

GE Healthcare



Radiology Consultants Associated

trophon® EPR High-Level Disinfection Platform
Boosts Productivity and Reduces Costs at
Radiology Consultants Associated



imagination at work



Radiology Consultants

ASSOCIATED

Radiology Consultants Associated (RCA) is a radiologist-owned and operated group of 15 community imaging clinics located primarily in Calgary, plus a clinic each in Lloydminster (Alberta), Vancouver and Regina. With a staff complement of 400, including 45 radiologists, RCA offers a wide range of imaging services, including MRI, CT, x-ray, bone densitometry, fluoroscopy, nuclear imaging, mammography and ultrasound, and performs more than 600,000 exams annually. The firm's partners have taken a progressive approach to growth, especially outside RCA's traditional Calgary borders, establishing a presence and/or partnerships in four additional provinces and territories.

CHALLENGES

Each year, RCA performs roughly 13,500 endo-vaginal (EV) ultrasound exams. The endocavity transducers or probes used for these procedures require "high-level disinfection" after each use to ensure patient safety; however, because these devices are heat-sensitive, conventional steam sterilization in an autoclave unit cannot be used. Instead, EV probes are soaked in a high-level disinfectant – typically a glutaraldehyde-based solution – to achieve maximum germ reduction and disinfection. For RCA, the drawbacks associated with the EV soaking process include:

- Multiple pre-cleaning, soaking and rinsing steps are time-consuming (30 minutes or more) and impact workflow efficiency;
- Probe handles cannot be submerged in high-level disinfectant liquid and thus must be disinfected using hospital-grade disinfectant wipes;
- Daily use of litmus paper to test for appropriate disinfectant levels;
- With a manual approach, there is no way to guarantee the consistency of the cleaning process;
- Glutaraldehyde is a hazardous chemical requiring special handling, especially limited exposure for staff and patients, and disposal has potential environmental impact;
- Having a separate probe cleaning area to reduce staff and patient exposure to the cleaning agent requires dedicated space that could be used for an additional exam room;

"These problems were impacting our ultrasound workflow and productivity and required considerable ongoing effort by everyone to maintain high levels of quality and ensure staff and patient health and safety," says Heather Andrews, Quality Assurance Lead at RCA.

New Guidelines Compound Disinfection Problems

Problems RCA was having with the conventional high-level disinfection process for endocavity probes were further compounded when it was learned that new, more-stringent infection prevention and control standards and guidelines were being issued by the College of Physicians and Surgeons of Alberta (CPSA) – the regulatory body that governs radiology practices in the province.

The Environmental Public Health branch of Alberta Health Services also reinforces all probe reprocessing practices to ensure they are up to the level of the new CPSA guidelines. For example, due to the potentially harmful effects of exposure to glutaraldehyde, the

cleaning could no longer take place in the same room where patient exams are conducted. A longer cleaning cycle would create a scheduling challenge of ensuring there were not too many back-to-back ultrasound exams that require an EV scan, otherwise probe availability and timing would be a problem. These changes presented significant additional challenges to RCA management.

"We have 74 ultrasound rooms across our practice, and the new process Public Health was suggesting would cut our productivity down by at least 25% in terms of daily patient throughput," explains Feisal Keshavjee, RCA's CEO.

Keshavjee goes on to explain that because 75% of all ultrasound exams done in Calgary are performed in the community, in clinics such as RCA rather than in hospitals, the new guidelines and new disinfection process would also create an access issue.

"One thing that is important to us as a community imaging clinic is ensuring we provide the access to service the public expects, and that means ensuring efficient productivity and workflow," stresses Keshavjee. "And if the number of ultrasound scans we can do in a day is cut down by lengthening the probe cleaning process, the clinic not only loses revenue, but access to care by patients in the community is also impacted."

Complying with new guidelines while maintaining current productivity and throughput levels would require hiring a full-time technical assistant at each clinic site to be dedicated to the task of cleaning EV probes. It would also require RCA to undertake physical infrastructure renovations at a number of its sites to create separate cleaning areas, in some cases requiring that an ultrasound room be closed down to create the needed space.

"The rules were changing and there was no way around this issue – status quo was simply not an option," concedes Keshavjee, who says the decision they faced was to either: upgrade their current cleaning process in accordance with new guidelines, hire additional staff and buy additional probes in order to maintain existing throughput levels; or find a faster, more efficient way to perform high-level probe disinfection.

SOLUTION

While attending a Radiological Society of North America (RSNA) conference and exhibition sometime earlier, the RCA team had been introduced to the new trophon EPR ultrasound transducer disinfection system developed by Nanosonics™ and distributed by GE Healthcare.

The trophon EPR ultrasound probe disinfection system is a fully automated, closed environment that uses vaporized hydrogen peroxide to provide high-level disinfection of probes and transducers. Consumables include hydrogen peroxide cartridges and an in-process chemical indicator to confirm high-level disinfection. No toxic chemical exposure is involved, and the only by-products are small amounts of water vapour and oxygen, so disinfection can occur right in the exam rooms and requires only minimal technologist involvement.

RCA had two potential solutions to address its disinfection challenges – one, a new, higher-tech version of the traditional chemical soaking

process, with higher labour costs and throughput problems, and the other, a solution based on trophon, with higher initial capital costs.

"I felt we needed the trophon solution in order to maintain the existing workflow and productivity levels," says Keshavjee, "But a fair bit of analysis was needed to show our radiologist owners that the long-term cost of ownership benefits would far outweigh the upfront capital outlay for the equipment."

Business Case Favours trophon Choice

RCA approached GE Healthcare for help with a business case analysis that compared both solutions, based on current EV exam volumes as well as on anticipated volumes with all exam rooms fully booked. With all costs – capital costs and operating costs, including labour and consumables – amortized over a five-year period to best reflect benefits and risks, the analysis showed that the total cost of ownership associated with a trophon solution would be considerably lower.

"Analysis showed that the savings with trophon could range from \$50K annually, with current exam volumes, up to as much as \$140K annually, based on anticipated future volumes," says Keshavjee, adding that this was without taking into consideration whatever physical renovation costs might be required to comply with new guidelines for the traditional 'soak & rinse' approach and the negative impact that solution would likely have on exam throughput and revenue.

"Having seen the trophon at RSNA and having researched it thoroughly, we were game to purchase the units as soon as possible," says Heather Andrews.

'Plug & Play' Deployment & Training

RCA purchased 51 of the trophon units – EV exams are not conducted in all 74 ultrasound rooms – and over a three-week period, all the units were installed by GE Healthcare people working with RCA Facility Managers and the Ultrasound Department to choose the individual table-top or wall-mounted locations.

"Since there were no snags reported, the most noteworthy thing about the deployment was how simple it was to install a trophon unit – unpack it, plug it in and insert the peroxide cartridge – and it requires none of the infrastructure changes we would have faced with the other solution," points out Andrews, who goes on to

describe how representatives from GE Healthcare and Nanosonics trained the RCA super-users, who in turn trained users in their local clinics. "The user interface on the front of the unit is simple, and the short training video was quite helpful, so the learning curve for users was very short," adds Andrews.

Adding to sentiments expressed by his team, Keshavjee says this has been a great customer-vendor partnership, "Not only because of the business case GE Healthcare did for us and the great new technology they provided, but also because they went to bat for us to ensure fast delivery when we were under such tight timelines to respond to the new guidelines."

RESULTS

Although RCA was forced to make some temporary changes to its legacy soaking process in several clinics to comply with new guidelines while awaiting trophon availability, causing exam throughput to drop, the subsequent trophon deployment quickly put the firm's exam bookings back on track. It also gave RCA a state-of-the-art disinfection platform that will support projected exam volume growth.

"Choosing trophon enables us to implement a single, consistent technologist workflow across other provinces and territories as we expand and gives us a high-level disinfection protocol that more than meets regulatory requirements in all jurisdictions," says Mark Sevcik, RCA's Director of Planning, Performance & Quality.

'Before & After' Trials Highlight trophon Advantages

With help from RCA staff, GE Healthcare conducted a study of RCA technologist workflow, disinfection cycle times and user satisfaction levels to get a solid characterization of the workflow improvements and other benefits to be gained from the trophon solution. The study compared two scenarios – the baseline 'soak and rinse' process, and the 'disinfection with trophon' process.

Two clinic sites in Calgary were chosen for the study because each has a different disinfection workflow – one (Southcentre) has a central cleaning area with three Trophon units, while the other (Mayfair) has a trophon unit in each ultrasound room. The disinfection process is fundamentally the same in both cases, including the appropriate pre-cleaning step, but the technologist workflow is substantially different.

	BEFORE (SOAK & RINSE)	AFTER (TROPION EPR)
Mayfair Clinic	<ul style="list-style-type: none"> • 5 examination rooms + 1 examination room converted into a cleaning room • 1 dedicated ultrasound assistant (75% time spent on probe disinfection) 	<ul style="list-style-type: none"> • 6 ultrasound rooms, including 1 'repatriated' cleaning room • trophon unit installed at point of care in each room • Technologists perform their own disinfections; No ultrasound assistant
Southcentre Clinic	<ul style="list-style-type: none"> • 8 examination rooms (one is a breast biopsy room) • Probe disinfection performed in a central cleaning area – capacity to disinfect three probes simultaneously 	<ul style="list-style-type: none"> • 8 examination rooms (one is a breast biopsy room) • 3 trophon units installed in a central cleaning area

The study was completed in three steps:

1. Characterize traditional disinfection workflow and performance, including profiling baseline capacity, utilization, cycle times and productivity through observation and staff shadowing and measuring 'waste' (delays, waiting, inventory, travel, etc.). Paper surveys and stakeholder discussions/testimonials were also conducted;
2. Repeat step #1 based on the trophon disinfection unit and workflow;
3. Compare the traditional/baseline and trophon scenarios and report.

Following step one, trophon units were installed and a four-to-five month period elapsed before step two, giving staff adequate time to get used to the new trophon units and adapt their workflow accordingly.

"The study made our technologists fully appreciate the trophon units," suggests Andrews, reporting that, "The quality of work life for our average technologist working throughout the day was improved dramatically by not having to work with the glutaraldehyde chemicals and all that goes with that, and the ease of working with the trophon and improvements to their workflow."

trophon Boosts Safety & Productivity

For RCA staff, safety and workflow improvements top the list of trophon benefits highlighted by the two-clinic study.

"Our primary concern is for patient and employee safety, so the biggest benefit of trophon to us is disinfection quality and safety," emphasizes Keshavjee, focusing on the 'no harmful chemicals' aspect of their trophon solution. He also refers to the quality assurance that comes from the system's digital display telling RCA technologists that the process executed successfully and proper probe disinfection took place for the entire probe, including shaft and handle.

On the workflow side, one major observation made quickly was the reduction in overall hands-on time required by staff, which improved efficiency and, over the course of a full day, allows for additional exam volume. The study also highlighted the flexibility in how trophon units can be deployed – central cleaning area or patient exam rooms, table-top or wall-mount – with benefits accruing for each.

Citing a Mayfair Clinic example, Heather Andrews says that, "Installation of trophon units in each ultrasound room not only saves technologists from repeated walking back and forth to a central cleaning area, but also allowed us to convert a room that had previously been dedicated to probe cleaning back into an exam room, thus increasing exam capacity and improving patient access."

In the 'after' scenario, the trophon cleaning cycle was measured to be 10 minutes duration, on average, including the pre-clean step, a significant reduction from the 30-minute cycle time for the legacy soaking process.

The shorter cleaning cycle is not only enabling greater exam throughput, but also eliminated RCA's previous probe availability and appointment scheduling problems – appointments can now be booked back to back and technologists can keep patients and procedures moving smoothly.

Cost Savings Reflect Business Case Analysis

The Mayfair and Southcentre Clinic study produced results consistent with cost savings projected in RCA's initial business case analysis – primarily operational costs saved by no longer needing staff dedicated to probe cleaning. Additional revenue opportunities were also triggered, including greater throughput for existing exam rooms and net new revenue as a result of unleashing new capacity by repatriating cleaning rooms back into exam rooms.

According to Heather Andrews, RCA is not only back on track with respect to its bookings and reaping trophon cost-saving and revenue benefits, but employees are much more satisfied with their workplace. During the study, staff in the two test locations was asked to rank, on a scale of 1 to 10, how likely they would be to recommend the current disinfection process to colleagues outside of RCA, both before and after the switch to trophon. The baseline 'soak & rinse' process garnered an average score of only 3.1, while the trophon process scored 9.2, confirming a high level of staff satisfaction with the new process.

"The trophon solution has helped us better achieve all our occupational health and safety goals and guidelines, and in some ways also helped us with our employee recruitment," says Andrews, explaining that attracting quality sonographers is challenging and suggesting that being able to offer state-of-the-art working conditions that are less hazardous and a firm that is investing in employee and patient safety could be a compelling attraction for potential recruits.

In summary, Feisal Keshavjee says that, "Here we are, with a new \$150K ultrasound machine and \$15K probes to go with it that we're cleaning with 1960s glutaraldehyde soaking technology – this just didn't compute for us any longer. If we're going to position ourselves to our patients and to the community as using the latest and greatest technology to maximize imaging quality along with patient care and safety, we have to use next generation technology in everything we do, which, in the case of high-level disinfection, which in our view and experience means trophon."



imagination at work

GE Healthcare
2300 Meadowvale Blvd.
Mississauga (Ontario) L5N 5P9 Canada
www.gehealthcare.com

©2012 General Electric Company
™Trademarks of General Electric Company

DOC1384415