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Virtual House Calls Improve Medical Care in Developing World

Baltimore-based medical team uses web conferencing with video to provide speech therapy to cleft palate patients in Nicaragua.

Executive Summary

Customer Name:

Greater Baltimore Medical Center and Johns Hopkins University School of Medicine

Industry:

Healthcare

Location:

Baltimore, Maryland

Number of Employees:

9

Challenge:

- Enable children without access to specialized treatment to receive high-quality surgery and post-surgery care
- Provide post-surgery speech therapy to children with cleft palates in countries without those capabilities
- Improve level of medical expertise and post-surgery care in remote locations

Solution:

- Web conferencing allows surgical team and speech therapists to make virtual “house calls” to remote patients
- Audio and visual feedback enables doctors to assess and monitor children’s post-surgery progress
- User-friendly interface makes it easy to train local healthcare providers remotely

Results:

- Achieved significant improvement in children’s speech within three months
- Trained Nicaraguan providers on best practices for follow-up procedures and speech therapy tasks
- Improved doctor-patient relationships with more leisurely pace of online follow-up

Challenge

As a physician specializing in plastic surgery of the head, face, and neck, Dr. Patrick Byrne directs the Division of Facial Plastic and Reconstructive Surgery in the Department of Otolaryngology – Head and Neck Surgery at Johns Hopkins University School of Medicine. He also co-directs the Greater Baltimore Cleft Lip and Palate Team. For the past 14 years, Dr. Byrne has been making annual trips to countries in the developing world, volunteering his services to correct cleft and lip palate deformities in children.

Over the years, Dr. Byrne and his volunteer colleagues have overcome challenging working conditions to provide excellent surgical outcomes. But treatment does not just end with surgery. Born with a condition in which the roof of the mouth is not completely developed, children with cleft palates lack the ability to swallow, eat, or speak normally. “The surgery itself is intricate,” says Dr. Byrne. “But in some ways, it’s the easiest part. We can put muscles back together and re-create the roof of the mouth, but kids who have never used their mouths normally need to relearn everything. Their brains don’t know how to formulate speech correctly.”

That’s why, in the United States, the medical team involved in the repair and follow-up care for the condition typically includes not just a plastic surgeon but an entire team of specialists, including a pediatrician, pediatric dentist, hearing specialist, speech therapist, and an ear, nose, and throat specialist. Children in the United States typically work with a speech therapist for as long as two years to optimize post-surgical outcomes. However, in many countries, including Nicaragua, that kind of specialized follow-up care is simply not available. Most patients lack money for subsequent treatment, and even if they have it, the expertise is not accessible.

Solution

Frustrated by a situation that has persisted for more than a quarter-century, Dr. Byrne has long sought a way to provide the same U.S. standard of care to any child regardless of location, financial means, and local availability of the highly specialized cleft palate surgery and post-surgery skills. This goal is particularly challenging in poorer nations, where, until recently it seemed quite impossible.

Dr. Byrne’s moment of insight finally came in 2009 while traveling in Nicaragua, when he realized that nearly every person he encountered in the country had a mobile phone. And what’s more, even at the remote sugar plantation where he was staying, wireless Internet access was available. “Suddenly it dawned on me that geographic distance no longer needed to be an obstacle to providing high-quality medical care,” he says.

Dr. Byrne immediately set out to determine how his volunteer team could use technology to fill its biggest gap in patient care: speech therapy. He quickly found supporters in his Johns Hopkins and Greater Baltimore Medical Center (GBMC) colleagues, including Dr. Chad Glazer of Johns Hopkins’ Department of Otolaryngology-Head and Neck Surgery, who wrote the research protocol

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for the project. Based on his solution requirements, Dr. Glazer recommended using Cisco WebEx™ conferencing technology as a means to work remotely with the children.

"We needed a powerful communication tool with excellent-quality video and audio that could share visual references from a variety of media," says Dr. Glazer. "It was also important that we be able to connect people from multiple locations, and that the tool be easy to learn and use. Cisco WebEx® technology met all of these requirements."

With GBMC serving as sponsor and Cisco® WebEx providing the technology, training, and support, Drs. Byrne and Glazer and their team launched a pilot project to determine the feasibility of using online collaboration tools to facilitate remote diagnosis and speech therapy after surgical treatment. With his first WebEx session, Dr. Byrne knew that they were breaking new ground.

Patti Bailey is the speech therapist on the team who evaluates the children and develops a tailored treatment plan for each one. These plans include goals and techniques to improve each child's functional speech. Says Bailey, "In just eight minutes, we taught a little girl named Allison how to say the word *cat* correctly. It astounded me how seamless the whole thing was. First we showed her a PowerPoint slide with an image of a cat, along with the Spanish word for it. She pronounced it incorrectly several times in the beginning, but after watching and listening to me pronounce it correctly, she got it. Her family was there in Managua with her, and the whole room erupted in a little cheer."

"It was a tremendous experience," adds Dr. Byrne, "and my concerns about using the technology were instantly allayed."

Three months into the pilot project, the team had provided speech therapy to an initial group of six patients in Nicaragua and had identified 10 more children as future candidates. "We used donated Flip Video camcorders to videotape patients pronouncing specific words," says Dr. Byrne. "Those sessions, which came together with no prior planning, provided more-than-adequate audio and visual quality for Patti Bailey back in Baltimore to use in her initial evaluations."

> "My goal is to use our Nicaragua program as a model to demonstrate that it's possible for children anywhere in the world to receive the same level of multidisciplinary care that children in the United States are receiving."
>
> **— Patrick Byrne, M.D., director of the division of facial plastic and reconstructive surgery, Johns Hopkins University, School of Medicine**

Results

In just a little over a year, Dr. Byrne's project has transformed from vision to reality thanks to the use of WebEx technology, and he could not be happier with the outcome. "The clinical results have been tangible," says Dr. Byrne. "In just three months of using virtual training sessions, children in a tiny town in Nicaragua, who would have received zero follow-up speech therapy in the past, are speaking markedly better. Their mothers say they can even be understood at school now. This is huge. We've actually been able to cure children of their speech problems in a very short period of time. In the past, we wouldn't have even been able to address the speech problems, much less correct them."

A big part of that success can be attributed to Dr. Byrne and the GBMC medical staff's ability to work remotely with the children and train the local staff using WebEx as a collaboration tool. "It's

tremendously helpful to be able to use WebEx technology to train healthcare providers in Nicaragua," says Dr. Byrne. "In this respect, WebEx technology has been a force-multiplier. It's allowed us to train additional personnel with minimal time investment, because nobody has to travel, and now training can take place between our remote sessions with patients."

One benefit that Dr. Byrne had not anticipated is the strengthened bond that WebEx-led "house calls" have afforded between clinicians and patients. "Typically, when we're overseas on the ground doing surgery, we're extremely pressed for time, because we're trying to help as many kids as possible," says Dr. Byrne. "The WebEx sessions, in contrast, let us get to know patients and their families in a leisurely, more intimate way, despite being thousands of miles apart. I think patients and their families truly appreciate that we're making the effort to deliver our services to their doorsteps. And it's fascinating to me that technology has introduced an interpersonal element that has proved difficult to provide during our hectic in-country visits."

Needless to say, the Nicaraguan trips have been a rewarding experience for everyone. "We've gotten letters from the parents of these children, telling us how they've seen their once introverted child transform into a social butterfly as a result of these speech therapy sessions," says Dr. Glazer. "It's hearing stories like these that takes me back to the fundamentals of why I chose to pursue medicine and surgery in the first place."

Next Steps

Drs. Byrne and Glazer and their team share a big vision for the future. "Our goal is to use our Nicaragua program as a model to demonstrate that it's possible for all children in the world to receive the same level of multidisciplinary care that children in the United States are receiving."

The success of this pilot project led Dr. Byrne to establish the Face Forward Foundation, a nonprofit organization that seeks to provide free surgical treatment and speech therapy to children in developing countries to help eliminate cleft lip, cleft palate, and other facial deformities worldwide.

For More Information

- To find out more about Cisco WebEx solutions, go to http://www.cisco.com/web/products/webex/index.html.
- For more information about Cisco Healthcare Solutions, go to http://www.cisco.com/go/healthcare.
- For more information about the Face Forward Foundation, go to http://www.faceforwardfund.org/

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