



Workflow Management Software  
automates Pulmonary Function Reporting

# New workflow management software automates Pulmonary Function reporting at St. Michael's Hospital

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 respiratory 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.”



**Eva Leek, respiratory therapist, and Dr. Marie Faughnan, respirologist, have helped deploy the new software.**

## Old processes: Slow and error prone

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.

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

## A new solution

In order to meet St. Michael’s respiratory complexities and unique needs, “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 proposed solution consisted of two components: the Influx workflow application for diagnostic reporting

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## Lean workflow

“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 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.

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

## Interoperability

“If a customer has different respiratory testing devices from different vendors, the unique abilities of 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 Philips 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. Michael’s clinicians happened overnight.

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## Paperless workflow

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.

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Measuring the improved efficiency Respiratory Workflow brings in terms of cost-savings, and other new efficiencies, may be easy to envision but traditionally difficult to actually measure.

## Return on investment

For instance, their Cardiology Workflow already provides an "Efficiency Calculator" which can be found at [influxworkflow.com](http://influxworkflow.com). Based on the number of diagnostic tests you perform annually, you can plug in your study volumes and get an estimate of what cost savings you're likely to make overall and calculate your return on investment.

Beyond those immediate benefits, Dr. Faughnan sees further potential for St. Michael's use of Respiratory Workflow and its supporting cardiology PACS.

"I can see us in future using both to do research that would give us, in effect, an analysis and decision tool. One that would help us better understand the data we are seeing and help us make better decisions about respirology and our care generally."

Given such potential and the uptick in efficiencies, other healthcare institutions are paying visits and calling St. Michael's. "We're delighted to share our experience with anyone who wants to know more," confirms Dr. Faughnan.