HealthManagement
Promoting Management and Leadership

Volume 2 / Issue 1 Spring 2007 - Cover Story

Future of the European Laboratory Informations Systems Market

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Introduction to LIS

A laboratory information system (LIS) can be defined as one or more application packages that support the operational and management needs of a clinical laboratory. Since the spectrum of services required can significantly differ from one laboratory to another, a LIS is a highly configurable application, which is customized to facilitate a wide variety of laboratory workflow models and must be therefore closely tuned to the operating needs of each laboratory and its organisation.

The clinical laboratory produces nearly 80% of the information that physicians use for medical decision making, so it comes as no surprise that when measured by sheer volume of clinical data, laboratory transactions make up as much as 60% to 70% of information that goes into an Electronic Medical Record (EMR). It is clear that the laboratory information system is a critical piece of the spectrum of clinical IT systems and contributes significantly to the overall care given to patients.

Current Status

The classic LIS has existed in clinical laboratories for more than three decades, and was designed to support laboratory activities with particular emphasis on work and specimen flow. This has led to high penetration levels for legacy LIS systems (more than 95% in certain geographies), although nowadays they do not provide much flexibility and configurability. The need for replacing such systems, aided by a change in the mission and goals of modern laboratories (with greater emphasis on activities such as point-of-care testing, outreach testing and error-free clinical diagnostics) has been a major driving force for new LIS installations.

While initial purchase price, cost of ownership and return on investment (ROI) are still major considerations in purchasing decisions, new features that help improve overall laboratory management and workflow are gaining importance, as listed below:

î The emergence of the electronic medical record as the key system for providing clinicians with an integrated view of clinical information in hospitals is one of the biggest factors in encouraging laboratories to replace their LIS. These changes are related to a drive to connect together various hospital departments and departmental software. Clinicians want to be able to enter data into electronic records. They want ancillary systems, such as those of laboratories, to accept orders from the EMR and replicate clinical data to it, as components of an integrated clinical database.

î A growing interest in, and enthusiasm for, the capture, storage, and integration of images— for example, in surgical pathology and cytopathology— into laboratory and pathology reports.

î A growing interest in processes and systems to capture and communicate infectious disease information and epidemiologic data from hospital laboratories to local, regional, and national health authorities.

î Automation of processes that streamline the laboratory workflow, thus reducing levels of human interaction and consequently improving accuracy and quality of tests.

Many advanced technologies have already enabled the high level of functionality demanded from modern LIS solutions. Some examples include more powerful, yet easier-to-use databases; lower cost computers and networks; and higher throughput, automated laboratory systems. As a result, modern laboratory information systems have become increasingly standardised and most of them support tasks such as specimen collection, order entry, results reporting, and interfaces to automated instrumentation and computers.

The Road Ahead

New demands will be placed on laboratory professionals to shift the range of services that they offer toward clinical consulting, integration of laboratory information from multiple sources, and laboratory information management. These information management and integration tasks can only increase in complexity in the future, as new genomic and proteomic testing modalities are developed and come online in clinical laboratories.

As clinical laboratories start adopting new business models to make themselves more competitive, cost efficient, and responsive, they face a number of information technology challenges that are heavily influencing the development of next-generation LIS solutions.

Radio Frequency Identification (RFID) promises to have a major impact on hospitals and laboratories in the future since it can easily be tied into existing information systems. The use of RFID is currently being driven on the consumer side for automatic tracking and identification throughout distribution systems. In time, RFID technology could be used in the laboratory workflow for everything from patient to specimen tracking.

Wireless networks, which will aid point-of-care decisionmaking, information access and clinical data entry, are also coming fast. Possible devices that can be used with a LIS include tablet PCs, personal digital assistants (PDAs) and other multimedia-enabled devices such as barcode readers, while the actual technology includes Bluetooth and wireless local area networks (WLAN). These solutions can be used for the acquisition and distribution of laboratory information within a clinical setting, which makes them even more attractive to modern healthcare workers.

Software enhancements will always be a part of the future of LIS. Some of the new features demanded by laboratory professionals include billing and statistical reporting components, the ability to have multiple ways to access and report out operational information, the flexibility to handle data from various instrument manufacturers and the ability to serve outreach markets.

The future, however, will not consist entirely of bright, shiny new toys – everyone agrees that integration of existing laboratory software across the enterprise will be a significant activity over the coming years since hospitals are looking to lower total cost of ownership by standardising platforms and workflows. Such implementations will require more than just new software. Professional services and systems integration expertise will be equally important in helping achieve those changes.

Conclusion

Today’s laboratory is responsible for more than just generating results from a test. It manages how and when a test is generated, and how clinical results are presented, delivered and stored as electronic data through different interfaces. Clearly over the next few years, with the wider adoption of molecular and genetic testing, data produced in the laboratory will be even more vital to patient care.

In many European countries, stakeholders and decisionmakers are beginning to realise the clinical, organisational and financial benefits directly resulting from the implementation of healthcare IT systems. Fortunately, laboratory professionals are no exception. Within such an environment, ready to accept organisational and cultural change, the future of the Laboratory Information Systems market in Europe looks certainly exciting.

Published on : Sat, 21 Apr 2007