

Benefits and bumps of shifting to Beaker

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November 2017—If they were located in the Land of Oz, laboratories selecting a laboratory information system might not have to make a choice between full functionality and seamless integration with their electronic medical record system. They could just follow the helpful advice of the Scarecrow to Dorothy at a crossroads: “Go both ways.”

Down here in Dorothy’s Kansas, however, having to weigh an LIS that is part of an enterprisewide solution against a standalone LIS creates a classic quandary for hospital laboratories: Follow one brick road and you may have top-flight integration between the LIS and EMR but possibly less LIS functionality. Go down the other road and you may acquire a best-of-breed LIS but risk stumbling on the interface with the EMR.

Increasing numbers of hospital and health care system laboratories, already operating in an Epic environment for their EMR, are casting their lots with integration by choosing Epic’s Beaker for their LIS. As of August 2017, Epic had 375 installations worldwide, 28 of them between August 2016 and August 2017, the company reported in CAP TODAY’s 2017 LIS product guide (see page 37).

The shift to Beaker has brought enhancements and challenges for Allina Health Laboratory, a Minneapolis-based reference laboratory that serves the Allina Health System, said Heather Dawson, MBA, MT(ASCP), vice president of laboratory services, in a recent talk before laboratory industry leaders.

Before installing Beaker, Allina Health Laboratory used the Triple G LIS, later acquired by General Electric and then Cirdan. The health system has had Excellian EpicCare as its EMR system since 2004. So “Beaker came in as an application into a well-established, mature EMR system,” said Dawson in an interview with CAP TODAY. The laboratory chose to implement the LIS in four regional phases, followed by a “big bang” final phase for anatomic pathology.



Dawson

Dawson cites end user configurability as one of Beaker’s greatest strengths. Configurability leads to fewer problems than does customization, she notes. “Whenever you customize something, you run a risk when there are regular updates to the software. In those cases, your customization has a tendency to break your system. By having software that’s highly configurable, you’re less inclined to have difficulty with upgrades and updates as the software matures.”

For example, Dawson says, “From a preanalytic standpoint, for accessioning our specimens, configurability is available and expected by Epic, as opposed to having to write custom rules that run through an HL7 interface in order to put orders into a standalone LIS.”

The “snapshot report” feature also illustrates Beaker’s configurability. The snapshot report allows the end user to stay in an active resulting window with the ability to read consult notes, op notes from the surgeon, previous histories, clinical pathology results like hematology or microbiology, and so on, for a case. “This is a view that is available in anatomic pathology because there’s no interface needed between Beaker and the rest of the patient’s

medical record," since the EMR and LIS are integrated.

"There is an actual snapshot for the pathologist that shows them everything important related to the history of that patient and helps with their interpretation of the case. There are no fancy rules to write; there's nothing we have to do to pull it through an interface out of a standalone LIS. It's all in the patient record, and because it's highly configurable, pathologists can pick and choose what they want in their view, so they're only looking at the information that's relevant to them."

One complication of Epic's "one patient/one record" standard, which allows appropriately released information to be shared across Epic entities, is that 10 or 11 states, prompted by privacy concerns, require that patients have the opportunity to opt out of global record sharing. "We actually have to put those patients' laboratory test orders into a sequestered portion of the Beaker application because the whole point of Epic is to have this big seamless record," Dawson says.

Beaker handles add-ons and redraws in a simplified way, Dawson says. "Getting a redraw ordered and sent back to the phlebotomist is really easy. It doesn't take provider or nurse intervention; it just requires a click of a button."

Beaker's "dynamic outstanding list" aids in tracking current priorities. "Using view changes, filters, and sorting, along with flags, batches, and statuses, users can work their way down through a manageable list of patients that actually require their attention today and quickly identify test orders or samples of interest to work on."

Specimen tracking remains to be fully ironed out, however, especially in AP. "Can we tell where everything is? The answer is yes," Dawson says. "There is really good tracking on the CP side, but Epic's AP tracking is designed to track things once the case number has been assigned." She expects AP order specimen tracking to improve with Epic's 2018 upgrade.

In Allina's anatomic pathology group, Dawson says, it's important to have a standardized form for reporting, and mnemonics are key. "I have pathologists who build the mnemonics themselves through our physician builder program. This ensures the accuracy of the content from a clinical perspective."

Dragon functionality, or speech recognition, has been particularly useful for creating transcriptions in case results reports, Dawson finds. "With our legacy LIS, we might have had the capability, but I don't think we had the bandwidth to take on Dragon." In fact, she notes, overall staffing needs have changed considerably since Beaker was brought in. With the previous LIS, "we had a large IT team to support us. With installation of Beaker, our IT support needs went from a very large team to probably half as many."

Dawson praises Beaker's handling of microbiology in general. Allina was prepared for the difficulties of converting its LIS to handle microbiology. "That was one of the few specialty departments in our legacy system that worked very well, and they were hesitant to move off of it." Adapting the LIS to the microbiology automation the laboratory has been adding also turned out to be a nonevent.

Allina performs Beaker LIS upgrades every 12 to 18 months, though some health systems do them sooner and others may wait two years, Dawson says. Downtimes during updates and upgrades are short, lasting from 15 minutes to a couple of hours, and unscheduled downtimes are "extremely rare."

Despite these advantages, Beaker is not a fully mature LIS. "It's not considered best of breed, and it does have some deficiencies," Dawson says.

That the clinical pathology and anatomic pathology sides of Beaker still operate somewhat independently is one drawback. "CP and AP are still too siloed," she explains. Epic plans in 2018 to take the two parts of Beaker and merge them so they look almost identical, she says. "So it will no longer be an issue in another year or two."

Cytogenetics, which the laboratory started building in Beaker a few months ago, is a particular challenge with the new LIS. "We loved our cytogenetics lab in our standalone legacy system," Dawson says. "The cytogenetics

laboratory was running a homegrown system, so cytogenetics is the single biggest challenge for our transition to Beaker. Because of the timing of our coming upgrade, we are forced to wait until 2018 to implement.”

Shared specimen workflows remain problematic. “There is still a whole lot of human interaction related to coordinating and routing tests on body fluids and tissues coming out of the OR that need microbiology, anatomic pathology, and cytogenetics. We have not found an electronic solution for this.”

Dawson has a few additional criticisms:

- Integration of “OpTime,” which is Epic Systems’ operating room management system, is not optimal because information is not always bidirectional between Beaker and OpTime.
- Many pathologists cite too many mouse clicks for stain ordering or other ancillary tests.
- Case tracking is a bit too cumbersome for reviewing overdue specimens and accessioned cases.

Among the items on Dawson’s wish list for Beaker enhancement: For compliance with the CAP and AJCC 8th edition cancer staging system, she believes it would be useful for Beaker to have fluid staging and synoptic forms. “We have a very automated version today from a homegrown program we built ourselves. However, the addition of Epic’s oncology application, called Beacon, could potentially solve some of our problems.”

Other items she would add to the Beaker suggestion box: an audit trail for the random query generator database to support interfaced proficiency testing and other workflows; improved documentation of final specimen disposition; validation of autoverification processes for regulatory purposes; and the ability to cancel, edit, or correct data en masse.

When Beaker was first proposed as an add-on to the University of North Carolina Health Care’s Epic EMR, the laboratory voted thumbs down. UNC was operating with a homegrown EMR when it conducted an EMR analysis in 2012, choosing to go live with Epic in 2014, says Herbert Whinna, MD, PhD, who has been medical director of laboratories at the UNC system since 2010. “The UNC system decided that the cost of trying to make our homegrown EHR meaningful-use-certified—versus purchasing some other product with that certification—was such that it was better to go ahead and go forward with a third-party vendor.”

At that time, the laboratory was using SCC Soft Computer for its clinical pathology LIS and Cerner CoPath for anatomic pathology, and did not wish to change. After looking at various Epic modules, “we decided the version of Epic Beaker they had was not robust enough for us as an academic medical center.” In addition, Dr. Whinna says, “UNC had a very aggressive implementation timeline and there were just not the resources to do that extra module.”

After Epic was implemented successfully at UNC during the spring and summer of 2014, the IT department came back to talk to the laboratories. “The IT folks discussed the fact that our health care system had a road map that included four other affiliate hospitals going live with Epic in summer 2016. And they said three of these hospitals would need new LIS systems because their current LIS was embedded within the EHR and could not be pulled out as a separate thing.” The IT group proposed bringing Beaker in at the smaller affiliated hospitals, getting it up and running, then down the road bringing it up at the large UNC medical center.

But after talking with another laboratory director at a hospital that was already live on Epic, Dr. Whinna had a different take on this proposal. “We both agreed that the idea of building an LIS for a smaller community hospital,

then trying to rework it back into an academic or larger hospital, was going to be problematic. We thought the reverse direction was a better way to go.”

By then, Epic Beaker had advanced two versions from what Dr. Whinna had looked at earlier. As a result, “We felt that the pros of going ahead and implementing Beaker here first, then doing Epic for the smaller hospitals, made it the best strategy going forward.” And that’s what UNC did over the next 18 months, kicking off the project in late 2014 and going live in April 2016.

There are definite advantages to having an integrated single system, Dr. Whinna points out. “The orders for lab tests and access to patient information in one system are better and easier. It’s also easier to see some of the things our clinical colleagues are doing and their needs. Especially for our core lab functions, the system has worked fine.” Among other pluses, the mobile printer to scan and print patient ID labels at the bedside when a specimen is collected has been a win, and the laboratory was able to move positive patient ID onto the nursing floors as well.

Beaker handles well the more ordinary lab functions in chemistry and hematology, Dr. Whinna notes. “We had a cytogenetics and molecular lab and we were a little concerned about how they would fit in as well. They were not as robust with Beaker. However, our cytogenetics lab embraced the process and came up with a system and ability to track specimens in a paperless manner that they feel is better than what they had pre-Beaker.” The molecular lab is in about the same place as before, but Dr. Whinna is hopeful that Epic’s work targeted to genetic testing in future versions will bring improvement.

In microbiology, too, Beaker was not as mature as the system UNC had with Soft. “Part of the reason is that our microbiology department had worked very closely with Soft for many years to customize their system, and they had it very much the way they wanted it. So far, they are not back to the level of functionality they felt they had before Beaker. But we didn’t get there overnight with Soft either.”

The other big area where UNC’s laboratory took a step back in functionality was anatomic pathology. “If you talk to physicians about Epic in general, you will hear a lot about how many clicks it takes to do any given thing. With CoPath, the pathologist used a single-page Word document to make a pathology report, while with Epic you are moving between different fields, and it’s not as smooth and it’s more time consuming.” Epic plans to offer a single-page editor in a future version.

In Dr. Whinna’s experience, Beaker is equally good on both the clinical and operational sides. “Before, we knew where in our accounts receivable system to look and find denials, and we had to learn those places within Epic. But with our old third-party systems, you had to look to see whether you were getting paid. Now the reports tell us that, plus they show the productivity of our staff and the work they’re doing—although it may take some time to learn how to best leverage those reports.”

Other institutions of UNC’s size, such as Duke University, are almost all making the move to Beaker when they go live with a new Epic system, Dr. Whinna is finding. “Epic’s lab package was somewhat behind the EMR package as far as functionality, but as more and more places have Epic, there are real advantages to being with an integrated system.”

He feels fortunate that UNC hospital administration and IT staff included the laboratory in conversations about switching to Epic and Beaker. “We were able to say in the first go-round that we will not be able to function with this. Then when we were getting ready to go live with Epic at several affiliate hospitals, they asked us to revisit it. Looking at the improved functionality for Beaker LIS and the prospect of reworking a rebuild for the smaller hospitals back into a bigger medical center, we decided to say ‘Go ahead’ and we agreed to implement Beaker.”

It’s helpful if there are staff who combine IT expertise and health care expertise, Dr. Whinna believes. “Our health care system, at the time of the first Epic implementation, decided that if you were going to be a builder in the Epic project, you would have to come out of your home department. So if you were a nurse or lab tech or information specialist, you would have to come out of that department and take the job in IT. In 2014, we had four full-time,

LIS-only staff, and we lost one who chose to work on the Epic implementation, but the good news is that they were also there helping make sure we weren't left out of the process."

Something similar happened on the Beaker installation. "Almost all of the IT team building Beaker were former medical technologists and had the best interest of the labs in mind, and making that work." Across the seven-hospital system, there are now eight or 10 such laboratory experts.

That connection is key to any conversion to any new LIS, he says. "Where I've heard that it's gone bad, laboratorians haven't been in the conversation early. Someone just tells them, 'This is what we're doing.'"

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