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The Doctor Is In June 10, 2002

The house call may be a thing of the past, but with technology even the most out-of-the-way patient can receive quality medical care.
By Marianne Kolbasuk McGee

Yordano, now 12, was born in rural Panama with a deformed skull that caused him to have only one eye, mild retardation, and trouble swallowing. Nineteen months ago, he embarked on a journey through telemedicine that's transforming his features and might someday have just as dramatic an effect on how global medical care is delivered.

In November 2000, Yordano was examined via videoconferencing by doctors at St. Joseph's Children's Hospital in Paterson, N.J. Using measurements collected by digital CT scans as part of a videoconference session, the New Jersey doctors created a computer model of Yordano's head and used it to plan surgery to reshape the boy's skull with bone and titanium.

One year later, Yordano flew to the United States for the 10-hour operation that also created a second eye socket. This summer, he'll return to St. Joseph's for a second phase of surgery to reconstruct his jaw. Although St. Joseph's doctors will perform the surgery, doctors in Panama will again collaborate with them to bring Yordano through the preparation and recovery.

Since Yordano's first exam, doctors in Panama City have met every other month through videoconferences with specialists from hospitals in the United States to discuss cases and treatment of other severely ill Panamanian children. They've dealt with more than 200 children, and the collaboration is estimated to have indirectly helped about 2,500 kids with similar illnesses who are patients in other parts of the country.

The telemedicine project is the work of Medical Missions for Children, a Paterson, N.J., nonprofit organization launched in 1999 to link American doctors with those in Panama and now in other countries. The live videoconferences let doctors look at patients as well as exchange their medical records and CT scans electronically, and they often allow local doctors in consultation with U.S. specialists to treat children without costly flights abroad. "The children are the most vulnerable," says Dr. Esteban Lopez, medical director of the Hospital del Niño, Panama's largest children's hospital. "This technology gives help and hope for kids who can't go to the United States for treatment."

The help comes from doctors at three hospitals: St. Joseph's, Mount Sinai New York University Medical Center, and Johns Hopkins Hospital in Baltimore. But the technology that links them came about from the passion of Frank Brady, founder and chairman of Medical Missions for Children. Brady

is a retired executive who worked for General Electric in France. Traveling internationally, he and his wife, Peg, had seen how seriously ill or deformed children were often abandoned because they couldn't be helped. "I have a very good international Rolodex, and I put it to use," Brady says.

The numbers illustrate the need. The death rate for children in underdeveloped nations is 20% to 50%, compared with less than 4% in the United States, according to the World Health Organization. Of the 11 million children younger than 5 years old who die each year, more than eight of 10 live in medically underserved nations.

After Medical Missions' successful test with Panama, the organization is expanding its telemedicine program to eight more U.S. hospitals with the goal of helping 10,000 youngsters at clinics and hospitals in 20 countries by year's end. Nicaragua and Bolivia recently joined, and Medical Missions is participating in a program in which the U.S. Defense Department provides the communications infrastructure for telemedicine conferences among hospitals in the United States and those in two former Soviet countries, Uzbekistan and Georgia.

The Medical Missions program operates through donations of IT equipment and services to the U.S. mentor hospitals and foreign client hospitals and clinics. The donations come from a number of companies and organizations, including Polycom Inc., which is donating 40 ViewStation videoconference systems (worth about $30,000 each), telephone technical support to Medical Missions as needed at no charge, and in-country technical help. The World Bank, a development bank owned by 183 countries, donates use of its satellite network for member countries without commercial satellite services. In return, the World Bank gets access to recorded telemedicine sessions that it features in its Global Development Learning Network, which provides E-learning and videoconferencing to health ministries in 40 nations.

The U.S. doctors are all volunteers, though they say it's not all charity. They see and learn about illnesses that no longer show up in the United States, such as advanced stages of tuberculosis or infections that have festered long past where they would in this country.

"A mother in the bush of Panama will walk for days to take her child to the children's hospital, and by the time she gets there, the infection is much worse and the child much sicker," explains Dr. William Bithoney, physician-in-chief at St. Joseph's Children Hospital and Medical Missions' medical director.

Panamanian doctors get advice on conditions with which they're not familiar. "We've discussed some symptoms that are very subtle, and once the meetings are over, the doctors can take that information about that one specific case and use that knowledge to diagnose other patients," Bithoney says.

The Medical Missions' videoconferencing program also teaches technicians how to use new medical equipment and repair broken devices, a process that Brady says can otherwise take a poor hospital months. Videoconferencing can greatly reduce that time and also provides education on new procedures, new drugs, and instruction for nursing staffs. "In a developing nation, it might take three to eight years for new information to filter down to those who work in the hospitals," he says.

The World Bank sees E-learning and videoconferences as a growth opportunity. A videoconference costs about $3,000, while bringing a group together in person from lesser-developed countries can cost as much as $100,000 in travel and expenses, says David Gray, the bank's senior knowledge-management coordinator.

Still, the technology hasn't yet reached its full potential. Bithoney is awaiting the development of digital stethoscopes so he can hear a child's irregular heartbeat and haptic gloves that would let him feel a tender abdomen remotely. It sounds far-out, but gloves that allow that kind of remote, simulated touch could happen in the next few years, says Dean Chang, chief technology officer at Immersion Corp., a maker of haptic technology products for the medical, aerospace, and automotive industries (see "Haptic Tools Let Doctors Practice On Virtual Patients").

The use of telemedicine is growing. The U.S. military is deploying a variety of telemedicine applications to diagnose and treat soldiers in remote locations. And U.S. health-care providers are using Polycom's videoconferencing systems domestically to reach rural patients.

In Marquette, Mich., a city of 20,000 that's the largest in the state's Upper Peninsula, Marquette General Health System employs videoconferencing to increase access to specialty care for the peninsula's remote population. This includes offering patient consultations, providing education to health-care professionals, and facilitating tighter coordination among Marquette staffers located throughout the region. But this type of creativity doesn't cross state boundaries because doctors are licensed by state, says Barry Walker, VP of marketing at Polycom's video communications group.

Perhaps telemedicine's most powerful use is international, to dramatically speed up the process of spreading medical knowledge. Medical Missions has held sessions in auditoriums where hundreds of doctors could hear from a U.S. physician, then go out and use that information to treat more patients. Hospital del Niño's Lopez talks of one day using videoconferencing inside operating rooms to assist in surgery.

For doctors, it's a chance to change the world, or at least one small bit of it. "In the United States, most patients do well. They go back home and lead normal lives," Bithoney says. "But in Third World nations, they don't do nearly as well. We're in a position to help change that, and that's the most gratifying feeling in the world."

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