Vidyo®
Personal Telepresence

Connecting Doctors and Patients for Emergency Care When Every Minute Counts

Challenge

Bring expert healthcare teams and remote patients together for better interactions and healthcare workflow in acute and emergency scenarios

Solution

VidyoRouter™
VidyoPortal™
VidyoDesktop™
VidyoMobile™
Vidyo™ APIs

REACH INTERACTIVE CLINICAL ACCESS

REACH Health is transforming patient care with a telemedicine platform that is rapidly gaining acceptance in America's emergency rooms, ICUs and patient rooms for neurology, pulmonology, cardiology and psychiatry as well as other applications. To understand just how important telemedicine is to current and future healthcare needs, one only has to look at the pioneering work of REACH Health in the area of telestroke.

Key Results

| Connected physicians to patients in < 10 minutes | 4X improvement over U.S. average tPA administration rates | 11,000 telestroke consults for better patient outcomes |

Stroke is the fourth leading cause of death in the U.S., occurring an average of once every 41 seconds. When a patient enters an ER with symptoms of stroke, physicians must act quickly to determine if a stroke has indeed occurred, the time of onset, and the type of stroke. Without this information, an accurate diagnosis and course of treatment is impossible. Yet many hospitals and clinics don't have the specialized staff or systems necessary to handle stroke. The founders of REACH Health recognized the challenge of acute care situations such as this, and the potential for telemedicine to meet the challenge.

According to neurologist and REACH Health founder, Dr. David Hess, "In our profession we often say 'time is brain'. The amount of time we save is the amount of brain we save. In cases of ischemic stroke, every minute counts."

With ischemic stroke, a blocked blood vessel deprives the brain of oxygen and essential nutrients normally supplied by the blood, and millions of brain cells die every minute. Administration of the clot-busting substance known as tPA (tissue plasminogen activator) has been proven to help patients survive an ischemic stroke, with the potential for full recovery of normal functions. But tPA administration requires the ER staff to take the patient through a strict protocol and bring in a neurologist to evaluate and diagnose the patient—all of which must happen within a 3-hour window after onset of stroke symptoms.

"The REACH system grew out of our desire to improve the quality of stroke care by bringing physicians and patients closer together and improving clinical workflow," said Dr. Hess, who now serves as Department Chair and Professor of Neurology at Georgia Health Sciences University in Augusta. "There was particular concern for patients in rural hospitals that lack the patient density to justify a neurologist on staff to evaluate the patient, or a radiologist on staff to read the patient's CT scan images. For these patients, the nearest specialists might be too far away to reach a rural hospital within that critical 3-hour window."

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> Richard Otto, President/CEO, REACH Health

A Dynamic Telemedicine Platform

"The REACH system is a software-based telemedicine platform designed by physicians to work the way physicians work," said Richard Otto, President/CEO of REACH Health. "Using the REACH system, healthcare providers can complete a clinical workflow with great efficiency. By integrating our REACH solution with the software-based video conferencing capabilities provided by Vidyo, we enable medical experts to connect from any location in minutes to perform a remote consult. In this way, they can observe and interact with the patient, check the vital signs and review the lab data much as if they are at the patient's bedside."

"This is essential in cases where the patient's diagnosis is unclear, and might require physicians in a sub-specialty on the consult," said Hess. "Vidyo gives us the ability to invite a physician to connect from any location and join a remote consult in progress." With Vidyo, REACH system users can provide a 'guest link' to any consulting physician – all that's needed on their end is a webcam-equipped mobile, desktop or room-based device and an internet connection.

"In cases of acute stroke everything happens very fast," said Hess. "The patient may have difficulty following instructions and speaking clearly during an examination. If the telestroke system does not sync up video and audio, the exam may be difficult or impossible to do. With REACH and Vidyo, the experience is as if we're working right alongside physicians in their ER. The telepresence quality of Vidyo makes better interaction possible because we see and hear the patient clearly without frozen or broken images or delays."

"Vidyo provides physicians with remote camera control so they can pan, zoom, and tilt the camera and focus on their patients as if doing the consult in person," said Hess. "They can zoom in to look at a patient's pupils, and zoom out to observe the patient's response to instructions such as lifting their arms. They can evaluate the patient remotely with confidence in their assessment of the patient's symptoms."

"We also chose Vidyo for its ability to provide consistent telepresence quality for multipoint video conferencing, even in the low bandwidth environments typical of rural communities," said Otto. The Vidyo platform is the first and only software-based architecture that meets this requirement by dynamically optimizing video streams to the capabilities of each endpoint and network conditions.

"In acute care environments, mobility of the telemedicine system is critical and you need the ability to quickly plug in anywhere," said Otto. "The combined REACH and Vidyo solution is delivered in a mobile cart that's compact, easy to move, has good battery power, and adapts easily to various large or small hospital settings from the patient's bedside to the ER. We call it 'moving point of care to point of need'."

"Having Vidyo as part of the REACH system provides physicians with the flexibility to work from a home office, a remote clinic, or across

the hospital campus," said Otto. "Deploying the VidyoDesktop software client to laptops supports our commitment to an immediate response whenever a call comes in. Our next step is to take advantage of the VidyoMobile app on tablet devices when we're on the move."

Helping Physicians, Patients and Families

Over the Labor Day weekend, Dr. Hess was on call. A female patient presenting stroke symptoms had arrived at a network hospital's ER. Dr. Hess logged in to the REACH system and was connected to the patient and the ER physician remotely via Vidyo within a few minutes. He evaluated the patient, reviewed her history and brain scan images, and made a diagnosis of ischemic stroke. During the remote consult Dr. Hess was also connected with the patient's family so he could explain her condition and how tPA works. "Within 30 minutes into the infusion of tPA, the patient totally recovered, without any deficit," said Hess. "To see this kind of recovery is what makes everything we do worthwhile."

"For remote consults, the visual acuity is fantastic. It's as if the doctor is at the patient's bedside even though he may be 100 miles away. The audio, even via cell phone connection, is crystal clear. The video transmittal is instantaneous, without delays which would interrupt vital doctor-patient interaction. And the patient's clinical data and medical images can be displayed in real-time, all on one system."

Paul P. Hinchey, President and CEO, St. Joseph's/Candler Health System

Currently, tPA is the only approved drug for ischemic stroke. According to Otto, "The average REACH system has a tPA administration rate of 25-28%. When compared with the national average in terms of patients that could receive tPA and those that receive it, we're ahead by a factor of 4. Looking at outcomes in the total patient population, impact on patients and their families is dramatically improved by using a system like what REACH Health and Vidyo provide today."

St. Joseph's/Candler Health System is pioneering use of the integrated REACH and Vidyo telemedicine system in rural southern Georgia. According to hospital President and CEO Paul P. Hinchey, "For remote consults, the visual acuity is fantastic. It's as if the doctor is at the patient's bedside even though he may be 100 miles away. The audio, even via cell phone

connection, is crystal clear. The video transmittal is instantaneous, without delays which would interrupt vital doctor-patient interaction. And the patient's clinical data and medical images can be displayed in real-time, all on one system."

"Rural hospitals must overcome medical manpower issues to stay open and serve their communities," said Hinchey. "Our use of this telemedicine platform within a 'hub and spoke' network of hospitals has been extremely successful. We are doing clinical innovation in a rural setting and achieving good patient outcomes and satisfaction scores. Within 5 years we expect to grow to 15 spoke hospitals across southern Georgia. And by choosing a scalable telemedicine solution, it becomes more cost-effective as we expand its use."

"Because the software platform is flexible and not confined to one specialty, we'll be serving several modalities in addition to stroke. In fact, we already have new protocols in development to address other areas such as ICU, cardiology and mental health."

For St. Joseph's/Candler RN and stroke network coordinator Lynnette McCall, the integrated REACH and Vidyo telemedicine solution makes it easier to provide clinical and technical oversight to the hub and spoke facilities in her stroke network. McCall monitors clinical outcomes and ensures that all facilities follow the stroke protocol so each patient is properly assessed and receives appropriate treatment and opportunity for tPA administration.

"Administering tPA early is clinically proven to reduce disability by at least 30% for patients who receive it within the recommended window of time," said McCall. "It's not just about treating more patients, but the right patients, and achieving a reduction in disabilities across 3-month, 6-month and 1-year benchmarks."

"Often when a patient's family is connected into a remote consult they can provide critical information regarding the onset of the stroke, and they can better understand the patient's condition as well as their role as a support system during recovery," said McCall. "In many cases with tPA administration, they can see the patient begin to improve before their eyes, when moments before, the patient couldn't speak, lift an arm, or follow directions. It's emotional and moving for the family to see the recovery."

"Over the last five years, we have supported more than 11,000 remote telestroke consultations on the REACH platform powered by Vidyo, and improved patient outcomes," said Otto. "When we can treat patients within their communities, we can avoid

patient transfers, which often involve expensive ambulance or air-lift helicopter transport. This is a significant ROI for hospital systems as it relates to the reimbursement for administration of tPA and to efficient use of specialized physician resources such as neurologists. Most of our customers achieve a positive ROI well within the first year of using the combined REACH and Vidyo platform."

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Exploring New Frontiers

REACH Health is also proposing to use the integrated REACH and Vidyo telemedicine platform—with its decision support, clinical documentation and video conferencing capabilities—to bring rural patients into a clinical trial.

"If rural populations aren't represented in clinical trials, then it won't be known if a drug really works for them," said Hess. "We can identify trial candidates, conduct informational sessions about the clinical trial, consent them, and begin the clinical trial process. The REACH and Vidyo platform also allows us to connect with research pharmacists to guide the local hospitals in conducting a research study."

According to Otto, "The ability of REACH to work with Vidyo developers and Vidyo APIs allows us to explore new frontiers for telemedicine. Other physicians are now working with us to design new specialty protocols for telecardiology, telepsychiatry and telecritical care medicine. And Vidyo is a key technology of our platform for this effort."

"Regardless of what telemedicine application we pursue, the powerful context management delivered by REACH and Vidyo will give physicians access to all the patient data and diagnostic tools they need within one system. From hospital CEOs and medical directors to nursing directors and their staffs, everyone can see the benefits. REACH and Vidyo will continue to offer integrated technology not only for today but also for the future of healthcare."

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