

Doing Double **DUTY**

It is rare when a system not only is used in making medical devices but also can be applied as a medical device itself. Librestream's Onsight mobile collaboration approach is that rare system. Designed, certified, and manufactured in North America, Onsight devices are used in the assembly of Intelligent Hospital Systems' (IH Systems; Winnipeg, Manitoba, Canada) automated pharmacy unit. It also is used by the Northwestern Ontario (NWO) Regional Stroke Network at Thunder Bay Regional Health Sciences Centre to provide patients in out-of-the-way places with access to medical specialists.

The Onsight system fully connects subject-matter experts to remote locations in real time. The expert can see live video and share feedback with field staff, external suppliers, or customers to assess operations or resolve issues immediately.

Used in assembling medical devices as well as serving to help deliver health care, Onsight is in a class by itself.



In the field, a technician uses the Oversight device to show the inside of a RIVA automated pharmacy unit to a subject-matter expert at IH Systems office.

The Onsight system is comprised of three main components:

- Librestream's wireless devices, including the Onsight 1000 and 2000 models. While these hand-held units may look like oversized digital still cameras, they are more than that, offering bidirectional video and audio among their capabilities. Onsight Mobile-enabled Motorola MC75 and MC9500 mobile computing platforms also can be used as part of the system.
- Onsight Expert, the desktop software that runs on the subject-matter expert's computer; and

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Onsight 2000 looks like an oversized digital still camera with an integrated illumination ring but sports an interactive video screen.

- Onsight Management Suite, software that provides system administrators with centralized management tools for the Onsight system.

The Onsight 1000 device, the unit used by IH Systems, provides hand-held wireless mobility, video streaming from the field, two-way audio and two-way screen markup for full collaboration. The audio is carried via VOIP with both speakerphone and head set modes and includes the ability to make video/audio calls to SIP-enabled video conferencing endpoints. Its capabilities include:

- Optics that deliver 10× zoom and 1-cm macro;
- Advanced security, encryption, and authentication features;
- Recording capability, still image capture, on-screen drawing;
- High-resolution viewfinder with touch-screen support;
- Image-sharing mode for low bandwidth network connections; and
- Bidirectional image and video file sharing between the device operator and the remote expert.

The unit also features a touch-screen user interface and integrated 802.11 b/g wireless networking. It is capable of operating over a temperature range of 0–40° C.

Onsight 2000, which is used by the Northwestern Ontario Regional Stroke Network, differs in that it has an integrated illumination ring, can operate in temperatures as

low as -10° C, has a chemical-resistant exterior, and is able to withstand multiple 4' (1.2-m) drops to steel or concrete.

The primary product of IH Systems is a medical device called RIVA, the Robotic IV Automation System, which automates the preparation of IV syringes and IV bags. IV preparation is a repetitive and complex task, which drives a strong need for this kind of automation. RIVA lowers the incidence of errors, reduces the risk of contamination, and has the potential to reduce waste. These safety improvements, as well as the associated ROI and efficiencies, have attracted the attention of hospitals around the world.

Each RIVA system weighs up to 6600 lbs (2970 kg) and is 8' high × 10' long × 5' wide (2.44 × 3.05 × 1.52 m) when fully assembled, making on-site assembly a virtual necessity. As a result, IH Systems performs final commissioning at the customer's premises. Given the complexities and need for perfection, commissioning can take from three to five weeks. Each RIVA system includes a five-year maintenance agreement which also makes ongoing maintenance an important part of the full-service offering.

IH Systems decided on the Onsight solution because it needed an innovative way to speed commissioning and provide effective maintenance. Onsight furnishes IH Systems with a way to immediately connect the right people at the right time to get the right answer.



Physician uses computer to respond to information provided via Librestream's telecommunications link (facing page).

The Onsite 1000 mobile device is used by technicians performing final commissioning or ongoing maintenance and support at the client's site. The Onsite Expert application is installed on the desktops of key engineering specialists at the IH Systems head offices.

IH Systems uses the InGate SIPrator device to manage and control the audio, video, and data streams between the Onsite device and Onsite Expert application. With this infrastructure, IH Systems was able to immediately connect engineers working at the head office with the team at the client site.

site immediately. He helped the team right away, which saved valuable time and eliminated the need to interrupt a trip and fly him there," explains Alex Reinhardt, director of customer service at IH Systems.

IH Systems found that live collaboration with internal engineering specialists was essential not only during the final on-site commissioning, but also for ongoing maintenance and client support. Downtime is not an option for a mission-critical system like RIVA. When customers need help, they require immediate attention and assistance. IH Systems has found

The Onsite system fully connects subject-matter experts to remote locations in real time.

With Onsite, IH Systems has improved commissioning in a cost-effective way. The company has already used Onsite to successfully implement RIVA in hospitals like Primary Children's Medical Center in Salt Lake City and Children's Hospital of Philadelphia.

There is no need for expensive, last-minute travel to get experts on site. If a question comes up, the team is able to connect immediately with the expert who could be at home, on the road, or in the office.

"We had one situation where the expert was in Orlando while the system was being commissioned in Salt Lake City. We were able to connect him from Orlando to the client's

that Onsite provides an innovative customer service tool for immediate, live assistance, from anywhere in the world.

"We experience many situations where having Onsite at the client's premises helps us support them. For example, there are some procedures that need to be performed on a periodic basis, such as calibrating the UV disinfection system. As part of an improvement exercise, we had our field staff and engineers link up with Onsite to evaluate the current process, and then improve the process to reduce time and increase accuracy. It worked really well," explains Reinhardt.

IH Systems has seen many additional uses for the Onsite system, including using it to record video and cap-

ture still images for future training purposes and troubleshooting. It has proven so valuable that the company has made the strategic decision to provide an Onsight mobile device with every RIVA system. This embedded strategy ensures that every IH Systems customer will benefit from fast and effective customer service.

“The customer service improvements and efficiencies that Onsight helps us drive are really unmatched. We know that the payback on our investment in Onsight is simply a couple of service calls away. It is rare that you find a tech-

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nology that can drive that kind of return. We won't ship another system without Onsight,” Reinhardt says.

Getting things right is just as important in assessing the condition of those who have suffered a stroke. This is one of the areas where the Onsight system plays a role as a medical device.

Stroke has been described as Canada's most forgotten disease. It is the country's fourth leading cause of death. Almost 60% of persons who have suffered and survived a stroke are left with moderate to severe impairment. The burden on people and families living with the effects of a stroke is immense. The cost to the Canadian economy is estimated at more than \$2.5 billion per year.

Currently, it is difficult to provide sufficient and equitable care to all people living with stroke in Northwestern Ontario. One of the challenges is that many are in remote communities that do not have access to on-site specialists. Often, the only option for a person living with stroke is to travel a considerable distance to see the rehabilitation professional they need. According to the Ontario Stroke System's (OSS) *Report to the Consensus Panel on the Stroke Rehabilitation System*, people living with the effects of a stroke need periodic reassessments with stroke care professionals at six weeks, three months, one year, and as needed. At the present time, there are very few people who receive this level of care.

The Northwestern Ontario Regional Stroke Network at Thunder Bay Regional Health Sciences Centre proposed a project to improve access to care in remote communities. They have now been awarded funding by the Ontario Stroke System—Ministry of Health & Long Term Care to utilize telemedicine to deliver stroke rehabilitation follow-up visits. The overall goal is to provide equitable access to rehabilitation reassessment for people living with stroke in rural and remote areas, particularly First Nations communities.

To deliver equitable access to care, the project “Tele-Rehab: Improving Access to Quality Stroke Rehabilitation in Rural and Remote Communities” was born. This approach uses telemedicine technologies to provide better access to care for people living with stroke.

Study coordinator and physiotherapist Kirsti Reinikka has developed the processes necessary to facilitate rehabilitation visits from providers based at St. Joseph's Care Group in Thunder Bay to rural and remote communities using the Ontario Telemedicine and Kuhkenah Networks (OTN and KNet). Through collaboration with Keewaytinook Okimakanak Tele-Mushkiki (KOTM), local home care workers will visit patients and connect the patients directly to stroke rehabilitation specialists using Librestream's Onsight mobile device. Specialists will see patients and interact ver-

bally with them to assess their progress and recommend next steps for rehabilitation. By using OTN and KNet, patients will not have to leave their home communities.

Esmé French, physiotherapist and regional stroke rehabilitation specialist with the NWO Regional Stroke Network, states, “Librestream's Onsight mobile collaboration system will help people living with stroke achieve their maximum potential and have equitable access to service regardless of where they live.”

French continues, “The innovative use of telemedicine technology will build capacity in, and improve access to stroke rehabilitation services across Northwestern Ontario. These efforts will strengthen the continuum of integrated stroke care.”



Onsight device is part of an interactive system that can capture video of patients at isolated locations (above) and stream it to physicians (facing page).

Timely and consistent stroke rehabilitation is a critical part of recovery. The Ontario Stroke System, through its support of this pilot project, will be able to offer improved access to services for people living with stroke in communities across Northwestern Ontario.

“The current service model,” French concludes, “is unable to meet the needs of those living in rural and remote communities. Telemedicine-based alternatives can be one solution to improve the overall quality and timeliness of care.”