Introduction to Webinar by Renee Browning, Clinical Liaison for Ortho Clinical Diagnostics   :

Thank you. Hello, and thank you for joining us today for our program today. My name is Lauren Browning, and I'm your moderator for this Ortho on demand session. I'm the clinical science liaison for transfusion medicine at Ortho clinical diagnostics, and previously had the pleasure of working with our speaker Mike Roth and his team during their adoption of Ortho Connect.

Ortho Connect is a robust middleware solution that delivers one connection and complete control because it creates a seamless flow of information that centralizes WebEx management activities across multiple instruments and lab from remote monitoring new role configuration to workflow management and quality control for a single cost effective and scalable solution, allowing you to competently control your operations, trust your results and optimize your staffing resources to meet the challenges of today and prepare for the challenges of tomorrow.

Our speaker today is Mike Roth, laboratory Administrative Director at Saint Joseph's Hospital in Colorado, where he has led change across the labs and the Sisters of Charity of Leavenworth or SCL network to meet the changing healthcare landscape and improve efficiencies to deliver high quality patient care. This follows a 30 plus year career in the United States Navy, which included leading the implementation of several automated systems across hospital labs and develops his philosophy to use technology to work for the lab and empower the technologists to focus on patient care.

At the process at St. Joseph's Hospital as the first US site to select and implement Ortho Connect paired with the Ortho vision in 2018. Today Michael share their journey. As with any journey, there were challenges and learnings. He will describe how he led change and adoption across the integrated network with eight hospitals and their remarkable results achieved today. One that's one last note before we get started, the presentation lasts about 25 minutes and will be followed by a question and answer session. We will now begin the presentation.

Presentation by our speaker, Michael Roth,
Laboratory Administrative Director, SCL Health, St. Joseph Hospital, Denver, Co,

Slide 1: Good evening, my name is Mike Roth. I am the Laboratory Administrative Director at SCL Saint Joseph Hospital in Denver, Colorado.

Slide 2: Tonight I'll be talking about improving workflow through data control. I want to begin with thanking Ortho Diagnostics for inviting me to speak with them, for them tonight.
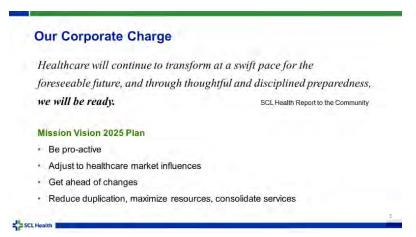
Slide 3: So a little bit about SCL Health, SCL Health is a small, faith-based health care organization. We have eight hospitals and over 100 physician clinics that are spread out through Colorado, Kansas, and Montana.

Slide 4 : At Saint Joseph Hospital, I am the Laboratory Administrative Director. We are a 360 bed, level four trauma facility who specializes in cardiac surgery, cardiovascular care, obstetrics, and NICU. Our laboratory performs over 870,000 tests each year, our phlebotomy team collects over 100,000 vena punctures each year, and our transfusion services performs over 9,200 product transfusion annually.

Within SCL, we have a corporate charge. Our corporate charge is that healthcare will continue to transform at a swift pace for the foreseeable future, and through thoughtful and disciplined preparedness, we will be ready.

slide 5   And what that means is that for SCL, we have determined that we have a five-year plan. We are calling it Mission Vision 2025, and some key takeaways from that plan are that we understand that we cannot just sit around waiting for healthcare to make the next change. We have to be proactive, being aware of market changes and market influences, and be prepared for the next change. Otherwise, we may be caught unprepared and have to make a decision that is less than desirable for our strategic outcome. Another key element is that we need to reduce our duplication so that we can maximize our resources and consolidate services and efforts to conserve spending.

slide 6 So to meet that Mission 2025 Plan, I needed to figure out a way to transform our laboratory. I needed to find the opportunities that are out there in the market today and see what we can do to make technology work for us.

If you asked my wife, who has recently just bought a new car, this is very similar to buying a new car. We basically So to meet that Mission 2025 Plan, I needed to figure out a way to transform our laboratory. I needed to find the opportunities that are out there in the market today and see what we can do to make technology work for us.

 went 10 years before moving to a new blood bank analyzer and what was on the market 10 years ago is not what's on the market today. What are we looking for? Well, my wife wanted Bluetooth, she wanted GPS, she wanted satellite So to meet that Mission 2025 Plan, I needed to figure out a way to transform our laboratory. I needed to find the opportunities that are out there in the market today and see what we can do to make technology work for us.

radio, she wanted the electric seats, we wanted all of that. Okay, similarly, within the lab we wanted to look at what is out there and this year's laboratory models that are out in the market.

slide 7 We needed a laboratory application that was going to reduce our manual processes, simplify our quality control, and allow us to centralize our skilled labor force. And what we found, we found within ORTHO CONNECT. ORTHO CONNECT links our lab analyzers to our LIS, it links our laboratories together, and it actually links our hospitals together. So ORTHO CONNECT has an application that is driving us forward into the future.

Slide 8   So our first step in our transformation was to move testing from a manual to an automated platform. In our current blood bank, we only perform Type and Screens automated, and even then it was not all of them. Our current instrumentation was not able to keep up with our current workload. During busy times, Type and Screens would be split between a manual process and an automated process. So if you could imagine, performing over 75,000 tests annually with majority of that being done manually with test tubes. Additionally, our normal workflow was between four and six antibody identification panels daily, which means about an hour per panel, almost a full FTE, just spending time working on antibody identification panels.

So then we moved to ORTHO, we get the ORTHO Vision Analyzer and where are we at now?

Slide 9 Well, we have now automated our Type and Screens and in addition to that, we've added our unit retypes, our DAT samples, our cord bloods, our AHG crossmatches, and all of those pesky antibody identification panels are now on the Analyzer. What this has done for us is it has allowed us to free up our technicians to be able to focus on the more advanced technical work while the analyzer is working for us, doing the more common routine work.

Slide 10 So our next areas of focus after that was to look at quality control, staffing, and process improvement.

Slide 11 Our quality control program as it existed was pretty clunky. We had nine instruments spread across eight hospitals. Each instruments had to be managed independently. That meant you had to perform quality control, maintenance, new lot number had to be all built, each site, each analyzer.

At Saint Joseph, our workload for QC was approximately 45 minutes a day and what that did, it took a technician away from the bench from other work while they were doing quality control. Within that quality control, they would have to reload the analyzers, they would run the reports, print out the reports, review them, and then have to file them away.
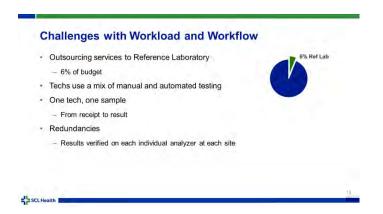
As you can see from our slide here, in addition to this storage of reports, we had to keep paper records on hand for at least two years and then after that, we'd pay to send off to a repository. These photos in this slide are actually this year's, only nine months worth of quality control records for our blood bank.

slide 12 Then we need to look at staffing. Common to all of us is that there's a shortage of medical technologists and technicians across the nation. In the Denver area, this is no different.

We are currently experiencing a large growth over the last five years and that the healthcare industry is booming in Denver. There are new hospitals and clinics popping up all across a metropolitan area. What that has done for us,

unfortunately, is there's so many opportunities for technicians and it's hard to retain qualified staff. I've lost technicians recently for a variety of reasons, some of them for shorter drives, some of them for better hours, a lot of them for higher pay. Two of my technicians recently were wooed away by a competitive organization, one received $6 more an hour and another received $10 more an hour. That is almost impossible for me to compete with that.

Slide 13 Within that, I have such a high turnover rate that I'm currently budgeting in my personnel budget to have at least one of every technicians be in some level of orientation throughout the year.
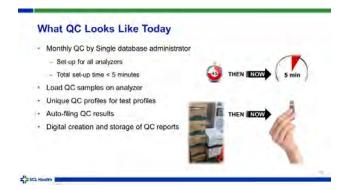
Another thing we're running into is our workload and workflow. Because of the fact that we were doing so much testing manually on the bench, we were relying on our reference laboratory at the blood supply center to perform a lot of our advanced testing.

My budget consisted of 6% of my budget was just nothing but reference laboratory testing. Before ORTHO CONNECT , we relied heavily on outsourcing our advanced testing. A majority of it would go to our donor, our blood supplier, where their reference laboratory before testing for us. The total amount we were spending was about 6% of our annual budget that was going off to the reference laboratory. The other thing we were looking at with standardization, we had a lot of processes in place that were very rigid and singular in action. For example, we would have one tech, one sample. That meant that technician received that sample from when it arrived in the laboratory until the result was completed later on. Within that timeframe, they very rarely would take on another sample.

We also have a lot of redundancies in how our processes are done. Each site, eight hospitals as we've mentioned, they each have their own procedures, they have their own policies. This then created a much larger amount of paperwork. A recent audit of our policy control system showed that we have over 2,500 documents across our eight laboratories. Our System Chief Medical Officers recently challenged us to reduce that number.

Slide 14: How did ORTHO CONNECT help us transform our laboratory?

Slide 15: Well certainly, it transforms our quality control process. ORTHO CONNECT is set up for us in a centralized database and there's a single database administrator. So when a new lot number of quality control is released, that database administrator builds the lot number of quality control, takes them about five minutes each month, and once that is done, it is ready for all analyzers across all sites.

Now the technician that we had spending 45 minutes a day working on quality control can now just go to the analyzer, load the samples, the analyzer communicates with ORTHO CONNECT, and the samples auto-run, auto-file, and auto - tore. Another plus is that while the quality control is running, we can continue to run the vision for patient testing. As you can see here, there's our picture of our paper records and we've gone from paper records to a small thumb drive. Another thing that we are not doing at the moment, but who knows what we might consider in the future, is that we could actually have one central person monitor all nine analyzers at one site. Certainly we're not doing it now, but it's an appealing thought to have quality control being monitored centrally.

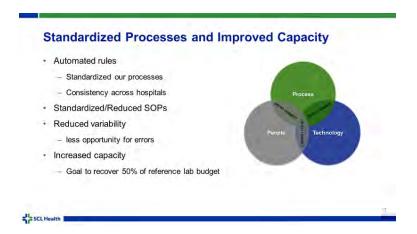**slide 17** So how an ORTHO CONNECT help us maximize our resources? Well one thing we were able to do is we were able to look at our staffing matrix. We already mentioned that we're having a hard time finding qualified technicians and technologists. What we're able to do was, using ORTHO CONNECT, we were able to allow our lab assistants to start using the analyzer to load samples. Within ORTHO CONNECT, there is a security feature that we can program and custom for our own use and we built a lab assistant within there. What allows them to do it is it allows them to load the analyzer, but they cannot release results or review results. So that alone, again, it gives us more freedom for our technicians to now work on the bench on those more advanced testing. The other thing being that it's a centralized server, the smaller hospitals within our organization can now draw upon the resources of our larger hospitals. We only have about less than 10 SPBs across our system.

What we don't have, is that a technical expertise at each site. And so what we can do with ORTHO CONNECT is, you can go in and help another site draw upon their SPB and can look at their results while it's in there. So for example, a couple of weeks ago I was on the phone with one of our sites in Montana, which is 554 miles away from Denver. I was on the phone with a technician, I was looking at ORTHO CONNECT, we were looking, she was looking at ORTHO CONNECT and between the two of us, we were able to look at those reactions. I could see exactly what she's seeing and I was able to provide advice to her on what's the next step in testing that sample.

Slide 18   So now because of our techs have now been freed up from manual testing, we now have increased testing capacity to be able to take on that more advanced technical work, which then is going to secondarily reduce our need to rely on the reference laboratory. The other thing, ORTHO CONNECT, we have automation rules. They have been accepted across all of our sites, so they are in place standardized across all of our hospitals and that again helps us achieve standard consistency. So as you can see from the slide here, we have had to change how we use our people, our processes, and our technology to help transform our laboratory, and within the center of all that is ORTHO CONNECT.

slide 18 So as a car analogy we talked about earlier, we looked at the new technology that was out there, we looked at the features we had out there available to us, and we're now taking advantage of those features to drive our transformation. So how do we make this journey?

Slide 19 Well, first thing, none of this was easy. It was certainly not all rainbows and butterflies and unicorns and I don't know what it is about your blood bankers, but you have some of the toughest people to change the way you're doing business. We had huge trust issues we needed to overcome. We ran into questions about how can you use auto-releasing of results, manual testing is always better than automation, and why would you want to bring in this new technology and rely on a machine when people are always better? And if you look at the graphic that is on this slide, it truly represents what we ran into. On one view, you may look at that graphic and say, "I am having to push these people into the 21st century." On the flip side, you could look at it and say, "They're just trying to push me out the door, so who's doing the pushing and who's doing the pulling?" But that's truly what we ran into with this and it is a new solution for our blood banks and we had the gain their trust.

Blood bankers, apparently, you guys are all skeptical of new things and so we had to go and be able to change that paradigm within our blood bank. We had to be realistic that we were taking on a new technology, being the first hospital and the first medical system in the United States to bring on ORTHO CONNECT, that we were going to run into some new challenges and we were going to face these challenges and having to figure out to ways to overcome them and meet them.

Slide 20 So within our strategy of bringing on ORTHO CONNECT, it was a key part of it was that we had to have a hands-on approach.

We needed to demonstrate to our staff that how the system worked and lead by example. We needed to listen to their concerns and we need to be responsive to their concerns and we need to be responsive to their concerns quickly and we

needed to be responsive thoroughly. And when that wasn't enough, we needed to take it to the next level and needed to do a one-on-one with them. Sometimes a one-on-one was face to face, sometimes it was through a WebEx. As again, our hospitals are spread out through Kansas, Colorado, and Montana.

Slide 21 Then we had the communication piece with ORTHO. We had to have a relationship with them. ORTHO was there for us throughout the process, this was not an application that they sold us and then they left. They were there for us with the whole process. We had biweekly meetings throughout the entire process. When questions arose or problems existed that we were not able to handle on our own, ORTHO was there available via cell phone or email. But the one thing, is this was truly a shared relationship, it was an equal partnership. Ortho was there for us, they viewed us as equals, we viewed them as equals. Nothing that we said was viewed as a subpar or anything and we work together to reimplement this together, and there were a lot of surveys done, a lot of questionnaires done, and any information that we gave as input is being taken and we'll hopefully see that in a future software upgrade.

Slide 22 So what sort of lessons did we learn? Paramount to the project, that we needed a project champion and your project champions not somebody who's just going to have a fancy title. They need to be somebody who's going to embrace the role. If they have a background in LIS and in electronic medical records and blood bank, and that's going to certainly be a plus and they're going to act as your ORTHO CONNECT expert. They need to be fully committed to mastering the software. They need to learn what all the features are, see how you can use those features within your lab, and they need to go and work with your team and bring that to them and show them how it works. And you also have to have your IT team involved, not only in getting it off the ground, but you're going to need them forever. As long as you have ORTHO CONNECT, your IT team is going to need to be there to help you manage the software, the hardware, and sometimes having that call center in the middle of the night. S.

Summary and Next Steps

Slide 23 So what are our next steps?

ORTHO CONNECT™ Transformed our Blood Bank

- Technology transformed our workflow
- Increased capacity
- Maximized our resources
  - Centralized QC
  - Freed staff to focused on complex work and patient care
- Standardized our processes
- Positioned St. Joseph's to support consolidation of services
  - Core Laboratory

SCL Health

Slide 24 As we said, ORTHO CONNECT helped us transform our blood bank. We made it imperative that we need to be proactive to meet our technology available, position ourselves for the future. That's meeting our system goals of Mission

2025. We are making the most of the resources that are available to us to avoid duplication and consolidation of a workload. Recently new information for us is that our organization has now decided that we're going to go through a Core Lab concept, which means with the four hospitals that we have in the Denver Metro area, Saint Joseph hospital is going to be identified as the Core Lab for those areas, who will then start sending routine laboratory testing to us. ORTHO CONNECT helps us by positioning us to move forward with that Core Lab concept.

Slide 25 Hey, our next steps at SCL, we're still transforming at a very fast pace and 2020 is going to be even faster than 2019. Some of the projects we already have lined up for us is we're going to be bringing in a inventory of antigen-type units. We want to reduce our reliance on our reference laboratory, so we're going to take that availability where the Analyzer and ORTHO CONNECT has freed up our technicians to now bring on a new option of having antigen-type units as an available inventory and stock. We're going to be putting a new LIS online in April of 2020, we're going to be upgrading our current bloodbank software in summer of 2020, and we're certainly hoping to adopt the next version of ORTHO CONNECT.

Slide 26 Thank you for your time.

This begins the recorded Question and Answer session form the live May 13 webinar

Lorraine Browning: Thank you so much Mike for sharing your experience with us. I can say that was truly an honor to partnering with you and your team throughout this process. We are now going to move to the interactive Q&A portion of our presentation, as a reminder please ensure you have opened the chat panel by using the associated icon located at the bottom of your screen. If you have questions for Mike, please submit to all panelists in the chat and we will address them now. I see that we've had a few questions come in. So Mike, after adopting Ortho Connect, is there anything your labs are able to do that you couldn't do previously?

Mike Roth: Yes, thanks for inviting me back again to speak. What we've been able to do now is we have been able to change up a lot of our workflows reuse our people in different way than we were before. We have been actually if you look at earlier in the slides you remember we referenced though prior should have the Vision and Ortho connect. We only had type and screens as automated tests. We now have our core blood our titration are something we're working on now we're doing a lot of our antibody identification now. Our DAT panel are unit retypes are being done all on the vision and Ortho connect. In Ortho connect link to our LIS means these results going directly to the LIS results fields and it's been able to allow us how we are staffing our blood bank.

Lorraine Browning: Can you expand on how you restructuring your stuffing?

Mike Roth: Yes, what we have been able to do is by putting the testing on the Vision and Ortho Connect. We have been able to take what we would consider to be more routine work, the tube testing the retyping the busy work if you say from the bench and moved it to automation which now leaves our techs freer to work the more complicated part of blood banking such as the interpretation of antibody identification panels, warm autos, cold auto antibodies, those are more extensive workups than the past required us to

send out to the reference laboratory because we did not have the time available to us because of all the other routine works that we were doing.

Lorraine Browning: Okay. Perfect, thanks. Given the current climate in healthcare and the changes in your lab how have you been able to use Ortho connect to streamline?

Mike Roth: Yeah, like everybody else we're being challenged to find ways to down stuffed during this COVID crisis and keep our overhead costs down as low as we can. What we've been doing for the last eight weeks in our blood bank is in tandem with the operating rooms not using as much patient casework. We've been staffing our blood bank at our weekend levels. Again, the way Ortho Connect works is the technicians can really just put a lot of the instrumentation. Excuse me sorry put the samples on the instrument and run that for them. And with the business rules we've got written in Ortho Connect, if it passes our set rules and our parameters it'll auto drop to the LIS. And the results will go out that way. And we don't have to have the technicians doing all the other work manually. It's been a real freedom for us in the fact that we've been challenged to keep staffing levels down but also to be able to carrying the workload and we've been doing.

Lorraine Browning: Great, regarding the pathologists, how involved were the pathologists in the decision around the Ortho Connect and the rules being set up?

We have what we call a best practice team within our organization. So have that and we have one that was set up with transfusion medicine and within our transfusion medicine best practice teams. We have three of our pathologists on that team. And so when anything was talked about as far as Ortho Connect. What rules were done? It was done as part of the team collaborative with those pathologists on those calls to agree to or lend input they felt was necessary.

Lorraine Browning: Regarding implementation, did you implement Ortho Connect and your Vision simultaneously? If so, how was that experience? And did you go live with both at the same time?

Mike Roth: We did do the implementation with the vision and Ortho Connect at the same time. It was a little bumpy at the beginning and I'll say that for all of us, it was a little bit with both Ortho and with us. Because as the vision we were learning the Ortho Connect together as we were trying to put the Vision online. And I think it was a learning curve for both Saint Joseph and for Ortho at that time as we brought the Ortho Connect. But once we got everything up and going, I think it was actually better after the fact that we tried to bring the both online at the same time, because otherwise, we had to rethink how we would use the Vision if we used it as a standalone analyzer. And then switching over to Ortho connect and using those business rules there.

Lorraine Browning: You previously mentioned 6% of your budget was dedicated to send out, was check time the driving factor and have you seen an improvement since standardizing?

Mike Roth: Yes, let's go back to that work. we were talking about, we have, like I said, I would probably estimate 80% of our routine work that we were doing before. I'm talking about things like core blood testing, ABO retraining of units, antibody identification panels, DAT testing, we're all being done manually and on the bench. We switched that over to the Vision, and now we can do that antigen typing in house. In the past, If I had a patient who came in with a positive antibody, I needed to find an antigen negative unit, depending on the time of the day and what we're staffed as, we may refer that work to the reference laboratory requesting antigen typed units and, cross match from the reference lab.

The difference in that is that not only am I paying for a unit of blood, I've got to pay for the testing they perform. I've got courier fees I've got to pay for and we're trying to chip away on that amount of money that we're spending is associated with all that travel, courier services and turnaround time. One thing that you can do now is we're in the middle of validating at the moment is doing antigen typing on the Vision. One of our goals is to build a in house library of antigen tested units that we have out there ready. So, if you think about how our current process is for doing a finding an antigen negative unit, my patient comes in, we run that type and screen, we get that positive antibody panel, we identify the antibody and then we don't have to go through our inventory meter manually pulls and test those units for the corresponding antigen. Result goes to the LIS performed AHG cross match and then allocate the units for those patients. In some cases, depending on what the workload looks like at that moment in time, we may refer this off to the reference laboratory and ask them to do all that work for us. And that includes and then you add to all that other stuff you got to worry about getting in your couriers gotta be set up and brought in for that. So what we're hoping to do now with the antigen typing is to get those units ready for us so that when you identify that antibody, then we can just go to our inventory taking you into the shelf, and actually do the AHG cross match eliminating all that extra work arranging couriers and all that. But I didn't say is that you can also do AHG cross matching on the Vision which is another streamlining process for us.

Lorraine Browning: Alright at your sites without seasoned blood bankers, do you have a policy of Ortho Connect reviewed prior to that site sending to an IRL particular Literally your Montana sites that must be remote?

Mike Roth: Yeah, so what we have we built the rules in Ortho Connect for the QC review and OSI review, we put we standardized them across all the sites. So that when the result comes

over, there's analytical validation or biotechnical validation, analytical validation, Ortho Connect is truly associated with a lot number quality control issues. So, if you have quality control that has not been performed or has not been performed on that particular lot number of reagents that result we held in the Ortho Connect for analytical validation, and then we'll have to manually release from there. And for biotechnical validation, we have anything that we consider an abnormal result, so positive DAT, a positive antibody screen will be held there, requiring manual release. What we can do with Ortho Connect is you can, identify who can release that kind of result in the system. We are currently have it that everyone has the same level of control. But you can restrict it and say if you have MLSs and maybe a mix of lab assistants or MLTs and you don't want that positive antibody screen being released to you LIS you can define technician access in Ortho Connect and only leave that to a higher level of a supervisor who can release that results.

Lorraine Browning: Regarding lab assistants, how do you handle history checks and labeling checks with having the lab assistants load analyzer are they doing that portion?

Mike Roth: Then our lab assistants load the analyzer there, their restriction is primarily to be able to load the analyzer. And it goes from there the panels and testing that we have written into our LIS requires a field as part of the type and screen will be a history check, that's got to be resulted and performed that way that still falls on our MLSs and that cannot be performed by our lab assistants because they don't have access to that portion of the LIS or to work on Connect for that piece also.

Lorraine Browning: Okay, how did you overcome staff resistance to change?

Mike Roth: That was a challenge. We had several of our technicians that have long term associates and when I say long term, I'm talking 30 to 40-years employees and they were the probably the biggest challenging group to bring along. The newer technicians who are you know, when I say newer, I'm talking with somebody who's graduated from their programs in maybe the last 10 years or so who are more used to automation auto releasing the results auto filing of results are were easier to bring along on this. The other techniques since you have not seen such automated results in computer systems were a little bit for them understandably gun shy of the letting the computer thing for them. But as we were always in the room, working with our team, showing them what they can do, showing them the next little tidbit to spark their curiosity. We had several of these newer Tech's come along. And as they, their enthusiasm grew, they brought the rest of the group along. Now, I will admit there was one person that's, you know, she was a 38-year employee and she just never came along. And we, she did give us a

retirement date. We kind of waited her out. So, but eventually we would have had to get her going.

Lorraine Browning: You mentioned auto releasing of results. Can you expand on that? Are there any checks and balances in place? And if so, what are they?

Mike Roth: As far as the auto releasing of results, what happens for us is that we're using Sunquest as our LIS asked and, and those results our old workflow before switching over to work though, was that we had manually release the results from the analyzer to go to our LIS. And that was a figuratively imagine a tech is getting up all day long that they get up from their workspace, and walk over to the analyze it, view the results, release it, and then those results will then go to the LIS. Now what they can do is because of the way the rules are set up. If everything passes on the Vision, everything passes on Ortho Connect releases directly to the LIS. And then the technicians can just sit at their bench and they can review that result. As it comes into the LIS. We're not doing auto filing in the sense of what you may see in chemistry where that glucose is filed and it's automatically in a chart and viewable at that time. There were still a second step where the technician has to view the result and load it into the patient file and complete the work at their point. But it is a lot more streamlined process for us where we don't have to have the technician constantly getting up and walking across the room to the analyzer and releasing the results from there and then going back to their bench and completing that LIS release also.

Lorraine Browning: Okay, how many Visons do you have at each site?

Mike Roth: We have eight hospitals and each one has one vision and one of our larger hospitals who is more remote on the western part of Colorado has two visions and they have basically an am and a pm Vision. And they also this site also has a donor collection center so that is the other reason why they have two Visions out there to help support that overall workload.

Lorraine Browning: Regarding training, how many hours per tech would you say it took to train for the Ortho Connect piece and what type of competency testing was involved?

We've changed it up a bit since we started when we did first start with Ortho Connect we did Ortho connect and visions the same time. Each technician did a full eight hours of training on both of those as we were bringing them up. What we found now at this time is we have been able to take the Ortho Connect piece and shorten it up to maybe half of a day, even a little bit less. And we were able to allow them to go into the testing environment which is we have Ortho Connect we call production and test. So test allows somebody to who is learning and training what they're doing to actually use Ortho

Connect, play in the environment, learn about it on their own. So they have a lot of freedom in their current training process to work and do things in, in this training environment, which allows them to learn it without having to do anything risky by accidentally releasing a wrong result to a patient chart or something like that. So we've shortened it up a little bit and change it up instead of doing it all in one day. We may teach the vision on one day and then the Ortho Connect piece on another day. Just to do that. There's also some online training that you can do through Ortho that we ask the people to go online and complete that training from there also.

Lorraine Browning: Good. What is your experience with select cell panels?

Mike Roth: We do with our panels. We've been we have moved antibody identification to the vision. Obviously, if you're familiar with anything like panels themselves, you get a result off the Vision, you don't necessarily get the actual interpretation you still have to do that by the staff member has to do that. But what you can do is we do, we're very commonly used the Rh immune globulin select panel, which I believe is cells 5,6,7 and 8. We can load that on the vision and just pull those cells off. We can also have our Vision, we have a program that we can pull other select cells if we wanted to do a we're working on a rule out panel. We found this again, as very huge benefit to us particularly with the select panels for the Rh immune globulin as we seem to get a lot of positives from recent immunizations. What we talked about earlier in the slideshow was that as part of our larger goal, we're trying to bring outpatient work that we're sending out to a competitor lab back into our own facilities. And because of that, we have found that we're getting more outpatient type and screens, prenatal panels, and those tests as they're coming in. We're getting we're seeing more and more of these panels. So it's a great way for us to, again, automate something and allow our technicians to be able to focus on other things.

Lorraine Browning: Would you say that you're performing more of that the testing that you would have sent out in house now?

Mike Roth: Definitely on the more complicated panels, but what we're seeing is that because the technicians can put this work on the, on the vision, that it's just freeing them up from other things that they're doing. There's a lot of work involved when you're sitting at the bench and you have to do a panel manually, you've got to make that cell suspension, you've got to dilute the cell suspension. You've got to pipette it into the cards, you've got to load it into the incubator, centrifuge the cards, and then you get your reading. Right now, when it comes down to having one of these panels, we can just load it on the vision, hit select, save, and go and the testing is getting done. And that's 30 minutes for that tech was sitting at the bench, babysitting this result from pipetting it to incubating

it, centrifuging it is now free to do something else. And the other thing that we're seeing is we're a side benefit that we didn't really expect is that we're finding that the pipetting through the instrument is much more regulated. And we're finding that we're actually getting a little bit more out of our panels than we do in the past maybe we had technicians that double drop double drops of cells in their testing or maybe they went a little bit too heavy on their reactions. But regardless, what we're finding now is that this the panels are lasting a little bit longer because I think we've got everybody now putting them on the vision because the vision does a very measured aspiration and what a pipettes out and we standardize that.

Lorraine Browning: Okay, good. For the staff that were hesitant to or difficult to gain buy in, have you seen any improvement since go live?

Mike Roth: Yes, there's been a recent upgrade to the Vision which is going to allow us to do antigen typing on it. We're also looking at doing antibody titrations on the Vision. And I think that we currently have not yet doing. But when we see when we come out to the technicians, and we say hey, you can do this new test. How about you and you guys want to consider doing antibody titers on Vision? They're all over it. I mean, I'm getting my core team is very excited that what can the vision do for me next, you know, unfortunately, there's a little bit of bad id that they want. They want it today. No, no, we have to finish the validation plan. We've got it completed and we got the medical team to sign off on and we'll get to get the procedure in place, then you can do it, but you know.

They heard antibody antigen typing on division and they were like, can we start tomorrow?

Lorraine Browning: Is that the next set of testing that you plan to add to your lab? Antigen typing?

Mike Roth: Antigen type typing is a big one, because going back to that 6% of my budget goes into the reference laboratory, I would say, a good 15 to 20% of my costs are associated with just image and typing of units. And that's just the raw part of it. You know, that doesn't include the time that's a little bit harder to measures. But yeah, we're very excited to get antigen typing on the Vision and getting our units tested ahead of time.

Lorraine Browning: Regarding assigning work minutes, if doing remote review, do you have a process to assign any work minutes to the site that is assisting the site performing the testing, making sure that the remote review site gets credit for the work that they're doing?

Mike Roth: Currently, how we're doing that processes, we're not measuring how much work is being done and transferring it costs over to the site that sends it over to us. We are as

we are moving forward with the reorganization and building a core laboratory. We are having conversations right now on how to capture that workload.

For example, right now, we do have four laboratories in the Denver area, that all belong to the same organization. Each hospital has their own laboratory. What we've been doing in the past is I may do a test here that somebody sends to me and then they have a test that I'm not doing I sent to them. And we've looked at that data in the past. It's pretty much equal. As to who's picking up what sort of a workload, and we've decided not to worry about trying to transfer costs. But as we move more towards more of a core lab concept, some of these other laboratories are going to reduce what they're doing and send more to our laboratory at St. Joseph's. And that is going to become more of an issue because it's going to be more weighted to one side who's doing the work. And we actually started having these conversations a couple of weeks ago, and how we're going to capture that data and see how to transfer off those costs.

Lorraine Browning: Following the topic of costs, did you have any difficulty justifying the purchase of the software to your organization? Were you able to model the cost savings well enough to convince them or were they more motivated given your five-year plan?

Mike Roth: So we took this to our best practice team that I discussed earlier and how it was presented, what we can do with this, and how Ortho Connected can work for us. You know, at that time, you know, there was our best knowledge of what we knew with Ortho Connect. And we've actually, we've learned so much more and they can actually do many more things for us. But in the short run, it really was a huge difference in savings, what we had to do, so for Ortho Connect, we've set it up on a central server, we call our server farm, and everybody ties into that everybody's vision is pointing to the to that main computer. The main Ortho Connect computer is then interfaced to our LIS. We had to just set up a one interface in our LIS to communicate with Ortho connect and do all the validation studies and testing on that was one interface. If we would have gone and taken all the instruments as standalone, we would have had to buy nine interfaces because we have nine instruments. So right away, we're looking at one ninth of the cost.

One, we just paid out the 2020 invoice for Ortho Connect. And we separated the cost by sight. I think each side paid I think it was $379 each for one year's, their share of Ortho Connect. we're talking huge difference in cost and what we were paying if we just went instrument directly to LIS.

Lorraine Browning: Thanks. That's good. Thank you. As a reminder to the participants, if you have any additional questions that you'd like to ask Mike, please enter them into the chat panel

to all panelists. We still have a few more. You mentioned that your LIS is Sunquest. Can you share any lessons learned regarding LIS interfaces?

Mike Roth: Um sure we definitely needed to have everybody on board when we first turned on ortho Connect, we need to have our Sunquest person available, we need to have our own internal corporate LIS expert available for us and Ortho, we're all either in the room or on a call together as we were moving things back and forth in trying to get everything up and going. We did have everything in place ahead of time that we needed, which was to ensure that the instrument and network drops were installed and they would live and everything was set up to go with that and having our team available who could check the data strings, we're using that's called Wiretap to verify data was going back and forth. And just having everybody together in the same call, we set up what we would call a command center. once we get the data stream going across, then it was everything was good to go in regards to what do we learn? What do we need to know for the next instrument, but just like I said, we only have one interface though. Once we got the Ortho Connect and talk to our LMS, we were good for all eight hospitals, and everything was up from there. we didn't have to go back on that part. In regards to having somebody in the lab, if you have somebody in your laboratory, who is blood bank savvy, as well as LIS savvy. That's going to be a plus for you because what we found is that the LIS people certainly can check to see if data is coming over. And what is the data stream looking like? But they needed somebody who was a blood bank savvy and who at least could talk a little bit on their level to help in the process and say, the data is coming over and it looks right or not looks right.

Lorraine Browning: Okay, good. Having automation for testing and Ortho Connect for your data and results. What is the outcome for your patient? Could you improve your turnaround time and or accuracy of results delivered?

Mike Roth: Yeah, so for our patients, having everything going through the instrument to Ortho Connecting to our LIS is a huge thing. Because of the fact that we obviously are going to reduce our potential for error by not having to manually enter those results into the computer, and put something in incorrectly, or pulling up the wrong patient file and entering results into that, since everything is now being sent over through the LIS, we have a data being checked as is coming over and validating that we're in the right chart. So, you know, we, I think we mentioned, maybe I did mention how my test could do and you're looking at somewhere around 100,000 tests a year in our blood bank, and like I said prior to going on Ortho, we had only done the types and screens with an automated test. So, you're only talking one 10th of our testing would be fully automated and everything else has been put into the computer by hand. And in Our LIS is just to add to the results of an ABO typing something Like 13 different keystrokes. It's 13

different opportunities to put a reaction and wrong. Now, our LIS obviously a set up that if I put in reaction patterns an a pos, and I try to put in the results of a neg, a will flag me, but is a lot of steps involved a lot of keystrokes. And all of that alone has potential to slow down our turnaround times as we're doing it manually when it comes off of the Vision, and if it passes all of our rules that we've got set into place, it'll automatically drop over to our LIS, and then we can just load the result into the chart. And that's one keystroke, load result, click OK. And then hit save and verify. So, a lot less on the keystrokes and a lot more accuracy in the fact that we don't have the risk of them putting in the wrong reaction pattern or getting to the wrong chart accidently.

Lorraine Browning: Definitely a decrease in risk there. So that's good. What final advice would you give is if we want to adopt and implement automation for data management in our lab?

Mike Roth: I would say one of the biggest things you have to have is you're going to need to have somebody who's going to be a champion to take the project on. If you're just saying, we're buying something, and here it is for the blood bank, and they don't know what it can do for them, and who's going to lead that implementation process? You're going to be working a little bit behind the power curve, having one hand tied behind your back. One thing I've learned with blood bankers is they're very attention to detail and they're very concerned that you know, what is this computer going to do? Do for me, and they have to understand how it's going to work, and you have to show it to them. If you can do that, you'll be ahead of the game in regards to have successful implementing of a computerized system like this.

Lorraine Browning: Excellent advice, I thank you. We're now approaching the end of our time. As a final reminder, we've made a copy of the slides available, please see the link in the chat box if you're interested. Mike, do you have any final thoughts before we close our session?

Mike Roth: If somebody were to have any other questions that maybe they didn't get answered here and they wanted to get any other feedback, I'm sure we could arrange through Lorraine or through Ortho to somehow to get that question over to us when we get it back out to you.

Lorraine Browning: Absolutely, we can make arrangements for that. But thank you so much for sharing your experience today and answering the questions posed by today's audience to our participants thank you for Taking the time to join us and for your questions.

Today's event. ortho clinical diagnostics, we never let ourselves forget how high the stakes are, which is why we never start working to deliver accurate test results efficient, reliable instruments, easy to use technology and continuous collaboration to ensure your lab is achieving the most important measure of success. Exceptional patient care

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