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Workflow software helps automate Pulmonary Function reporting

BY ANDY SHAW

Respirologists at Toronto's St. Michael's Hospital are breathing easier these days. They've deployed software from Influx Workflow Solutions, which extracts patient data from a wide array of cardiology and respirology diagnostic devices and consolidates it all in a single structured report. The reports can then be easily viewed by respirologists, cardiologists, referring physicians and other caregivers – easily and quickly.

"In our Pulmonary Function Lab, we do a wide range of diagnostic tests including spirometry, lung volumes, lung diffusing capacity, airway resistance and exercise oximetry among others," says respiratory therapist Eva Leek. "In the past, both our staff and physicians have had to go to each machine to create their reports. Now, we can gather all reports from just one workspace and see a complete view of the patient's respiratory status."

All this inconvenience made for a respiratory workflow that was slow and prone to error. While preliminary reports might be in clinical hands within a day, full diagnostic reports sent back to referring physicians could take a week or more

Moreover, any errors made, human or otherwise, created their own nightmares, says Leek: "It was not easy to fix a mistake – even something as simple as a work order error. That meant we had to dig into the depths of the medical record system and remove the mistakes one by one, a very tedious task."

"In short, we did not have a very efficient set-up," says Dr. Marie Faughnan, a respirologist and associate scientist who is in charge of St. Michael's respiratory lab.

Eva Leek, respiratory therapist, and Dr. Marie Faughnan, respirologist, are helping to deploy the new software.

Adding to the workflow challenges at St. Michael's are two other complications, says Dr. Faughnan: "We do a lot of work here in infectious diseases, which requires separate labs, so that added to our workflow and control problems. Also, we are a teaching hospital. So our workflow has extra steps in it to accommodate our training responsibilities.

"Here for instance, a report goes from the respirologist to the doctor, of course, but then he or she then passes it on to the student resident for review and a teaching-moment discussion with the doctor. Then it goes back to the doctor, before the report is finally sent out. We needed a system that was very user-friendly and made reports very easy to interpret."

And one that would also work fast, very fast, with integration to the patient's electronic health record

Luckily, a generous hospital donor put up $75,000 towards the capital expenditure for a system that could deal with St. Mike's respiratory complexities and unique needs.

"That donation was the catalyst that really got us going," says Dr. Faughnan.

So, the hunt was on to find a solution, if it existed at all.

"We selected five vendors from our RFP responses and made site visits to them all. We did that because we realized we needed something really sophisticated," explains Dr. Faughnan. "We weren't looking for just machines; we were looking for people we could work with and help us develop that level of sophistication."

Ironically, part of the solution that Dr.

Faughnan and her team endorsed had already been at work in St. Michael's own backyard.

The Canadian company that won the RFP, Roxon Medi-tech, specializes in supplying cardiac, respiratory and neurology equipment to hospitals. Most importantly, Roxon was also a partner with a start-up company called Influx Workflow Solutions, and its innovative multi-diagnostic reporting software.

"The proposed solution consisted of two components: the Influx workflow application for diagnostic reporting and a cardiology PACS system which was already in being used in the St. Michael's cardiology department" says Rajesh Sharma, the chief operating officer for Influx.

Influx's own roots are in cardiology. Corcare, a three-clinic cardiac and nuclear medicine practice in Toronto, developed Cardiology Workflow, Influx's first product. Like Respiratory Workflow, it too embodies Lean management principles in its software to tap a variety of imaging sources including: echocardiogram, EKG, stress, Holter, and nuclear imaging devices.

"Our product is workflow", says Sharma. "By incorporating Lean principles to our software, we have been able to automate the capture and interpretation of complex clinical data into a clear and concise reporting workflow process."

Therapists performing the study can quickly pull down relevant information from worklists, perform the study and send it to the Influx reporting system, which is integrated with the cardiology PACS system, for immediate physician reporting. The process removes many time consuming steps in the process, automates old paper-based systems and reduces the potential for errors.

All that has made Sharma, a veteran of more than 20 years in hospital information work, ever so aware of just how much can go wrong in paper-based cardiology or pulmonary testing.

"Typically, a patient comes in for a breathing or another pulmonary function test. The respiratory therapist doing the test might make some written notes and place them in the in-tray for the respirologist to take a look at and interpret the results, who then also makes notes and then signs off on the report. That all gets printed up and put in another bin for sending off to the referring physician or wherever it needs to go. With so many hands touching the report, the potential for error or loss is substantial," observes Sharma.

We have been able to automate the capture and interpretation of complex clinical data into a clear and concise reporting workflow process.

As a solution to this challenge, Influx Workflow offers what Sharma calls an automated, multi-diagnostic solution.

"If a customer of ours has different respiratory testing devices from different vendors, the 'secret sauce' we have in our workflow software can take the data from all of them and streamline it into a standardized format, which we then send along with their related images to the cardiology PACS system," explains Sharma. "Even though it is respiratory data, the cardiology PACS system can analyze the information through what we call 'finding codes', based on how doctors interpret reports, and make reports readily understandable to respirologists."

This is not to say that making Respiratory Workflow understandable and easy-to-use for St. Mike's clinicians happened overnight.

"It did take us longer than expected," admits respiratory therapist Leek. "But what got us through it was that we have involved everybody at the hospital who is involved with the system – therapists, physicians, our IT people and nurse practitioners, among others. And we kept working together over the past year to get us where we are today."

And where they are today, is that respiratory workflow at St. Michael's has gone virtually paperless. Preliminary respiratory reports are available to all in patients' electronic charts almost immediately after being written. Final reports are not far behind, often showing up same day.

Measuring the improved efficiency Respiratory Workflow brings in terms of cost-savings, and other new efficiencies, may be easy to envision but difficult to actually measure. However, folks at Influx are working on that too. Their Cardiology Workflow already provides an "Efficiency Calculator" on the company website. Based on the number of diagnostic tests you perform annually, you can plug in your study volumes and get an estimate of the savings you're likely to make and calculate your return on investment. A similar tool is in the works for Respiratory Workflow. For more information, see: http://influxworkflow.com