Medical "telemissionaries" link hospitals, doctors worldwide

Since 2000, a Stevens Special Lecturer in Chemical Biology, Thomas Cattabiani, has worked to help realize the vision of a successful New York surgeon, his longtime friend and onetime classmate in the Stevens pre-med program, UPTAM (Undergraduate Projects in Technology and Medicine). The vision enforces the establishment of clinics and hospitals worldwide that are served by Internet links to experts in the US — physicians who can, from great distances, help to train other doctors, and even advise on real-time surgical procedures, in regions where the latest in modern techniques are not commonly known.

Cattabiani has traveled specifically a number of times to Serbia, a nation recovering from years of internecine warfare as part of the former Yugoslavia. There he has helped provide telemedicine capabilities to local physicians, while his friend, Dr. S. Vincent Grasso, has imparted his expertise in laparoscopic — i.e., minimally invasive surgery.

"Operation Outreach" in Zrenjanin, Serbia, was inspired by the success of earlier expeditions to other regions of the world. It began with a request for support from a former graduate student of Cattabiani's, Véjik Popov, and the team of surgeons working at a charity hospital, the St. John Hospital for Special Surgical Services in Zrenjanin. During 2001-2002, Operation Outreach provided donations of badly needed medical and surgical supplies; surgical equipment and training in Minimally Invasive Surgery and Medical Informatics; installation and support of a computer LAN; Serbian language software to support a hospital database; and security protocols for Internet transfer of sensitive medical data.

Cattabiani and Grasso recently initiated a new phase in the life of the Serbian hospital, in which — instead of traveling to Serbia in person — they directed their colleagues in innovative procedures entirely from a remote real-time Internet facility located at Dartmouth University.

The event was the culmination of several years of hard-won gains in a Balkan nation achingly short on technology infrastructure and long on political uncertainty. But, not content with this success, Cattabiani and Grasso are looking to the next logical phase of Operation Outreach Zrenjanin: expansion of the hospital, and extension of the experiment to other locations.

This adventure in the healing applications of high-tech communications began with a commitment made by Grasso in the closing years of the 20th century.

Technology Integrations for Medical Applications (TIMA) is a privately held New Jersey corporation founded by Grasso in 1999, upon completion of his R&D efforts as a NASA Project Manager with the Yale University NASA Commercial Space Center for Medical Informatics and Technology Applications. The focus of Grasso's R&D consisted of exploring the feasibility of deploying a mobile healthcare information system platform capable of empowering health care providers to care for patients regardless of their geographical location.

The high point of these efforts resulted in the internationally recognized Everest Extreme Expeditions of 1998 and 1999, where physicians and scientists from Yale, NASA, the US Army, the MIT Media Lab, and AT&T Health Solutions experimented live from Mount Everest with the information system platform developed by Grasso and his team. This system at Everest was prohibitively expensive to deploy and functionally limited. Despite these shortcomings, these expeditions were exceedingly successful and illuminated a pathway to building the next-generation healthcare informatics platform.
"The telescugical operating room in Zrenjanin.

"The software development team at TIMA has spent the past six years designing, testing, and refining what we feel is the most advanced healthcare information system platform available," says Grasso. "We are now in the process of conducting the last series of trials within the New York Metropolitan Area at major hospitals, nursing homes, imaging centers, physician offices, and mobile initiatives such as visiting nurse and physician house call activities."

"TIMA has developed a globally deployable healthcare information system designed to meet the needs of both providers and patients across the entire range of healthcare delivery – clinically and technically," says Cattabiani. "It is the first system of its kind to fully integrate healthcare information flow with business logic, thereby providing a hyper-efficient and effective delivery platform. Central to its design was the overwhelming desire not only to empower providers with those tools and services essential for delivering quality care, but a focus to empower patients to have greater input into their healthcare experience."

Technically, TIMA software architecture has embraced Next Generation Internet designs and the ability to make full use of emerging Grid Computing capabilities.

"The mobile application of that platform, TIMA Mobile," says Cattabiani, "possesses all the capabilities of the static enterprise platform, delivered from a single laptop computer."

Grasso has been labeled the 'Telemedicine' for his pioneering work involving the introduction of Telemedicine into the Third World, says Cattabiani. – Patrick A. Berzinski

AYUDAMOS

Behind the TIMA experience is AYUDAMOS, a non-profit organization founded by Dr. Grasso as a result of his profound personal experiences during the 1991 Peruvian cholera epidemic.

The name AYUDAMOS derives from the Spanish, meaning "We Help."

AYUDAMOS has been responsible for the distribution of more than $1,250,000 worth of goods and services without direct funding of any kind. The recent introduction of Telemedicine, Medical Informatics, and their related technologies into the delivery package of this organization by way of the Operation Outreach project platform has been well received.

During the period of 1991-1997, observations were made on health care practices and outcomes in both Asia and South America. The extent and severity of the cholera epidemic of 1991 in Peru was clearly the result of a shortage of commonplace medical supplies, Grasso maintains. Thousands were affected, he says, as a result of the lack of doxycycline and balanced salt solutions.

A subsequent experience in Cambodia in 1996 demonstrated the suffering brought about by the widespread use of land mines. Observations made in Bolivia in 1997 indicated that, despite the absence of trauma, the medically disadvantaged were unable to receive the standard of care that was also found to be absent in Cambodia.

"AYUDAMOS has concluded that despite the origin of the pathology, there is needless and preventable suffering among the medically and economically disadvantaged," says Cattabiani. "This suffering grows from a lack of targeted medical supplies, trained personnel, and computer/telecommunications technologies."

Other recent projects pursued through AYUDAMOS have been set in regions such as Armenia, Guatemala, Haiti, Nepal, and Uganda.

For two friends who met as undergrads at Stevens, the road to global humanitarian action has meant the union of high technology and medicine. Cattabiani and Grasso show no signs of fatigue in their efforts, or of a slackening in their sense of mission. – PB