



Diagnostic Testing and Technology Report

Competitive Intelligence & Analysis for an Expanding Global Market

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Established 1979

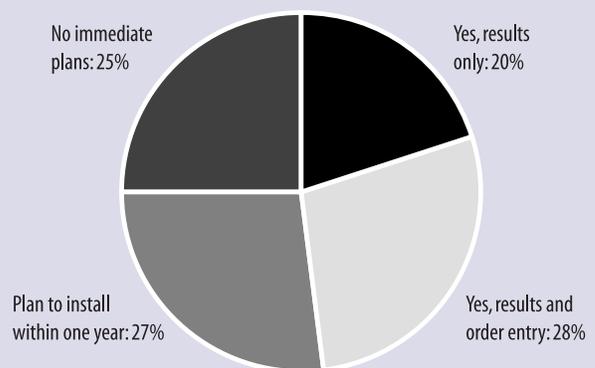
Web Connectivity Finally Catching Hold

The first Web-connectivity systems for lab order entry and test result reporting hit the scene in the mid-1990s, and after 10 years of fits and starts, it looks like the use of these systems is finally catching on. Today 48% of labs say they have a Web-based system in place for results reporting and/or order entry, while another 27% say they plan to install one within the next year, according to an exclusive Washington G-2 survey completed by 290 lab directors and managers around the country.

The demand is mostly being driven by Quest Diagnostics and LabCorp, who are each relentlessly marketing their Web capabilities to physicians as an added service. The biggest challenge that labs face in implementing their Web systems is interfacing them into their LIS systems and physician client's practice management systems. These tasks have proven so difficult, costly, and important that LabCorp, for example, purchased an entire company (Persys Technologies) that is focused on establishing data exchange connections last year.

For advice on connecting Web systems to LIS and practice management systems plus the results from our exclusive Web Connectivity Survey, see *Inside the Diagnostics Industry*, pp. 3-9. 🏠

Does your lab currently offer Web-based reporting of lab test results?



Source: Washington G-2's First National Web Connectivity Survey, June 2005

Tm Bioscience Gets FDA Okay For Cystic Fibrosis Kit

Tm Bioscience Corp. (Toronto, Canada) has become the first IVD manufacturing company to receive FDA clearance for a cystic fibrosis genotyping test kit to help diagnose the disease in children and to identify adults who are "carriers" of its gene variations. The company's Tag-It Cystic Fibrosis Kit also represents only the second multiplexed genetic test (behind Roche's AmpliChip CYP450 microarray) to be cleared by the FDA for sale in kit form. ➔ p. 2

Cystic fibrosis is the most common inherited disease in the Caucasian population, with an incidence of approximately 1 in 3,200 live births. Half of the people with cystic fibrosis die by the age of 30.

▲ **Tm Bioscience Gets FDA Okay For Cystic Fibrosis Kit**, from page 1

The Tm Bioscience test screens for 43 gene mutations and variations associated with cystic fibrosis. The test is a bead-based microarray that uses a standard 96-well plate format and runs on the xMap instrument system made by Luminex (Austin, TX).

In response to recommendations by the American College of Medical Genetics (ACMG) and the American College of Obstetricians and Gynecologists (ACOG) in 2001, the demand for cystic fibrosis screening has increased dramatically. Greg Hines, president of Tm Bioscience, estimates that roughly 1.5 million cystic fibrosis tests are currently performed each year in the United States at an average price of \$40 each for reagents, indicating a market size of \$60 million. Reference labs charge an average of about \$150 to perform cystic fibrosis genetic analyses.

Hines says Tm Bioscience will sell its Tag-It Cystic Fibrosis Kit at current market rates. However, he contends that Tag-It has a lower startup cost because the Luminex xMap system sells for only about \$40,000 versus roughly \$300,000 for competing platforms.

Hines says the company spent about one year collecting test performance and reproducibility data from three different labs in the United States and submitted an application to the FDA in late September 2004. Clearance for the Tag-It Cystic Fibrosis Kit, related software for interpretation and test result report writing, and the xMap system were granted on May 9.

Tm Bioscience also has a research-use-only (RUO) tests for CYP450 and an Ashkenazi Jewish Panel. Hines says the company will seek FDA clearance for these tests as well. He says 25 labs in the United States have installed the Tm Bioscience system and are performing the company's tests.

Hines expects the approval process for Tm Biosciences future test kits to move smoothly because the company's manufacturing processes have been designed to meet the FDA's Quality System Regulations (QSR) and current Good Manufacturing Processes (cGMP). In his opinion, other IVD manufacturers have encountered problems with the approval process for their microarrays because their manufacturing processes have been designed for the less stringent requirements of the RUO market.

"The big question now is whether the FDA will allow the industry to continue to sell microarrays on an ASR basis," Hines adds.

In the three months ended March 31, 2005, Tm Bioscience reported a net loss of Canadian \$2.8 million (US \$2.3 million) versus a net loss of \$2 million (US \$1.6 million) in the same period a year earlier; revenue was \$1.1 million (US \$866,970) versus \$878,000 (US \$708,122). ▲

Tm Bioscience in Brief (in Canadian \$000)

	1Q05	1Q04
Revenue	\$1,075	\$878
Net loss	-2,793	-1,965
Cash & securities	9,950	5,013

Source: Tm Bioscience

inside the diagnostics industry

Interfacing Is Biggest Challenge For Labs Offering Web Connectivity

The shift toward greater use of the Web at laboratories and doctor's offices is gaining momentum. That's good news for both labs and physicians because test orders received via the Web are generally more complete and accurate than orders scribbled on paper. But while convincing physician offices and their staff to use the Web is getting easier, it's still no slam dunk.

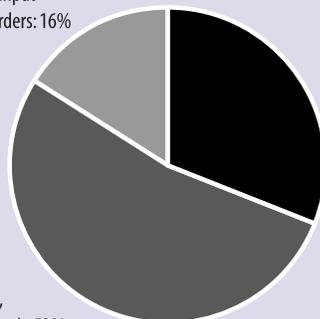
Sixteen percent of labs that offer Web-based order entry to their physician clients say they have had difficulty getting physician offices to input their own orders, 53% say some physician clients use it and some don't, according to *Washington G-2's First National Web Connectivity Survey*. Only about one-third of surveyed labs (31%) offering Web-based order entry reported that nearly all the physician offices they hook up use it regularly.

The survey was e-mailed to approximately 4,500 lab directors and managers across the country in mid-June. In all, 290 survey forms were completed and returned for a 6.4% response rate. Among the 290 respondents, 189 were from

hospital labs, 65 from independent labs, 11 from pathology groups, and 25 were from physician office and other labs (e.g., academic medical centers, public health labs, HMO labs, etc.).

How have physician clients responded to order entry on your Web-connectivity system?

We have had difficulty getting physician offices to input their own lab test orders: 16%



Nearly all physician offices we hook up use it regularly: 31%

Some use it, and some don't: 53%

Source: *Washington G-2's First National Web Connectivity Survey, June 2005*

What's the greatest difficulty labs face when trying to get physician offices to input their own orders through a Web system? The answer is difficulty interfacing with physician office practice management systems, according to 34% of labs with Web-based order-entry systems that responded to our survey.

The next biggest challenge is overcoming physician practice patterns—26% of

survey respondents with Web systems said their physicians and staff still prefer writing a lab order on paper.

"Physicians feel like they are doing work for us, and their staff does not have the time. . . It is definitely not 'plug and play.' It takes lots of resources on the lab's part. If you're interfacing you must have the office's commitment to the project," wrote one survey participant from a hospital lab in Colorado.

"It's very difficult to get the physician office to change their routine, the flow of the office. Many offices do not have PCs in areas that would make the concept work," said a survey participant from a hospital lab in Michigan.

And another surveyed lab from Virginia said: "There is push-back from physician's offices to do the order entry. There is also a huge issue of connecting to their individual EMRs, of which there is an almost infinite variety."

What is the greatest difficulty you have in getting physician offices to input their own orders on your Web system?

Difficulty interfacing to physician practice office management systems	34%
Physicians and staff still prefer writing a lab order on paper	26%
Physician office staff changes too frequently	11%
Physicians and staff are too busy to get training	10%
Our Web system is too cumbersome and time consuming	10%
Other	9%

Source: Washington G-2's First National Web Connectivity Survey, June 2005

Despite the difficulties, lab directors and managers feel that having Web connectivity is a must. "It's absolutely a necessity now and in the future as more offices install EMRs and other paperless systems. It's also key to linking offices to hospitals and systems. It will probably become expected by payers in the near future to reduce errors and to lower overall costs," wrote a lab manager from Nebraska.

The most frequently cited benefit surveyed labs said they received from Web connectivity was less phone calls from physician offices seeking test results (35%). Better client retention (i.e., Quest and LabCorp offer it, so we need to offer it to) was named by 26%, while another 26% said they received cleaner lab test orders as a result of Web connectivity.

What benefits have you gotten by providing Web connectivity?

Less phone calls from physician offices seeking test results	35%
Better client retention—Quest and LabCorp offer it, so we need to offer it	26%
Cleaner lab test orders	26%
Better tracking of specimens	3%
All of the above	5%
Other	5%

Source: Washington G-2's First National Web Connectivity Survey, June 2005

So why aren't more labs using the Web today? That's an easy question to answer. Thirty-five percent of survey participants not using the Web said it was too costly or not in their budget. The next most frequently cited reason was they didn't see the need/physicians aren't asking for it (22%). Thirteen percent said their outreach program was too small to justify a Web system.

Twelve percent cited "other" reasons for not installing a Web system (e.g., some surveyed labs cited other priorities at their IT departments, while others said their lab was moving to an EMR instead).

If you have not yet installed a Web-connectivity system, why not?

Too costly/not in budget	35%
Don't see the need for this/our physicians aren't asking for it	22%
Our outreach program is too small to justify this	13%
We're waiting for the technology to improve	9%
Seems too complicated/no time to evaluate	5%
We don't have the staff for this	4%
Other (e.g., other IT priorities, moving to EMR instead, etc.)	12%

Source: Washington G-2's First National Web Connectivity Survey, June 2005

CareEvolve And Telcor At Top Of Lab Customer Satisfaction Survey

Our survey also asked labs with a Web-connectivity system if they would buy from their current vendor. Answers were given on a scale of 1 (absolutely not) to 5 (absolutely yes).

Tied for first place on the “buy again?” question were CareEvolve and Telcor. The average score from the seven customers in our survey using the CareEvolve Web system was 4.67. Telcor also got an average of 4.67 from three customers.

With 24 customers, Atlas had the biggest market share in our survey and scored an average 4.38. Twenty-three survey participants were using an internally developed system with an average rank of 4.25.

Telcor and Misys ranked best (each with 4.33) on the question of “Was implementation on time?” Other vendors scoring 4.00 or better included CareEvolve, Atlas, and LabTest.

However, a hospital lab outreach manager from Oregon said this about implementation: “None of the systems are as easy to implement as the vendors would lead you to believe. We had to hire a full-time LIS analyst to maintain and keep up with the operations of the system.”

But despite all the challenges associated with getting a Web system up and running, most survey participants said Web connectivity was a “must have.”

“One of the best products we have offered to our clients. We cannot survive in the lab world today without this tool. It is essential,” said a client service director from an independent lab. “If you plan on being in the outreach or reference lab business, you will need to offer Web connectivity or you will not be able to be a

player in the market,” added a hospital lab director from the Midwest.

And finally, an administrator at a pathology group offered this: “As a pathology group we have discussed Web connectivity several times. This would require an expensive upgrade to our LIS. Currently our clients are not asking for this. However, we still plan on doing this sometime within the next year because we feel it is the way of the future. The one difference with pathology services is that the client still likes to talk with the pathologist about their cases over the phone or in person. This will never be replaced by Web connectivity.”

Average Customer Rankings on a Scale of 1-5

Vendor	# Customers	Would you buy again?	Implementation on time?
CareEvolve	7	4.67	4.17
Telcor	3	4.67	4.33
Atlas	24	4.38	4.10
Internally developed	23	4.25	3.78
LabTest	5	3.80	4.00
McKesson	14	3.80	3.60
Misys	5	3.75	4.33
4Medica	20	3.63	3.43
Orchard	4	3.50	3.25
Sysware	3	3.00	2.67
Cerner	17	2.64	2.00
Dr. Chart	5	2.40	3.00
LabPortal	3	1.67	3.67
Other	27	NA	NA
Total-Unweighted Avg.	170	3.55	3.56

Source: Washington G-2's First National Web Connectivity Survey, June 2005

Insider Perspectives On Web Connectivity

For more color on what’s happening with Web connectivity at labs, *DTTR* interviewed a dozen lab managers and vendors. Here’s what they had to say:

Lynn Jansen, administrative director at **Florida Pathology Laboratory** (FPL-Orlando, FL), says her lab went live with the 4Medica system in October 2004 and currently has 20 out of its 1,400 physician office clients connected for results and order entry. She says the system has helped FPL increase its volume of business from existing clients by steering work its way.

Jansen advises labs to carefully select which physician offices they connect with. In addition to the size of the physician office, labs should first make sure the physicians are onboard as well as the person who will actually be inputting the orders (i.e., office manager, nurse, medical assistant, or phlebotomist).

“You’ve got to approach the physicians from the standpoint that this will make their lives easier. They don’t give a rip if it makes our lives easier,” she says.

Ravi Sharma, president of **4Medica** (Culver City, CA), says Web-based lab systems should have the ability to link a hospital’s information system (HIS) with its LIS to streamline the test order process.

Sharma also recommends that labs carefully review the length of time it takes to place a test order on the system. “If you have to go through seven or eight screens and they’re not in a logical order, then physicians won’t use it even if it’s interfaced to their practice management system,” he says.

Sharma says the biggest benefit electronic order entry offers is reduced error rates and cites a study by the Rhodes Group that showed that an average of 40% of handwritten requisitions contain errors (usually in the patient demographics area).

The High Cost of Interfacing

Don’t overlook the cost of interfacing your Web system to other information systems. For example, some LIS vendors charge as much as \$60,000 to help interface competing Web systems into their LIS systems. Third parties (e.g., Hilgraeve or Halfpenny Technologies) typically charge a few thousand dollars to establish connections with physician practice management systems. And that can add up for labs that have hundreds of physician office clients.

Typical Costs for Interfacing Your Web System

Practice management system \$1,000 to \$3,000 per office
 Electronic medical record \$10,000 to \$15,000 per EMR
 Lab information system up to \$60,000 per LIS

Source: *DTTR* research

Sharma believes that Web-system vendors will have to provide more applications than just lab tests if they want to remain successful in the future. He says 4Medica is working on adding a radiology report component to its system. “Convergence [i.e., radiology and lab test reports] is coming,” according to Sharma. 4Medica currently has 60 live customers using its Web system, including Detroit Medical Center, FPL Florida Path Lab, and Mullins Labs in Georgia.

Jack Redding, vice president of sales at **Labtest Systems** (Midland Park, NJ), says that over the past year or two hospitals have woken up to the need for their lab outreach businesses to have Web connectivity. The key question for hospitals now is “who will help them establish interfaces with their LIS system and physician office clients?” The choices include: 1) using an existing interface engine being used by the hospital for other data; 2) getting cooperation from their LIS or HIS vendor; 3) getting support from their Web connectivity vendor; and/or 4) bringing in third-party experts like Hilgraeve or Half Penny Technologies.

Redding recommends that labs separate the job of interfacing their clinical lab business and anatomic pathology business. Trying to interface both at the same time can become an overwhelming task, he says.

Labtest, a privately held company, has its system installed and running at 40 different labs across the country, including Hospital Consolidated Laboratories (Southfield, MI), Centrex Clinical Laboratory (New Hartford, NY), and Diagnostic Laboratory Services (Honolulu, HI).

Greg White, vice president of lab outreach at **Cerner Corp.** (North Kansas City, MO), says some doctors simply don’t want to move from their paper-based methods for lab test order entry and results viewing. “These are the same physicians who don’t want to learn how to use their VCR,” he says. Nonetheless, he expects that the majority of lab test orders will be placed electronically sometime within the next five years.

Cerner’s ePathLink system for order entry and results reporting is currently live at 21 labs, and there are another 71 in progress (i.e., anywhere from signed to currently installing).

After a lab’s Web system has been interfaced with a physician practice management system, White says the key to getting physician office staff to use it is training. “If you can provide them with the training needed to use the system, they rarely abandon it,” he says.

Late last year, Cerner acquired the medical division at Vitalworks (Birmingham, AL, and Minneapolis, MN) for \$100 million. The division provides physician practice management software to 3,500 physician office and hospital clients and serves about 30,000 doctors. White says Cerner now has the ability to offer a complete IT solution for labs and physician offices from LIS to Web-based orders and results reporting to practice management systems.

Steve Harris, vice president and general manager of **Carilion Consolidated Labs** (Roanoke, VA), says his lab went live with Atlas LabWorks last year. “It hasn’t been that difficult to convince physician offices to use it [Web-based order entry]. They have been more proactive than you’d expect,” he says. In addition to receiving cleaner orders, Harris says that Web-based systems help guide lab work to Carilion. “If we’ve got the insurance contract, then the system directs the work to our lab,” he notes.

Don't miss Washington G-2's Audio

Conference on **Web-Based Connectiv-**

ity: How to Get Your Physician

Clients to Use It

on Thursday, June 23, 2:00 -3:30 PM (EST).

Featured speakers include Steve Harris from Carilion

Consolidated Labs and Jeffrey Banet

from Hilgraeve. Go to www.g2reports.com/2audiocon.php to register today.

Jeff Banet, vice president of development at **Hilgraeve** (Monroe, MI), says many labs are inclined to select the Web connectivity system that their LIS vendor offers. However, he says this is not always the best decision. "Their Web systems are a little behind the curve compared with some of the startup Web vendors," he says.

According to Banet, key questions and considerations that need to be asked before selecting a Web connectivity system include:

- 1) How easy is it for physician clients to use the system?
- 2) How many systems has the vendor got installed and operating?
- 3) How many physician office practice management systems has the vendor interfaced its Web system to?
- 4) Who are they working with (Hilgraeve, Halfpenny Technologies, etc) to help connect their systems to physician practice management systems?
- 5) Does the vendor provide support for converting test codes so results can be downloaded into electronic medical records?

Joseph Mann, manager of information technology at **Mullins Labs** (Augusta, GA), says his lab went live with the 4Medica system for results and order entry in April last year. Currently Mullins is connected with seven physician office clients.

Mann says you've got to convince physicians and their staff that the Web will save them time or else they won't use it. Interfaces into practice management systems are a requirement; office staff won't enter patient demographic data twice, he says.

Mullins uses two methods to extract patient demographic data from practice management systems: 1) real-time downloads using Hilgraeve's HyperSend system; and 2) an internally developed system that extracts data periodically.

Mullins is an independent lab that services Georgia and South Carolina and performs 7,000 to 8,000 billable tests per week.

Debbie Tillman, senior product manager for **Misys Laboratory**, and **Shirley Garcia**, product manager for Misys, tell *DTTR* that one of the biggest benefits of choosing a Web system from your LIS vendor is the uniformity of test codes and test result reports.

Misys has installed its Encompass Web system at eight labs and is currently in the process of installing it at another four labs. Tillman and Garcia say Misys is focusing its sales efforts on the 600 lab customers (1,200 sites) that already use its LIS systems.

Tillman and Garcia estimate that 15% to 30% of physician offices are now using an EMR and believe that adoption could reach 60% to 70% within the next five years. They believe that's bad news for third-party vendors of Web systems for lab orders and results reporting because EMRs will soon become the preferred method for ordering tests and receiving results. "Standalone Web products for lab tests will have a short shelf life," predicts Garcia. [Note: Misys has an electronic medical record called Misys EMR that is currently being used by 1,200 client sites].

William Neeley, M.D., medical director at **Detroit Medical Center-University Laboratories (DMC)**, says labs should be wary of the references that some Web vendors give to potential buyers. Sometimes lab directors and executives are biased toward a product because they are paid consultants or on the board of directors of a Web vendor. "It pays to ask," says Neeley, who has no personal financial ties with any Web vendor.

He also advises labs to shop around because he found huge differences in the prices charged by different Web vendors.

Neeley says DMC went live with the 4Medica product for order entry and results reporting in early 2003. Currently DMC is receiving 700 to 900 of its total 2,500 daily outreach accessions via the Web. The biggest benefit is improved accuracy of test orders, he says.

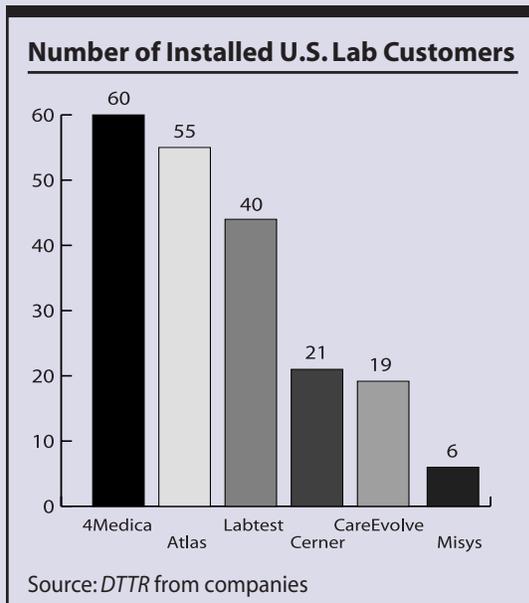
Neeley says DMC has had success in getting physician office staff to input their own test orders even when the 4Medica system is not interfaced to their practice management system. He says the key has been the ease of use of the 4Medica system. "Physicians don't have time to go through multiple screens. It's a real turnoff," he adds.

Paul Park, vice president of corporate strategy at **Atla dical** (Calabasas, CA), says that in addition to the "local hands on trench work of establishing interfaces" other challenges include the simple fact that as many as half of physician practices do not yet have high-speed Internet connections.

Even so, he says labs and their physician clients are quickly adopting the Web. As of June, Park says that Atlas had its LabWorks system installed at 55 different labs, including UniPath (Denver, CO). UniPath is one of the largest pathology groups in the nation, and earlier this year it became the first lab to go live with Atlas's new anatomic pathology Web system.

Tom Shockey, manager for lab operations in the information services department at **Sparrow Health System** (Lansing, MI), says the lab at Sparrow went live with the LabTest Web system in November 2004. He says Sparrow chose LabTest because of its bar-code system that allows orders to be scanned into the lab's legacy systems. He says that other labs thinking about Web connectivity should: 1) understand their lab's business model and what they want from a Web system; 2) realize that installing a Web system will require work-flow changes at the hospital, lab, and physician offices.

Curt Zeberlein, vice president of business development at **Halfpenny Technologies** (Blue Bell, PA), says getting physician offices to enter their orders using the Web is all about work flow. "The order process must be quick and easy to learn because of doctor-office turnover," he notes. "The last thing office staff wants to do is double-key patient demographic info," he adds. 🏠



Bayer Licenses EraGen's Cystic Fibrosis Testing Technology

Bayer Diagnostics (Tarrytown, NY) has secured plans to enter the cystic fibrosis testing market through a contract for exclusive worldwide rights to a genetic test developed by EraGen Biosciences (Madison, WI).

Under the deal, Bayer will manufacture and distribute an automated version of EraGen's testing system for cystic fibrosis gene analysis. Bayer is aiming to have the product on the U.S. market in an ASR format by the end of the year, according to a Bayer spokeswoman. She says the test will screen for 60 genetic mutations and run on the Luminex xMap instrument system.

EraGen chairwoman Irene Hrusovsky, M.D., says the contract should yield "several millions of dollars" to EraGen over the next five years. The 27-employee firm generated about \$27 million of revenue in 2004.

In 2000, Bayer licensed EraGen's technology for use in its Versant HIV (FDA cleared in September 2002) and Versant HCV and HBV assays (both cleared in April 2003). 🏠

Maryland To Require Coverage For HPV Testing With Pap Tests

A new Maryland law that takes effect October 1 requires health insurers to cover human papillomavirus (HPV) testing as part of cervical cancer screening for all women age 30 and older. A specific level of reimbursement to labs was not set.

The new legislation, introduced by State Sen. Gloria Lawlah (D-District 26), was passed unanimously by both houses and signed into law by Governor Robert Ehrlich (R) in early May. It stipulates that HPV testing be covered in accordance with American College of Obstetricians and Gynecologists (ACOG) guidelines published in July 2003.

The ACOG guidelines call for the combined use of a Pap test and an FDA-cleared test for high-risk HPV for women age 30 or older. ACOG says that if a woman tests negative on both, she should then be rescreened with the combined tests no more frequently than once every three years.

Digene Corp. (Gaithersburg, MD) currently makes the only FDA-approved test for high-risk types of HPV. Maryland is the first state to require insurance coverage of HPV testing when used as part of routine cervical cancer screening. A Digene spokeswoman says lawmakers in Ohio, New Mexico, and Texas are considering similar legislation. 🏠

Bihl Named President Of Bayer Diagnostics



Bayer (Tarrytown, NY) has named Anthony Bihl, age 48, to executive vice president, Bayer HealthCare, and also president of the diagnostics division, effective May 18. Bihl assumes these roles after serving as acting division president since September 2004. Bihl joined Bayer's Diagnostics Division in January 2000 as vice president of finance for the laboratory testing segment. In 2002, he became senior vice president for business planning administration where his responsibilities included accounting, supply chain, and strategic planning. 🏠

IVD Stocks Rise 3%; Meridian Up 15%

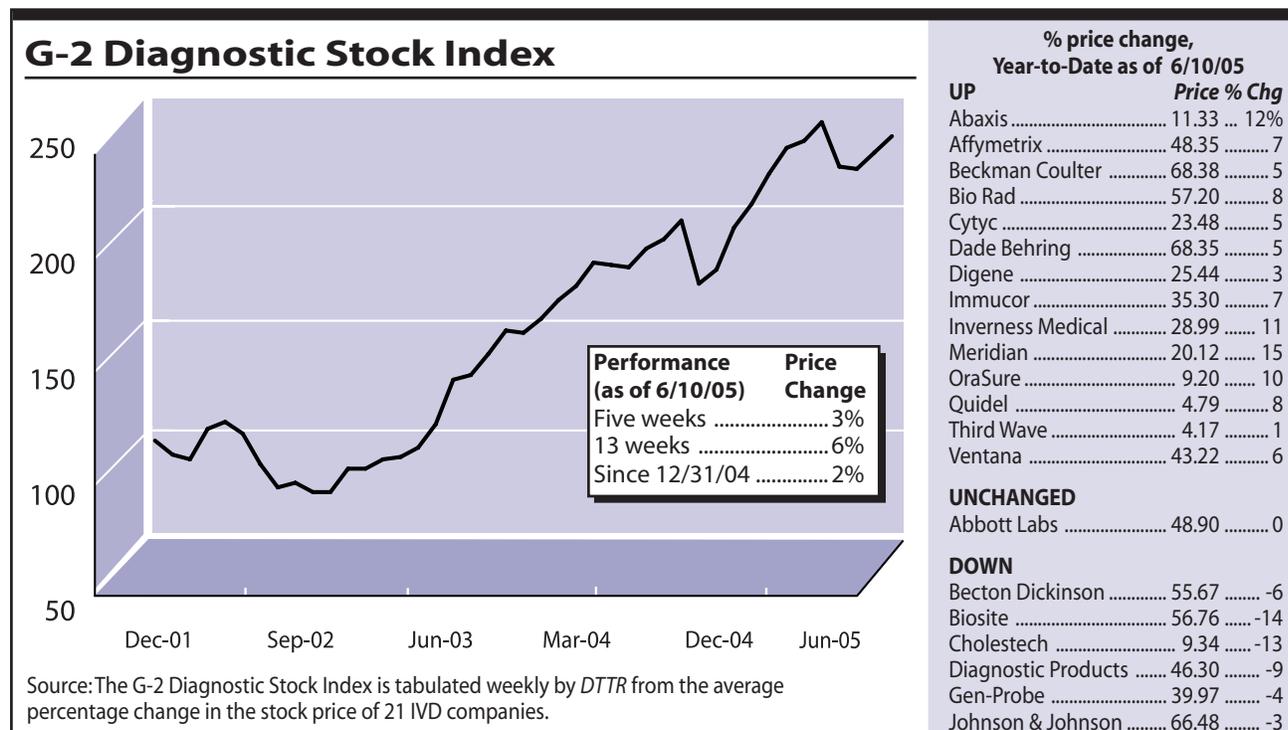
The 21 stocks in the G-2 Diagnostic Stock Index rose an unweighted average of 3% in the five weeks ended June 10, with 14 stocks up in price, one unchanged, and six down. Year to date, the G-2 Index is up 2%, while the S&P 500 Index is down 1% and the Nasdaq is down 5%.

Meridian Bioscience (Cincinnati, OH) rose 15% to \$20.12 per share for a market value of \$323 million. Meridian reported revenues increased by 13% to \$23.7 million for the quarter that ended March 31 compared with the same period last year. Profits shot increased 39% to \$3.2 million, or \$0.20 per share, for the period.

In a filing with the Securities and Exchange Commission, the company made no mention of the controversy that erupted in April after the company mistakenly sent out test kits, which contained specimens of the H2N2 virus that caused a worldwide epidemic in 1957. The Centers for Disease Control and Prevention (CDC) says all of the kits have been destroyed and no one was infected with the virus.

In addition, the CDC says that after visiting Meridian headquarters and interviewing a number of employees, the agency has found no indication that Meridian violated any regulations or safety procedures.

In other news, **HemoSense** (San Jose, CA), which makes a handheld blood coagulation meter, is expected to soon complete an initial public offering (IPO). The company is hoping to raise \$28 million to \$35 million from the sale of 3.5 million shares at an expected price of \$8 to \$10 per share. The company says it plans to use \$12 million of the proceeds from the offering for sales and marketing initiatives; \$4 million for research and development; \$1.5 million for loan repayment; and the rest for working capital and general corporate purposes. The company's shares will trade on the Nasdaq Stock Market under the symbol "HEMO." 🏠



G-2 Insider

Another Advance in Pharmacogenomics: A study published in the June 2 edition of the *New England Journal of Medicine (NEJM)* suggests that the analysis of genetic variations in patients could help doctors determine the right dosage of warfarin, a blood-thinning drug that is notoriously hard to prescribe.

Approximately two million Americans take warfarin (sold under the prescription name Coumadin) to prevent blood clots and reduce the chance of a stroke or heart attack. However, warfarin is unpredictable among different patients. Too much warfarin can cause internal bleeding in some patients, while too little can raise the risk of blood clots for other patients. Today, doctors can only determine the right dose through frequent testing for prothrombin time *after* a prescription is given.

But in the *NEJM* study, researchers from the University of Washington in Seattle and Washington University in St. Louis looked at the genes that control blood clotting and found that one gene in particular, called vitamin K epoxide reductase (VKORC1), accounted for about 25% of the variability in the drug among different patients.

Based on these results, researchers were able to group patients in three categories—high dose, intermediate dose, and low dose—depending on which variations they had in VKORC1.

The researchers say more work needs to be done before doctors can use their findings to routinely calibrate warfarin doses for patients. But given the widespread use of the drug their study has been seen as a major advance in this new field of pharmacogenomics. 🏠

Company References

4Medica 310-695-3300
 Atlas Medical 800-333-0070
 CareEvolve 888-322-5222
 Cerner Corp. 816-201-1024
 Halfpenny Technologies
 877-859-0661
 Hilgraeve 734-244-0042
 Labtest Systems
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