Telestroke White Paper

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Polycom Telestroke Solutions

Stroke is the third leading cause of death and a leading cause of serious, long-term disability in the United States. According to the American Stroke Association, approximately 780,000 Americans suffer a new or recurrent stroke each year with about 25 percent of them resulting in a fatality. Someone suffers a stroke every 40 seconds and dies from a stroke every three minutes. Stroke victims are frequently left with disabilities which do not allow them to resume their previous lifestyle or employment.[1]

What Is a Stroke?

Stroke is a form of cardiovascular disease affecting the arteries leading to and within the brain. A stroke occurs when a blood vessel that carries oxygen and nutrients to the brain is either blocked by a clot or bursts. When this occurs, the brain cells do not get the oxygen from the blood that they need to survive. As brain cells are compromised or die off, the body loses its ability to do everyday functions like walking, talking, and thinking.

Ischemic strokes are the most common form of strokes accounting for 83 percent of all patients. These strokes usually occur as a result of an obstruction within the blood vessel supplying blood to the brain. Ischemic strokes can be caused by several different kinds of diseases. The most common disease is narrowing of the arteries in the neck or head which is called atherosclerosis. When the arteries become too narrow, blood cells or plaques may collect and form blood clots.

What Medical Treatments Are Available for Stroke Patients?

While there is no cure for a stroke, medical care has significantly improved over the past decade for stroke patients including the availability of new diagnostic tests to help pinpoint the location of a clot and newer therapeutics to help minimize the impact of a stroke. One of the most promising therapeutics for stroke is tPA (tissue plasminogen activator). An FDA-approved clot-busting thrombolytic drug, tPA can reverse the effects of stroke if it is administered within three to four hours of the onset of a stroke.

In 1996, FDA approved tPA therapy for acute ischemic strokes but it is not widely used today and fewer than 5 percent of stroke patients receive it. Most emergency department physicians, especially those in rural and remote areas, lack the resources and expertise to effectively evaluate stroke patients and administer tPA. They are concerned about the risk of intra-cerebral hemorrhage and potential medical liability if the patient experiences a negative outcome.

What Is Telestroke and How Can It Help?

Telestroke is a form of telemedicine that enables emergency department physicians practicing in rural or remote areas to access and communicate with neurological stroke care experts.

Stroke care experts can use video conferencing to visually assess a patient's ability to perform specific tasks based on the NIH Stroke Scale. Patient CT and/or MRI scans can be downloaded and reviewed to identify the exact location of a blood clot and the extent of brain injury. Evidence-based guidelines can be used to determine the severity of the stroke and whether a patient qualifies for specific rescue therapies such as tPA to destroy the blood clot.

Are Telestroke Solutions Clinically Effective?

Over the past few years, a number of peer-reviewed case studies have been published demonstrating the clinical efficacy of telestroke solutions.

The Medical College of Georgia (MCG) is a non-profit academic medical center (Augusta, GA). They have deployed a telestroke solution called REACH (remote evaluation of acute ischemic stroke). REACH enables emergency physicians practicing medicine at rural community hospitals throughout Georgia to consult with stroke care specialists at MCG 24 hours a day, 7 days a week. REACH leverages Web-based technology allowing the stroke consultant to obtain history, examine the patient with live video, and review computed tomography to make a recommendation regarding the administration of tissue plasminogen activator (tPA) before transporting the patient to a tertiary medical center.

The REACH telestroke solution was used with 50 patients treated with intravenous tPA between February 2003 and March 2006. There was one (2%) symptomatic hemorrhage. The mean onset-to-treatment time was 127.6 minutes using REACH compared with 145.9 minutes within the MCG Emergency Department and 147.8 minutes within other published systems.[2]

Massachusetts General Hospital (MGH) is a nonprofit academic medical center affiliated with the Harvard Medical School (Boston, Massachusetts). In 1996, they created the MGH Acute Stroke Telemedicine Program to address the need for more rapid accurate diagnosis of ischemic strokes in remote locations. This program supports 24 hospitals across three states making the largest single "hub and spoke" telestroke network in the world. The MGH video conferencing infrastructure uses the Polycom video conference platform, which enables video connections to occur between multiple sites both inside and outside of the organization's network. Approximately 180 Polycom video conferencing endpoints have been deployed in conference rooms, offices, auditoriums, and clinical areas throughout the hospital.

From 2004 to 2008, MGH neurologists performed nearly 400 stroke telemedicine consultations, and provided tPA therapy to more than 130 patients for a treatment rate of 33 percent, well above the three-to-five percent national average.

How Can Polycom Support Your Telestroke Initiatives?

Polycom offers a wide range of standards-based voice and video solutions to support your organization's telestroke initiatives.

For the patient side. Healthcare organizations can use the Polycom® Practitioner Cart™ solution which provides mobile high definition video conferencing capabilities on a cart that can be moved around to support multiple functions within the healthcare organization. It can support wireless communication, on board PC applications and, with its built-in battery, can be moved where the patient is located. For telestroke, the Polycom Practitioner Cart can be moved to the patient's bedside or any location within the emergency department. The remote neurologist can place a video call to the mobile cart, and then can not only view the patient for assessment, but also can be seen by the patient on the mobile cart's monitor to provide a virtual bedside consult.

For the physician side. Physicians can select from several desktop options including the Polycom HDX™ 4000 Series and the Polycom Converged Management Application™ (CMA™) Desktop PC-based product. These two solutions provide personal video conferencing capabilities while allowing the physician to still have access to his/her Microsoft Windows personal computer applications. When combined with a high-speed Internet connection, stroke care experts can assess and treat patients from their own home, eliminating the wait time typically required for an in-person consult. Integrated video collaboration tools enable stroke care experts to access and share information from his/her PC or the PC on the Polycom Practitioner Cart, including radiological images (PACS), electronic medical records (EMR), and NIH Stroke Scale assessment scores.

Learn More

For more information about Polycom's healthcare solutions, visit us at *www.polycom.com/solutions/industry_solutions/healthcare/* or contact us a 1-888-POLYCOM.

For more information about Spyglass Consulting Group, go to *www.spyglass-consultin.com* or contact Gregg Malkary, Managing Director at gmalkary@spyglass-consulting.com.

Endnotes

[1] 2009, "What is a stroke," American Stroke Association, *www.strokeassociation.com*

[2] Dec 6, 2006, "A Web-based telestroke system facilitates rapid treatment of acute ischemic stroke patients in rural emergency departments," Journal of Emergency Medicine.