

Security in the cloud leads off in LIS exchange

November 2021—Cybersecurity and the cloud, COVID care gaps, and lab consolidation were among the topics CAP TODAY publisher Bob McGonnagle talked to LIS vendors and Toby Cornish, MD, PhD, about in a Sept. 20 virtual roundtable. A return to on-site trade shows, too, came up: “I do miss walking the vendor floor. I feel like I’m out of touch with what the developments are,” said Dr. Cornish of the University of Colorado Anschutz Medical Campus.

With Dr. Cornish and McGonnagle were Bob Dowd and Dayna Carlin, NovoPath; Nick Trentadue, Epic; Curt Johnson, Orchard; Jeff Watson, MT(ASCP), MBA, and Michelle Del Guercio, Sunquest; and Jonathon Northover, CompuGroup. As of Nov. 8, Del Guercio of Sunquest is chief marketing officer, Protenus.

[CAP TODAY's guide to laboratory information systems](#)



Trentadue

Two issues have dominated laboratorians' thinking in the past five months. One is cybersecurity. We've had lab and system outages in important places. The other issue is the significant labor shortage in laboratories and other parts of the health care system. Nick Trentadue, how is Epic reacting to these two problems?

Nick Trentadue, product manager, Beaker, Epic: Making sure you have a solid security system and apparatus in place is key for all our customers. That goes in a couple of different ways. We have sort of a split in terms of how our customers use Epic. Some are self-hosted, like Dr. Cornish's in Colorado. Some use Epic as a hosting vendor. We have hosting operations here in Madison [Wis.] as well as in Rochester [Minn.] and some other data centers. We also allow our customers to use the public cloud or other hosting vendors. Making sure they have the proper security apparatus in place regardless of who they pick to host is key to that issue.

Second, in terms of the labor shortage, we've tried to focus on where technology has been going the past decade. Whether it's automation lines, digital pathology, making it easier to need fewer people in the laboratory, and to be able to move work where it needs to go—to a center of excellence, for example—it's making sure we continue to automate and make use of resources where we need them versus just having more people in the lab.

Bob Dowd, the question of remote hosting or IT in the cloud is a big issue and a big piece of news from NovoPath. Give us a brief take on the advantages of being in the cloud, particularly as it relates to cybersecurity for your lab customer.



Dowd

Bob Dowd, VP of strategic accounts development, NovoPath: Yes, our product development is moving to implementation in the cloud. We have many clients that want to use cloud-based products for a lot of reasons, one of which is security that's automatically built in. So we've enhanced our product; we have taken everything virtually from our on-premise version, updated it, updated all the user interfaces, made it more user-friendly using

feedback from our client base, and we've reviewed workflow software to try to do two things. It is more secure, and internally at NovoPath we've increased our security through proprietary virtual private network software and we've done a lot to safeguard systems. We do some hosting, so we safeguard for our clients that want to go into the cloud and that have on-premise versions to ensure they're up to date on cybersecurity.

Everything we're developing in our cloud-based product is an enhancement of our on-premise product with client input, helping with workflow and with distribution. Everyone knows where a specimen is at any point in the process. We've seen productivity enhancements there, and that helps a bit with the staff shortages, as does the digital pathology we've done to be able to shoot cases around the country. A key thing has been wonderful client feedback to help enhance the workflow.

Toby Cornish, despite your relative youth, I know you will remember a time when many laboratorians had some skepticism around the cloud. There was kind of a division for a while between those who wanted to have their system and the heavy iron on site and those who trusted the cloud. Has that debate shifted?

Toby Cornish, MD, PhD, associate professor, Department of Pathology, and vice chair of pathology informatics, University of Colorado Anschutz Medical Campus: Yes, the debate has shifted. It's a little before my time, but this is sort of a cyclical thing. There was a time when people didn't want to be running their LIS on x86 microcomputer architecture—Intel hardware versus a mainframe or minicomputer. Over time you have to move forward, and there are always going to be people who are uncomfortable with new platforms.

Personally, I would move as much to the cloud as possible, assuming all other things are equal. But there are a lot of people who are a little uncomfortable with the idea. It's not always the laboratorians or the people running the information systems in the laboratory. Sometimes it's the centralized security for hospitals or academic centers that are saying no to moving out to the cloud, although in the past couple of years attitudes seem to be becoming more liberal in this sense.

Curt Johnson, when we talk about cybersecurity, it seems to me we're in a constant nuclear race between the people who are violating the security and those of you who are trying to do your utmost to maintain system security. Is this going to be an eternal problem?

Curt Johnson, chief commercial officer, Orchard Software: It's a problem that will be with us for a long time. These things do evolve and catalysts typically occur that move us. In this case, for a long time the cybersecurity for hospitals and the IT infrastructure, IT personnel, and leadership were wanted on site. This gave them more control over it. But as you said, in the nuclear war we're in, as the hackers improve, it's probably better to have professionals who understand it. We can build more security into the cloud than we can count on in an on-premise solution.

As we move toward the cloud, it allows for better security and a partnership between the vendors and clients. We understand the hosting. We understand the cloud. We can have data recovery centers in multiple places, as Nick mentioned. All your eggs aren't in one basket. You have a little more capability to help your clients.

It will continue to move that way. There will always have to be vigilance between the clients and the partner vendors to make sure we're doing everything in conjunction with them to mitigate as much security risk as we can. Will it ever be perfect? Not in the foreseeable future, but we can get really close.

Jonathon Northover, what is your perspective from CompuGroup on cybersecurity and the effect the cloud may or may not have on systems security?

Jonathon Northover, VP of product management, CompuGroup Medical US: It is certainly not going away—that's not contentious—and it is a question of keeping ahead, to the extent you can, of any changes or compromises with ransomware or other related security risks that can crop up.

What we're trying to do, and it is a challenge for all of us, is to standardize, because you have various labs with different security requirements. We all want to make sure we're not only meeting those but sometimes going beyond those. But they're all different. We are focused on standardizing it in the most flexible way so that when a

new client pops up, we fully support them according to their requirements as well as the industry standards.

Working with Amazon Web Services or Microsoft Azure, for example, always comes with the gold standard of security. I'm not saying that's what we have to rely on, but it's a key piece.

Jeff Watson, are the resource limitations and lab worries about labor and cybersecurity going to affect the marketplace? That is, will laboratory budgets be harmed in terms of how they would have been used had these two issues not cropped up so dramatically in the past year?

Jeff Watson, MT(ASCP), MBA, senior product manager, Sunquest Information Systems: There are always tradeoffs, but lab budgets are not accelerating; they tend to be under pressure to be reduced. This plays into the cloud strategy you talked about. If a client is operating their system on premises, there are resources they have to apply to their systems. In a cloud environment oftentimes Sunquest or your vendor will take care of those, which frees up those resources. That's where the vulnerabilities come in—you can do as much in the application around security and leave yourself vulnerable to a cyberattack by not patching your Windows servers or not staying current on your database servers. Being able to offshore that from the client to the vendor will increase security for them, because now you've got the resources from the vendor and maybe the cloud-hosted provider too.

Michelle Del Guercio, would you like to weigh in on this effect on the market?



Del Guercio

Michelle Del Guercio, VP of marketing, Sunquest Information Systems: Besides the normal reimbursement that is hit constantly, we're seeing the differences with labor staffing and shortages. Laboratories are looking to their technology vendors to help them with better workflow efficiencies within their solutions to help augment those areas where staffing might be reduced, by budget cuts or retirements. The more the technology vendors can help provide solutions to support those differences and gaps, the better it is for the laboratory and patient outcomes.

CAP TODAY publishes a monthly roundtable I have with the Compass Group, and its members are indicating that this labor issue is eating into budgets and may not even be solved by technology. Toby, do you see this at the University of Colorado?

Dr. Cornish (University of Colorado): Maybe only once in the more than five years I've been here did anyone tell me we were fully staffed. We will again be fully staffed in November in the histology and cytopathology labs, thanks to an aggressive recruitment strategy in which we used professional recruiters, which we had not done before for histotechnologists. It's a real problem.

To the credit of the LIS companies, a saving grace has been the technology we've put into our AP lab as far as interfacing with stainers and the barcode-driven workflows. Our histology supervisor says that has saved them, made them much more efficient. But we all would like to be fully staffed.

Nick, there's been news about the lack of adequate and timely cancer diagnoses as a result of COVID in the past year. Do you see reports about that?

Nick Trentadue (Epic): Yes. During the pandemic we launched the Epic Health Research Network [[EHRN.org](https://ehrn.org)], where we use the Epic Cosmos database, which has more than 100 million deidentified patient records, to look at different data elements. We published a couple of studies on the site, specifically on colorectal cancer, breast cancer screening, much of the preventive care that people weren't getting.

Our customers are seeing more advanced, later-stage cancers. I was talking to pathologists in Minnesota, Florida, Texas—everyone is seeing it.

We are seeing groups, too, that are trying to combat this in a different way. Instead of going for a colonoscopy, they are working with a company like Exact Sciences to do a Cologuard test, to help bridge the gap.

Toby, can you comment on the volumes and the delay of diagnoses or biopsies?

Dr. Cornish (University of Colorado): We haven't noticed it as much. As a large referral center, we get so many cases that other hospitals aren't willing or able to take that it hasn't been as noticeable. I agree with Nick there is very likely a trend, and we're probably going to see some unfortunate data getting published on this.

Curt, can you comment on these disruptions in the quality of care in cancer?



Johnson

Curt Johnson (Orchard): COVID has disrupted health care, it's disrupted the lab, and a lot of positives have come out along with the negatives. The modernization and mainstreaming of molecular testing are positives. In the long run that's going to improve cancer diagnostics.

Yes, people are delaying care. Is it going to be seen the same across the country? No. There are different pockets, and it depends on the type of facility you are, where you are in the country, and how your organization is dealing with that.

As molecular testing becomes mainstream, laboratories that have invested in PCR and molecular technology for COVID are looking to expand their test menu using what they already have. They're saying, "We're not going to be able to solve these problems with people, so how do I take my investment, which I had to put in place for COVID, and expand into cancer diagnostics, or into women's care?" You're going to see a lot of new molecular testing over the next 24 to 36 months, and it is going to move clinical pathology forward at a speed we haven't seen in a long time.

I think digital pathology and molecular testing are going to boom. The laboratory is finally at the forefront of diagnostic testing and there's an understanding within health care of how important the laboratory is. And I don't think it will go backward. That's a tremendous benefit to the laboratory, and in the long term it could have a positive effect on budgets.

We had a lot of new lab entrants in the past year, pop-up labs devoted to COVID testing. Are those people looking for IT solutions as they grow and expand?

Curt Johnson (Orchard): We see it on two fronts. A lot of labs are sitting on a war chest of financials because of COVID. Some are startup labs with rudimentary systems, single tests, and they're saying, "How do I expand this business? I can't live off COVID two, three, four years down the road. What does the future hold?" They're asking, how do we upgrade our technology and what markets can we serve to benefit the overall population?

Others are branching into toxicology. They're thinking, How can I help with the opiate crisis? How can I move to women's care? How can I move to cancer using the molecular technology I have? Where's the best benefit for the business that matches up with the needs of health care? That's what the smarter COVID labs are doing.

If the labs have integration with their customers, they have the pipes in place now to continue to be that lab's reference lab of choice. COVID allowed regional reference labs direct pipelines that wouldn't have been there before to businesses like Delta airlines or Tyson Foods. So how can they benefit businesses in personalized medicine and help organizations with their overall health care costs? Forward-thinking laboratories that came into the market are looking at those opportunities.

Jonathon, are you seeing new entrants in the lab business that will have greater needs for information technology?

Jonathon Northover (CompuGroup): We're seeing two things happen. New labs are appearing and existing labs are pivoting dramatically from doing, for example, fertility specialization testing to infectious disease testing with COVID. The reference labs we work with that have been successful have ramped up their volume of testing and staff management, almost the opposite of the labor shortage problem.

Now they're trying to figure out what to do next. And I agree with what Curt said with regard to reusing existing PCR machines to do other types of molecular testing such as urinalysis.

The second piece we're seeing is forward-thinking labs trying to get directly to the consumer. COVID has accelerated those labs' existing plans to develop the technology and availability for direct to consumer tests, and there's a huge marketing effort to offer such tests directly to the consumer.

And sometimes consumers themselves are demanding services. For example, we're supporting consumers being able to scan a QR code, for entrance to events or for international travel, that proves the legitimacy of their COVID test results within 72 hours.

Bob, I'm assuming what you're hearing from Curt and Jonathon sounds familiar, and your customer base would be happy to expand in a salutary way, financially and clinically. Have you experienced this over the past few months?

Bob Dowd (NovoPath): Some of the laboratories we work with have added the abilities of the PCR instrumentation they already had or invested in not only to expand their molecular offerings but to do COVID testing. So we created a repository for data for COVID testing for our clients to use, and now that our clients are expanding into molecular testing, we have the capability to add combined reporting. We're incorporating the cloud in that, too.

Michelle, pre-COVID, two years ago every conversation would've been consolidation, standardization, systems adapting, one system, et cetera. COVID has cut against that grain of consolidation—and it's good to have new entrants, new business. Three years from now, do you imagine we will have a greater number of laboratories operating in the United States? Or will we be closer to our pre-COVID number, with consolidation again having pride of place in the market's development?

Michelle Del Guercio (Sunquest): We will see some of those start-up or pop-up labs go away. That will occur naturally. Some will get acquired because what they are growing might be attractive to other organizations to purchase or consolidate with.

Even though traditional mergers and acquisitions have reduced during COVID, we have seen quite a bit of test routing and sharing, where one lab is not set up for COVID testing but they're receiving orders and sending them elsewhere to be performed, or consolidating to a single laboratory within a health system to perform the volume of work. We might see consolidation or M&As continue, but in a different way. We might see some sharing—I don't want to say management services organizations necessarily, but where there will be spreading of that integration consolidation in different ways.

Nick, could you comment on this same question?

Nick Trentadue (Epic): Michelle's right. We're going to see different groups pivoting into COVID testing or adding it into their line of business. Some of them will be successful; many will go away.

We're seeing enormous mergers and acquisitions and consolidation even through COVID, and I think it will continue, whether it's divesting part of a business to one of the large labs or health systems merging. Across the pond, the National Health Service and other groups in Europe are starting to consolidate and create more of a center-of-excellence model where they can build huge laboratories that serve most of London, for example. So I think we're going to continue to see bigger laboratories and more laboratories acquired, but I do agree there will be new players and there probably will be even acquisitions of those as well.

Toby, do you have an opinion on mergers and acquisitions, this system consolidation and how it might

end up? What does it look like from your perspective?

Dr. Cornish (University of Colorado): I agree with everything that's been said—there is a lot of pressure to consolidate laboratories. We've seen it in our market. There's a lot of expansion too of existing health systems, to be more competitive in markets. It's difficult to be a small lab these days, and they're kind of going by the wayside. You almost have to be acquired or merge.

From what Toby just said, one could take that there is a move in pathology toward not only subspecialized pathology but what I'll call deeply subspecialized pathology where we have two, three, or even four experts in the system who will deal with all the cases. Bob, are you seeing that trend with your clients?

Bob Dowd (NovoPath): Yes. Working with the clients, we've helped design with our distribution system down to the level of what type of cases people would like to read, can read, or be assigned. A lot is done automatically, programmatically, as cases come in; we know this type of case goes only to Dr. Cornish because that's his specialty. We have put that in at the request of some of our larger clients with pathologists who have a wide range of cases coming in.

Jeff, let me ask you the same question because it has to do with productivity—we assume the more subspecialized the pathologists are, the more productive they are with those cases. Are you seeing that in Sunquest's anatomic pathology offering and customer base?

Jeff Watson (Sunquest): Yes. Being able to have that center of excellence and get those cases to the right pathologist is more important than it ever has been, and it helps drive productivity.

Curt, out of all this activity, are we evolving toward a more efficient laboratory system, say, two years down the road—better organized, better triage among all the different levels and players? What's your prediction?

Curt Johnson (Orchard): Tell me how reimbursement will look in two years, and I'll tell you exactly what it's going to look like. Don't lose track of "follow the money" in all of this. When we're talking about mergers and acquisitions with large health care organizations, you'll see that. And when they start to think about what's our focus, what's our strategy, and they can divest or merge to meet that need, that makes sense.

When you think about where new things are coming from, they're typically from large university sites or from people we don't know about today. You'll continue to see an expansion of small laboratories because laboratory-developed tests will allow small labs to enter the marketplace. Will they get gobbled up if they have something of true value? Absolutely. With molecular testing and digital pathology I think you'll see an expansion of laboratory tests, and some of the mom-and-pop labs that popped up will turn into something and some won't.

The lab is also a business unit, a profit center for an organization. So while I'm half-joking about "tell me what the reimbursement's going to look like," I can tell you how consolidated or unconsolidated it's going to be. That's a factor that has to be taken into consideration.

Judging from what we've heard from CMS earlier this summer, PAMA will be back, threatening reductions. The clinical lab fee schedule and the physician fee schedule are not doing us any favors, from a 60,000-foot view. Toby, I don't think you'd disagree with that, would you?

Dr. Cornish (University of Colorado): No, I don't. And as was brought up earlier, I think our costs will go up substantially if we get serious about recruiting and retaining our technical staff, who are vital to the lab. Medicare reimbursements continue to decline, and it does not reflect the realities of what it takes to run a laboratory, even if you do consolidate. We are bound for a crisis in reimbursements versus costs in the near future.

Let me change the subject, Dayna Carlin, to sales and marketing and what it looks like in terms of getting around and getting your job done, particularly in the midst of the latest COVID uptick.

Dayna Carlin, marketing director, NovoPath: From a marketing and sales perspective, it's digital, which has opened up a brand-new door and brought people to see that people are people, not just pathologists or chief information officers or lab managers. It's given us a better way to connect as humans in a different light. When you were

traveling and meeting face to face, it was businesslike. Now you're seeing kids and dogs pop in, and it's brought a new human perspective to sales and marketing.

Nick, are you missing the old days of trade shows and personal visits?

Nick Trentadue (Epic): It's a new ball game. The lab hasn't worked from home or stopped working the past year and a half, so to some business is normal. At Epic we haven't stopped either; we have made some trips, but most has been digital, remote. To Dayna's point, I agree it's brought out the human side in everything. We'll continue to see a hybrid.

In some cases we get greater attendance when it's remote because people don't have to drive to, say, a seven-lab or seven-hospital system. We've seen success in terms of participation where more people are brought to the decision-making table because it's easier to connect via Zoom than it is to meet in one location.

Jeff, same questions: How have things been, and how do things look going forward?

Jeff Watson (Sunquest): It's a new world, working to reach people in a digital way. We leverage webinars. We have user-group meetings digitally, and we've taken on a vendor approach, doing sort of a digital tradeshow with a digital exhibit hall and speakers in the auditorium via a virtual platform environment that offers peer-to-peer networking, educational sessions, and product booth displays.

Our salespeople are eager to get back to interacting with customers face to face, and that is happening more regularly.



Dr. Cornish

I've always found the wonderful hallway conversations at meetings indispensable. I don't think I could do my job without them. Toby, do you miss the hallway conversations and exchanges?

Dr. Cornish (University of Colorado): Absolutely. I'm eager for in-person meetings to start up. I'm not saying this just to pander to the crowd on this call, but I do miss walking the vendor floor. People ask me questions about emerging technologies and I tell them I haven't walked a vendor floor in two years. I feel like I'm out of touch with what the developments are.

People say this is the new normal—working from home, remote work, virtual meetings. I think it undervalues those spontaneous conversations. In a perfect world we would understand who all the vendors are, what their offerings are, and we'd be able to efficiently and directly reach out to the people we need to contact to ask the right questions. The world is not that perfect.

It's what you're talking about, Bob. It's the hallway conversations, the things that are off agenda. At an in-person meeting you talk to the right person who's maybe not your salesperson but a technical person who's at the show. And you come away with an unexpected appreciation of a product or even redefining your own needs. You can't always get that when you are limited to just directed, digital interactions.□