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Why Sonora Quest gave itself high marks for LIS conversion

For laboratory chief information officer David N. Moore, July marks a first anniversary worth celebrating. Twelve months ago, his employer, Phoenix-based Sonora Quest Laboratories, flipped the switch on its new laboratory information system, effectively turning it on site-wide with one click—and with barely a hitch or a glitch.

To say that Sonora's LIS conversion went perfectly is probably a bit of an overstatement, but only by a smidge.

"Our success criteria was that we'd give ourselves an 'A' if we didn't lose a client [due to the conversion] in the first 90 days," Moore said in a talk at the Executive War College, in May. "If you've ever been through an LIS conversion, you know that client loss is expected." Yet Sonora Quest beat the odds when, after three years spent converting to NetLIMS, the company announced that it earned an "A" grade according to its own criteria.

The one-year anniversary of what was dubbed "the big switch" is all the more momentous because of all the work, planning, and troubleshooting it took to effect the seamless transition, including six months of end-to-end testing of the new system and a series of dress rehearsals.

While an LIS conversion is never easy, for Sonora Quest it was a daunting proposition. The integrated laboratory system is a joint venture between Banner Health's Laboratory Sciences of America subsidiary and Quest Diagnostics. It services more than 7,000 Arizona physician practices, hospitals, and managed care organizations, performing more than 75,000 diagnostic tests per day, and has 76 patient service centers.

Moore said that to allay the fears of colleagues and clients concerned about Sonora Quest making the switch on such a grand scale, he compared the conversion process to flying an airplane. No engineer tries to fly a plane before testing it, he told them. "You test, test, test, make sure it's perfect—then you fly."

In keeping with the airplane comparison, Sonora Quest undertook a massive testing procedure before it "flew." The company's test menu consists of 5,500 different orders, Moore said. With eight testing sites throughout the state, and each site needing to run through its entire menu flawlessly before going live with the new system, that meant 44,000 orders to audit.

"The real fun part," Moore added, tongue in cheek, "was what we called trigger point validation. There's a subset of those 5,500 tests that—because of what the result was—we had a subsequent action. The response to a critical result, for example, could be to run a confirmation or to print a comment on another kind of test result. One test could have 30 different actions or packets. We were comparing the [legacy LIS] result with what came out of NetLIMS to make sure it worked exactly the same way."

The objective was "to do a test that mirrors what's coming out of the legacy system," Moore explains. "We had to build orders to be placed in both test systems, then create the reports, and then have somebody who understood

them and could read them side by side and validate that the reports were of equivalent clinical value," he told CAP TODAY. "So the people who do that process are the people who are running the lab. We had to work in shifts. We had a dedicated training room where people would come in and review tons of reports—people doing the order entry, the resulting, and printing the reports."

Most of the testing events and other initiatives undertaken to run the replacement LIS through its paces took place on weekends, and Moore and his colleagues worked "horrendous hours" for weeks on end to make the entire conversion process go smoothly, he said.

Yet despite the magnitude of its systemwide conversion approach, there was little resistance to the decision to move from Sonora Quest's legacy LIS to NetLIMS in one fell swoop. "We were unified in the approach that we're not going to go live until we're all ready to go live together," Moore says.

The one hiccup Sonora Quest experienced after going live was with its automated chemistry lines, which required a middleware upgrade to play well with the new LIS. "We went back in and we fixed it, and life got smoothed out," Moore says. "It took one week to resolve that."

Despite going off nearly perfectly, an LIS conversion of this size and type is "as daunting a task as you'll ever do," Moore concludes. "But the rewards are amazing if you're running on a legacy system and you think you can never get rid of that dinosaur." —Kevin B. O'Reilly

Pathologists share homegrown software for infant autopsies

The University of Alabama at Birmingham has introduced software, available at no cost, that can assist with infant autopsy cases or provide data for epidemiologic and quality assurance studies.

Recognizing that the most challenging aspects of infant autopsies are assessing fetal and neonatal growth parameters and features of maturation, the software creators developed a program that allows pathologists to enter a variety of information, including total body weight and the weight of various organs, as well as the length of select body parts, in metric measurements. The program can then generate a table that best estimates the infant's gestational age and highlights values that fall outside the normal range, allowing users to identify abnormalities. Data entered into the program can be stored, retrieved, and edited, and the tables generated can be inserted into pathology reports.

While the software developers expected the program to be faster than conventional methods for accessing data on infant gestational age norms, such as books and Internet searches, "We were pleasantly surprised by the significant time savings," says Matthew D. Cain, MD, the University of Alabama at Birmingham pathology resident who devised the software. The developers found that the average time for novice and experienced residents to access data using conventional means was 26.7 and 15 minutes, respectively, compared to an average of 3.2 minutes via the software. But it's not just residents who find the software useful. "The ease of use of the program and its reliability were also recognized by staff pathologists not specialty trained in pediatric pathology," says Ona M. Faye-Petersen, MD, UAB professor of pathology and obstetrics, who contributed to development of the software.

Other benefits of the program are that it allows institutions to evaluate trends and compare data sets while protecting patient identity. "Knowing what is normal for a given gestational age is something that is limited by experience, and the program allows the user to assess these parameters with confidence and accuracy and not to overlook something," Dr. Faye-Petersen told CAP TODAY. "[For example,] in a situation of extreme infant edema, the weight of the baby is altered by fluid, and this can result in an overestimation of the infant's gestational age. Excessive weight can result in spurious assignment of gestational or postnatal age and underestimation of heart enlargement or liver enlargement or relatively poor lung growth.

"The program also greatly reduces transcriptional error," she continues. "When confronted with complex charts, it is easy to misread them or enter the wrong values for norms. Moreover, there are many charts of norms, and

finding the best one for a given case is difficult. The program norms are a composite of many tables' values and also include measurements for fetuses who died in utero but who were retained for many hours or days before delivery."

"The software is continuously being enhanced," adds Dr. Cain. "Currently, the Web page [cainmd.github.io/anthropometryData/] can only be used through Google Chrome. However, this will soon change so that any browser can be used." The software is also being rendered compatible with mobile devices and will eventually include the normal weight ranges for placentas at various weeks of gestation. —Kimberly Carey

CMS promotes innovation by offering data to private sector

The Centers for Medicare and Medicaid Services has introduced a policy that will allow the private sector to use CMS data to spur innovation.

The announcement "is aimed directly at shaking up health care innovation and setting a new standard for data transparency," said acting CMS administrator Andy Slavitt, while introducing the policy last month. "We expect a stream of new tools for beneficiaries and care providers that improve care and personalize decision-making," he added. Among the technologies that could result from the open-data arrangement are predictive modeling and care-management tools, CMS reports.

Starting in September, CMS will allow innovators and entrepreneurs to request data via the CMS Virtual Research Data Center, which provides access to granular CMS program data, including Medicare fee-for-service claims data. Researchers will be able to conduct CMS-approved analyses of de-identified patient information in a secure environment. However, they will not be able to remove patient-level data from the data center. While patient identities will not be disclosed, researchers will have access to the identity of the providers of care.

The CMS also announced that it will allow researchers to request data on a quarterly basis, rather than limit them to annual updates.

Agilent purchases Cartagenia

Agilent Technologies has acquired Cartagenia, a provider of software solutions for variant assessment and reporting of clinical genomics data from next-generation sequencing and microarrays.

"We look forward to providing Cartagenia's software solutions to our clinical genetics and molecular oncology customers and to providing Cartagenia's existing customers with access to our global service and support network," says Jacob Thaysen, president of Agilent's diagnostics and genomics group. "Together, Agilent and Cartagenia can help remove bottlenecks inherent in analysis, interpretation, and reporting [of] clinical data—resulting in faster answers for patients."
***Agilent Technologies**, 800-227-9770*

Database provides information from next-gen sequencing

Qiagen and Inova Translational Medicine Institute have launched Inova Genomes, a compendium of ethnically, phenotypically, and ancestrally diverse whole-genome sequencing data for disease researchers.

Qiagen will serve as the exclusive distributor of the database, which was built from a collection of more than 7,000 whole genomes derived from over 2,800 families.

In a separate announcement, Qiagen reported the commercial launch of its Qiagen Clinical Insight bioinformatics content and software platform. The offering is intended to help clinical testing labs interpret and report on genomic variants identified in next-generation sequencing. The first two supported applications for the bioinformatics

platform address somatic and hereditary cancer testing.

Clinical Insight is instrument- and assay-agnostic and provides access to the Allele Frequency Community repository of ancestral and ethnic diversity data.
***Qiagen**, 800-426-8157*

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