

# The Virtual Doctor Is In

VCU Health System's telemedicine program delivers high-quality medical services to Virginia's prison inmates at a low cost to taxpayers.

By Masha Zager ■ *Broadband Communities*

“Telemedicine is the coolest technology in use since the introduction of broadband,” says Shannon Reber, director of physician and patient services for the Virginia Commonwealth University (VCU) Health System. “It takes health care to places never before reached by physicians, and it broadens patients’ access to the state-of-the-art technologies and researchers at major academic medical centers.”

Adoption of telemedicine has been slow, but with health care reform, it is now surging. Health care providers recognize it as an economical tool to remove distance barriers in health care, connect health professionals around the world and take health care to the back roads of rural communities, reaching those who need it most.

VCU Health System started its telemedicine program in 1994 and has now hosted more than 25,000 patient encounters throughout Virginia and supported surgical interventions in isolated and war-torn locations in the Caribbean and the Middle East. The program started under a NASA grant, and in the same year, it became part of a pilot program launched by the Virginia Department of Corrections to improve its management of infectious diseases and chronic conditions. Inmates receive caring and compassionate specialty health care without leaving their correctional facilities.

Through alliances with nine community hospitals across Virginia, VCU also serves residents of rural areas. For example, it provides physician-to-physician consults to intensive care unit doctors in these smaller hospitals about unusual patient cases and end-of-life

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care. VCU's intensive-care doctors also consult directly with patients about pulmonary and pain-management issues through wireless terminals that are rolled to patients' bedsides. VCU psychiatrists assess patients in rural hospitals or at long-term care centers.

At any given time, a VCU Health System geneticist may be consulting with a cancer patient while cardiologists meet with congestive heart failure patients, rheumatologists care for patients with systemic diseases and infectious-disease providers manage patients who have chronic diseases and monitor their medications. Oral surgeons, orthopedists and thoracic surgeons all provide postoperative consults via telemedicine.

## TECHNOLOGY

Telemedicine makes use of videoconferencing over broadband networks. With videoconferencing equipment at two locations, a physician at one location can see and converse with patients and health care professionals at the second location. Videoconferencing technology has decreased in price and complexity over the past five years, and many programs now use desktop videoconferencing systems.

Because VCU uses an open, standards-based platform, Reber says,

the same videoconferencing equipment can be repurposed for administrative meetings, grand rounds and continuing medical education or training. This allows isolated or rural health practitioners to take part in professional meetings and educational opportunities they might not otherwise be able to attend – and, because these practitioners are now less isolated and have more professional development opportunities, they are more likely to stay at the rural hospitals and clinics where they are badly needed.

Medical devices can also be connected to telemedicine systems. Among the many peripherals made for use in telemedicine are ear-nose-throat scopes, derma scopes, sinus scopes, laryngoscopes, Littmann (cardiology) stethoscopes, digital stethoscopes, ophthalmoscopes, general examination cameras, dental cameras and electrocardiograms.

According to Reber, an examination with a telemedicine-connected device is sometimes better than an in-person examination – for example, physicians can hear heart sounds better through telemedicine connections. A physician can also download an audio file and replay it several times to identify any irregularity with greater precision.

## About the Author

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Photo credit: Jennifer Hasny, VCU

Dr. Gonzalo Bearman of VCU demonstrates a telemedicine consult with a “patient” from the Health System staff.

**TELEMEDICINE FOR THE PRISON POPULATION**

VCU’s experience as the telemedicine provider to 30 facilities managed by the Virginia Department of Corrections demonstrates many of the benefits of this technology. Transporting a prisoner outside a state prison to a physician’s office, which requires the services of two security guards, is expensive and time-consuming. Reber estimates that transportation for a single visit can cost anywhere from \$300 to \$1,000, depending on whether an overnight stay is required at a prison closer to the medical facility.

A telemedicine consultation, which allows an inmate to remain physically in prison, avoids all these transportation expenses as well as expenses to the health care provider, such as space, personnel and clinical supply costs, that are associated with on-site visits. Over 18 years, this telemedicine program has yielded huge savings for Virginia taxpayers.

More important, the quality of care has improved. Before the program began, inmates did not always get to their appointments on a timely basis. Now they have timely, consistent access to the proper level of care – for example, they receive quarterly medical monitoring for chronic conditions such as HIV, hypertension and diabetes. Their access to many types of specialty care has also

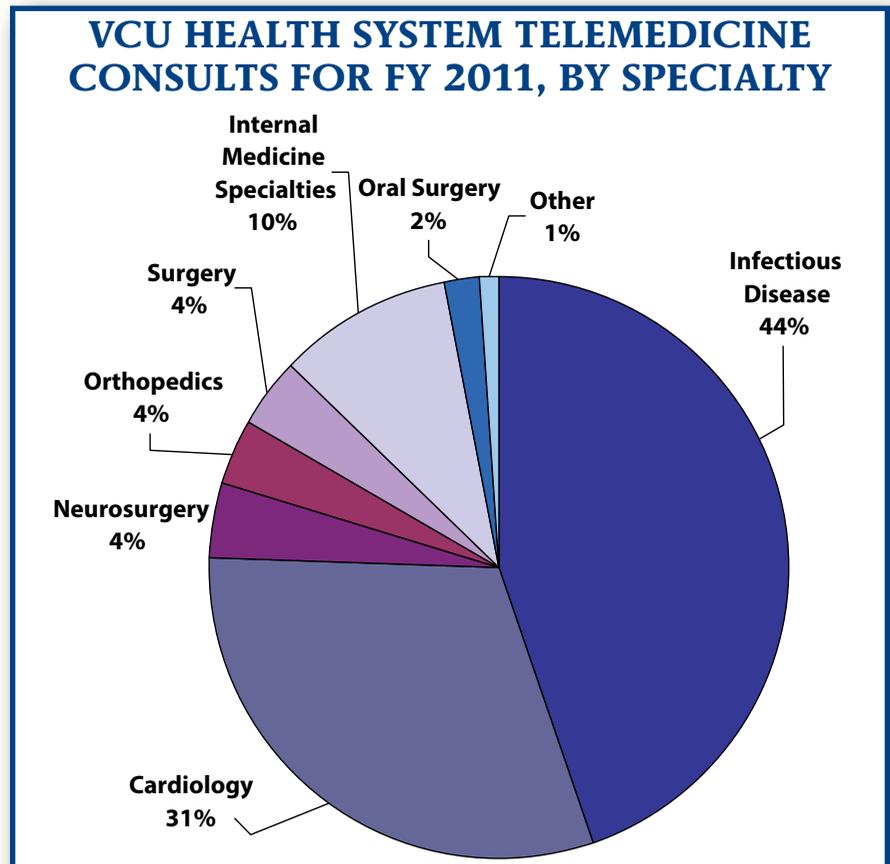
increased. The improved quality of care is reflected in measures such as the reduced number of hospital readmissions.

Patients appreciate the reduced travel and wait times, they are comfortable with the telemedicine setup, and their

rapport with their doctors is just as good as in on-site visits, Reber says. They can ask questions and even see their X-rays and other images on the screen. Doctors, too, find telemedicine convenient because it gives them a greater choice of locations. They can hold telemedicine consults at the hospital, in their own offices or even at home if necessary.

At the prisons, corrections officials note a reduction in security risk – even with armed escorts, taking a prisoner to a doctor’s office is not risk-free – and they say there is less incentive for a prisoner to feign illness if a trip to the doctor’s office doesn’t involve leaving the site. Finally, the medical providers posted at correctional facilities who treat prisoners’ routine problems appreciate having access to support from world-class specialists.

Building on the success of the Department of Corrections’ telemedicine program, VCU began a similar program in 2008 for the Virginia Center for Behavioral Rehabilitation, a secure treatment facility for sex offenders. VCU is also in discussions with the Virginia Association of Regional Jails about



## Home health monitoring is a potential new direction for the VCU telemedicine program.

providing medical services for its member organizations.

### WHAT THE FUTURE HOLDS

As the technology matures, as equipment costs drop and as health care practitioners gain expertise, new opportunities for telemedicine arise. According to Reber, VCU expects to add more medical specialties to the range of telemedicine services it offers – some experts estimate that as many as 60 medical specialties and subspecialties are suited to telemedicine, compared with the 16 that VCU currently offers. Another initiative is to integrate electronic medical records into the system so practitioners can easily view and update patients' records as part of any telemedicine session.

In the last few years, pharmaceutical companies have begun to integrate telemedicine into clinical studies – that is, they allow doctors to collect data from remotely located patients – so VCU physicians may also have an enhanced ability to participate in clinical studies.

The most important new direction for telemedicine, however, will likely be home telehealth. Now that low-cost videoconferencing is available on personal computers, tablet computers, TVs and mobile phones, patients can easily communicate with health care practitioners from their own homes.

Sensors placed in homes can also send alerts to health care practitioners when patients depart from their normal patterns of daily living – for example,

Internet-connected medication boxes can send alerts if pills are not taken.

Remote monitoring greatly reduces the cost of treating patients who have chronic diseases such as congestive heart failure, diabetes and chronic obstructive pulmonary disease. A 2009 study by the U.S. Department of Veterans Affairs of its home telehealth program – the largest such program in the world – found a 25 percent reduction in the average number of days hospitalized and a 19 percent reduction in hospitalizations for patients using home telehealth. The data also showed that for some patients, the cost of telehealth services in their homes averaged \$1,600 a year – much lower than in-home clinician care costs.

The one sure thing is that telemedicine will continue to expand – and that, in 10 years' time, there will be new uses for it that no one has even thought of today. And that's why Reber calls it the coolest technology since the introduction of broadband. ♦

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