it has worked to create a consolidated, unified laboratory services organization serving its partners' needs and the physicians' office community.

***That's all the insider intelligence for this report.  
Look for the next briefing on Tuesday, September 4, 2001.***

## ***News About The Next War***

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## ***UPCOMING...***

- ***THE DARK REPORT'S Annual Ranking of National Reference and Esoteric Laboratories.***
- ***Squeezing Costs Out of the Small Hospital Lab: Lessons Any Lab Can Apply.***
- ***Shift in Anatomic Pathology Marketplace: Local Path Groups Organize Combined Sales and Marketing Effort.***