



EMR & LIS: Working Together

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If your practice is considering an EMR, it may be your opportunity to get an LIS!

For a smaller laboratory running multiple analyzers, the installation of a Laboratory Information System (LIS) may have never been seriously considered. An LIS is an information system/software package designed to electronically handle laboratory orders, testing, reviewing, approving, and reporting laboratory results; and storing information generated by the clinical laboratory.

The basic installation of an LIS includes electronic interfaces with the analyzers. Under this scenario, lab orders are keyed in and bar code labels are generated and applied to the samples/tubes for that order. The samples are placed on the analyzers; the analyzers read the bar code labels and run the appropriate test; and results are sent back to the LIS to compile and place in the patient file both in the LIS and on the paper report. The lab order and results are stored electronically in the LIS.

Besides managing lab information electronically, there are many advantages to having an LIS, and a true return on investment can be

realized. Unfortunately, in many cases, the managing physicians simply elect to not spend the money. However, there is now a powerful force moving throughout the healthcare community that may catch your practice by surprise, and may provide you with a very good opportunity to finally acquire the LIS you always wanted (and needed). That powerful force impacting physician groups across the country is the infamous Electronic Medical Record (EMR).

So be on the alert! If your physicians are even thinking of getting an EMR, this article will arm you with all the information you need to approach your managing practitioners and convince them that it is time to get an LIS.

If your physician group is looking into the purchase of an EMR, often the biggest concern they face is the integration of other systems.

The primary benefits of the EMR and the integration of systems are the elimination of paper, the seamless flow of data, and the consolidation of patient information into an electronic format. To do this, there must be a way to manage orders and incorporate results from your lab and your reference laboratory into your EMR. If your physicians are considering the purchase of an EMR, you need to approach them regarding the method for



handling lab orders and results. This is your opportunity for acquiring an LIS.

Estimates state that over 60 percent of the clinical data providers use to diagnose and treat patients comes from the lab. Without an LIS, the process for orders and results is paper—paper orders and paper results to and from your in-house lab and possibly from a nearby hospital or reference laboratory. So, now with the new EMR, how will the physicians order lab tests? How will the results get back to the physician? Via paper?

As you think through how you will present your case to your managing physicians, consider the following:

- Understand and show how the EMR and LIS relate and integrate.
- Understand and explain the reason for installing the LIS first and why.
- Learn and present all of the various advantages of eliminating manual entry and paper in the lab.
- Know and show how an LIS can positively impact your practice's bottom line.
- Do your homework. Laboratory industry publications and the Internet contain valuable information. One of the obvious places to go is the websites of the LIS vendors. Most LIS vendors will present the advantages and benefits of having an LIS and may have links to related supporting articles.

After gathering some initial information, pick up the phone and speak with various LIS vendors. Their representatives will be more than happy to work closely with you. Ask them to visit your lab to show you a demonstration of the software and how it can work to address your facility's specific needs. They can consult with you and help present to your managing providers all the reasons and benefits for acquiring an LIS.

EMR/LIS Integration

Without a lab system, there is no way to electronically populate the EMR with lab results. While your EMR vendor may suggest that your analyzers be interfaced directly to the EMR, it is not recommended!

There are numerous issues surrounding analyzers being interfaced directly to the EMR. Be sure to fully understand the ramifications and what can and cannot be done without having an LIS in between your EMR and your analyzers.

The biggest issue is Quality Assurance. Interfacing analyzers directly to the EMR allows physicians to see results as soon as they are available. On the surface that may sound like a time saver, but it potentially could be grounds for a legal suit. If a physician treats a patient based on an incorrect result that was not properly evaluated for validity as required, and the patient suffered harm from that treatment, a legal suit could be on the horizon. Besides all the other issues, this alone is reason enough to invest in an integrated LIS!

With the LIS, all results come to one place. The lab personnel can compare all results (and prior results) and make a valid clinical judgment on the appropriateness of the result values. Without the LIS, this can still be done, but lab personnel will need to bounce from analyzer to analyzer, search for the specimen ID and try to match results to the other analyzer results on that patient.

When the provider sees an abnormal result in the EMR, he/she needs to be confident in the accuracy of that result. Without review by trained technologists to catch all of the above in the lab, how can the physicians possibly be confident in their lab results?

CLIA also requires all critical results to be called immediately to the provider. How does the EMR vendor plan to set up all the normal and critical ranges to alert the physician? Most EMRs receive results well, but they cannot evaluate them.

Besides results, other issues surround lab orders. Without an LIS, how will the orders get to the instruments? If a patient has a CBC, UA, TSH, BMP, it is possible that the tests will be run on 4 different instruments. How will the specimen be identified? Where does the accession number originate? Does the EMR print bar codes? If not, each specimen ID will need to be manually entered in each analyzer and human intervention adds a chance to introduce an error, not to mention the redundancy of data entry. How will the facility track when the



specimen was drawn, received, and resulted? Does the instrumentation track who reported the result? How will the EMR match the electronic fingerprint that the LIS tracks for each user? How will the EMR handle non-reportable comments? Does the instrument indicate if a result has been amended? When, and by whom? These are all areas under the lab manager's accountability and control and require supporting documentation by CLIA. Without an LIS, what will the lab do at inspection time?

These are just a few of the issues a lab may face without having an LIS interfaced between the EMR and the analyzers. For a physician practice installing an EMR with an in-house laboratory running multiple analyzers, the integration of an LIS is highly recommended.

Complete system integration provides a seamless flow of data between your EMR, practice management/billing system, instruments, and reference lab (see integration diagram below). Integration eliminates manual entry, reduces errors, and ensures accurate invoicing for completed lab tests. The overall value of system integration makes it easier for management, administrators, and lab managers to justify the purchase of an LIS.

Which comes first – the EMR or the LIS?

There are two key benefits for installing the LIS first. The first is that your LIS will begin collecting and storing patient results, so that when the EMR is installed and turned on, your providers will immediately have access to their

patients' historical results. If 100 percent of laboratory information is not delivered electronically to the EMR, paper records will still exist, and if a provider knows the electronic file is incomplete, he'll be obligated to check the paper charts. Having historical lab data in the EMR on Day One will enhance your providers' experience of utilizing the EMR.

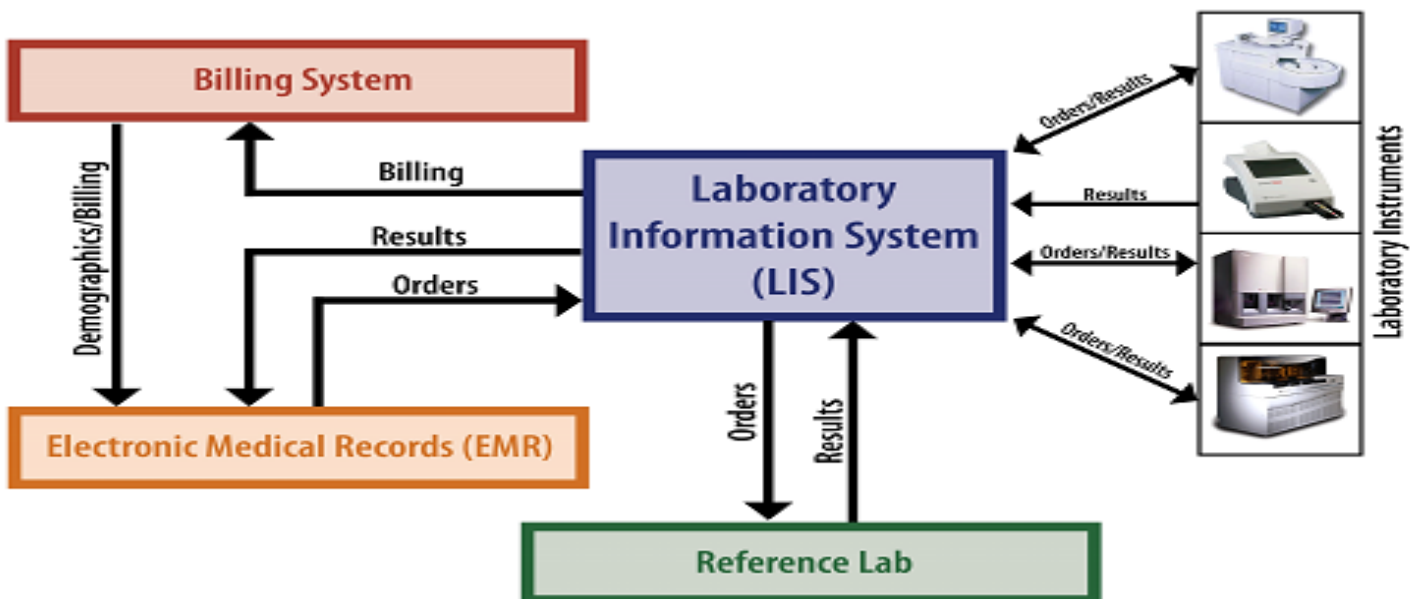
The second benefit is that the installation of the LIS impacts only a small portion of the overall practice. It is a smaller project and easier to make sure that your LIS is up and running smoothly before tackling the bigger task of interfacing the LIS to the EMR and integrating it into your practice's workflow. The installation of the LIS first will be a quick win and takes substantially less time than the full implementation of the EMR system.

Reduce Paper and Storage Costs

An obvious cost reduction is the elimination of paper and all the costs associated with printing requisition forms and storing paper files. With an LIS, orders for tests are electronically placed through the EMR system or through a web-based remote ordering portal. By going electronic, even with increased testing, one lab was able to reduce their cost of paper and storage by 23 percent over a three-year period.



LIS/EMR INTEGRATION DIAGRAM



Reduce Risk Exposure

The LIS eliminates a lot of manual entry, which helps to minimize the risk of reporting errors. Improving risk management and reducing exposure to medical errors can be a huge return on your investment. Determine what your current risk exposure is due to clerical errors, missing results, long turn around time, and then identify the potential savings associated with a reduction in this exposure.

Increase Productivity

Simply said, an LIS can be a very powerful tool for increasing productivity. One of the most recognized returns on an LIS investment is the increase in efficiency. Valuable FTE resources can be redirected to other productive work. As an example, one lab processed about 150,000 tests with 14.3 FTEs before implementing their LIS. As the practice grew and added more sites, they were able to process over 250,000 tests annually with only 12.5 FTEs.

Within the lab, the LIS manages electronic interfaces between the EMR, the practice management system, analyzers, and reference lab(s) to facilitate data flow between systems and eliminate duplicate manual entry of demographics, insurance, orders, and results. With an integrated LIS, the billing department will also notice a reduction in claim resubmissions as a result of reducing manual charge entry.

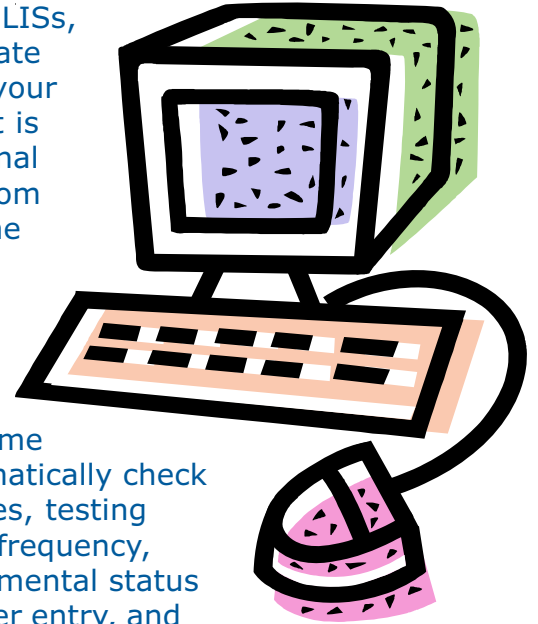
Simplify the Inspection Process

Another benefit frequently overlooked is the reduction of stress and the time spent preparing for and during the inspection process. Think about all the boxes and paper files you have to sift through to procure the documents requested by the inspector. By having an LIS, all the necessary reports are at your fingertips and printable on demand.

Some LISs provide Levey-Jennings graphs and easy access to data that show QC and allow you to pull up the necessary documentation. This eliminates the manual search for reports, and may even help improve your inspection score because everything is automatically documented.

Recapture Additional Revenue from Non-reimbursed Medicare Claims

With most LISs, an immediate return on your investment is the additional revenue from reducing the number of write-offs due to improper diagnosis coding. Some LISs automatically check ICD-9 codes, testing necessity, frequency, and experimental status during order entry, and will flag all potential reimbursement issues.



One lab manager worked with her billing department to determine how many lab claims had been written off, and they found \$30,000 worth of CBCs had been written off the year before. The good news is that something like this can help justify to your administration that they need the medical necessity screening of an LIS.

Recapture Missed Billing Opportunities

Many lab charges for pap smears or add-on tests, such as urine cultures, manual differentials, Taxo A, sensitivities, and micro IDs, are missed due to inefficient paper processes for charge entry. Also, due to insurance company contracts, many tests are routed to the wrong lab, and that reimbursement is lost. The rules-based technology built into some LISs will capture all appropriate charges automatically and route testing to the contracted laboratory. Both have a direct impact on the bottom line.

Reduce Claim Resubmissions and Days in Accounts Receivable

For many practices, there is a lot of revenue tied up in the Accounts Receivable department due to improper diagnosis codes and other billing errors that result in denied claims. Not only is revenue delayed and cash flow affected, but billing and laboratory personnel are kept busy rectifying each claim. With an LIS, you can identify many of these errors during



order entry, and reduce or even eliminate these delays and inconveniences.

An LIS is a Good Investment

The biggest difficulty in helping lab managers justify an LIS purchase is access to historic financial data. Many organizations have a difficult time collecting and analyzing the information, and the amount of write-offs due to medical necessity is one of the toughest to track down.

Once the cost savings and increased revenue are identified, you can compare these against the cost of the LIS. Amortize the cost of the LIS over at least five years, but with some LIS vendors who regularly include upgrades, you can justify going longer. Also be sure to include the cost of annual support and upgrades (if they are not included with support).

Healthcare information systems are a necessary tool in today's healthcare environment, and your practice's investment in an LIS will generate a return by saving time, reducing costs, minimizing errors, and increasing revenue, not to mention improving patient safety and the quality of patient care.

For a list of possible LIS vendors, a good source is *CAP Today's* annual LIS survey. In years past, this is found in the November issue, or online at www.cap.org in the Reference Resources and Publications tab under Periodicals.



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