

# TELEMEDICINE: CHANGING THE WAY DOCTORS SEE PATIENTS

Being able to “take a look” from virtually anywhere brings a whole new dimension to healthcare

Telemedicine – the use of telecommunications and information technologies to care for patients in remote locations or by healthcare professionals offering analysis while working remotely – is picking up momentum.

“I’ve seen more growth in telemedicine in the past two years than in the past 18 years,” says Jonathan D. Linkous, chief executive officer, American Telemedicine Association (ATA).

Telemedicine may be as simple as two healthcare professionals discussing a case over the telephone. Or it may be as complex as using satellite technology and video conferencing equipment to conduct a real-time consultation between medical specialists in two different countries.

Regardless of the degree of sophistication, telemedicine can deliver more and better healthcare by making it easier for both patients and providers to take part. It can also make for better use of physicians’ time, offer specialty care to underserved rural and urban populations, and save money.

## Radiology Beginnings

Video-enabled telemedicine’s roots are in supporting radiology and other imaging-oriented clinical activities. Picture archiving and communication

systems (PACS) were developed to address issues including the lack of onsite radiologists, allowing radiologists at other locations and in other time zones to examine digital images.

The first generation of PACS was expensive – in some cases up to \$5 million. It also required expensive dedicated T1 lines, which at the time may have cost thousands of dollars per month.

Today, video conferencing applications and other technology aspects of telemedicine, and its close relative, telehealth, leverage the growing availability, affordability and power of image technologies and network connectivity.

Broadband Internet, including mobile broadband, is becoming increasingly available both within metropolitan and rural areas, with speeds able to handle high-definition (HD) quality video. Similarly, even mobile endpoints, like smartphones capable of sending and displaying HD video, are readily and affordably available.

## Economics, Politics and Technology

It’s no surprise that telemedicine was a much-talked-about topic at the February 2011 Healthcare Information and Management Systems Society (HIMSS) meeting held in Orlando, Fla.

“The tipping point was in 2008, when the healthcare industry looked at video conferencing and video collaboration as a way to be more cost-effective and productive,” says Dr. Deborah Jeffries, director of healthcare, Americas, at Polycom.

According to Dr. Jeffries, one reason for this change is the new system of billable codes aiding reimbursement of doctors at hospitals. “This year, the Centers for Medicare & Medicaid Services (CMS) announced 50-plus new International Classification of Diseases (ICD) codes to support telemedicine-based activity.”

The new ICD codes include telepsychiatry, diabetes, dialysis management and kidney diseases. Among other things, the new coding enables hospitals to bill Medicare for these services.

Additionally, notes Dr. Jeffries, the federal government now endorses and supports new approaches to medicine. “For the first time in a federal framework, we’re seeing both telemedicine and telehealth mentioned,” she says.

“*The American Recovery and Reinvestment Act of 2009* talked about the use of collaborative video to support healthcare, along with support for the rollout of broadband connectivity needed to support high-quality video,”

## TYPES OF TELEMEDICINE

Telemedicine is typically broken down into three different types:

### STORE-AND-FORWARD:

Patients undergo X-rays or other medical tests at one location, and the results are forwarded to medical professionals elsewhere for analysis. This is most commonly used for radiology, dermatology and pathology.

### REMOTE MONITORING:

Patients undergoing treatment for chronic conditions can have their health monitored via devices that use cellular networks and the Internet to communicate with medical professionals. Though still relatively new, such devices promise to reduce hospital stays and office visits for patients, and to deliver information directly to doctors’ mobile devices.

### INTERACTIVE TELEMEDICINE:

This primarily involves teleconferencing between healthcare providers and patients but may also include consultations between medical professionals. For example, a general practitioner might consult with a specialist while a patient is present, reducing the need for multiple visits to different offices.

Jeffries adds. “And it included funding for telehealth and telemedicine, including distance learning.”

## Primary Uses for Video Conferencing

The use of video conferencing in medicine began as a way to connect patients living in remote areas, including military personnel, home-

bound patients and institutionalized or incarcerated patients, who could not be easily transported.

“Today, medical activities – clinical, educational and administrative – can and are applying interactive video,” says Joe D’Iorio, healthcare business development manager with TANDBERG, now part of Cisco, and a fellow of the ATA.

For example, according to Polycom, during 2009, the Ontario Telemedicine Network (OTN) provided over 100,000 clinical visits and more than 20,000 educational and administrative video meetings, with over 360,000 participants.

On the clinical side, according to the ATA, “Radiology continues to make the greatest use of telemedicine.” Other major specialty areas include dermatology, ophthalmology, mental health, cardiology and pathology. According to reports and studies, “... almost 50 different medical subspecialties have successfully used telemedicine.”

“HD video conferencing enables virtually every specialty to examine patients using telemedicine with confidence,” says Simon Dudley, director of GEM and national partners for LifeSize Communications, a division of Logitech. “We’ve done very successful pilot programs putting high-definition video communication into the homes of people with bipolar conditions.

“A well-trained psychiatric nurse can tell whether or not the patient has taken their medication, by video, which you can’t do just with telemetry,” he says. “From oncology and neonatal care to telepsychiatry and speech therapy, the applications for high-definition video telemedicine are boundless.”

## Going to School

Educational uses for telemedicine include training and certification for medical professionals, as well as education for patients. “Video can be used to provide continuing education for doctors and nurses, and patients can attend sessions at community health

centers or even watch on their own computers to support patient-centered care and wellness,” Dr. Jeffries says.

“The biggest single problem most rural hospitals have is retaining staff, because they won’t get the ongoing training,” says Dudley. “With video communication, they can keep up with their study and technique.”

Video conferencing is also helping in the administrative aspects of healthcare, D’Iorio notes. “Medical professionals and administrators may need to deal with patients who are not fluent in English, or who are hearing-impaired. Video conferencing makes it easier to bring in translators or other resources in a timely fashion.”

“Medical institutions have to move to electronic health records by 2014, or face penalties,” Dr. Jeffries says. Video conferencing lets IT developers observe and train end users of their e-health software. In addition, collaborative video can be used for marketing, sales and support, along with project management including patient caregiving.

## Deploying Teleconferencing

Video conferencing for telemedicine requires client-side “endpoints.” This may be general-purpose auditorium-scale telepresence, or dedicated conference, boardroom or office devices, including cameras, displays, microphones and speakers.

The technology also needs application and management software, typically running on a dedicated appliance that also includes the “codec” circuitry.

For many telemedicine applications, standard video conferencing products and suites from TANDBERG, LifeSize, Polycom, Sony and other vendors can be used.

“There are many aspects of medicine where video fits,” says D’Iorio. “We have barely scratched the surface of what video-enabled telemedicine can be and can do.” ■