



Center for Information Technology Leadership

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**CITL PUBLISHES LATEST RESEARCH:**

**PROVIDER-TO-PROVIDER TELEHEALTH TECHNOLOGIES  
WILL SAVE \$4.28 BILLION ANNUALLY**

***Robust nationwide telehealth systems remove barriers to care and  
improve quality in four healthcare settings***

***“Patients receive care when and where it is needed”***

Boston (November 12, 2007) – The Center for Information Technology Leadership (CITL), a nonprofit research center based at Partners HealthCare System in Boston, has announced the publication of its research findings on the benefits and costs of provider-to-provider telehealth technologies. Telehealth, the use of communications technology to transmit medical information from one location to another, allows patients to receive care when and where it is needed, removing geography as a barrier to care. Funded by grants from the AT&T Center for Telehealth Research and Policy at the University of Texas Medical Branch at Galveston, the O'Donnell Foundation, AT&T Foundation, and the Harris and Eliza Kempner Fund, the landmark study's findings conclude that robust telehealth systems – nationally implemented with a five-year roll-out in emergency departments, correctional institutions, nursing homes, and physician offices – can save \$4.28 billion annually.

CITL examined the overall value of three telehealth technology systems — store-and-forward, real-time video, and a hybrid model that combines the first two — in four different healthcare settings: emergency departments, correctional institutions, nursing homes, and physician offices. The report illustrates how these technologies can improve access-to-care issues for medically underserved geographic areas and under-represented medical specialties, and how the benefits far outweigh the costs

to implement these systems. CITL projects the robust hybrid model to be the most cost-effective system of the three. By reducing face-to-face visits and redundant and unnecessary tests alone, the hybrid system can save \$3.61 billion annually. With a five-year roll-out nationwide, implementation of hybrid telehealth technologies reaches a break-even point in year five, with a total annual net savings in the steady-state of **\$4.28 billion**.

The full report, *The Value of Provider-to-Provider Telehealth Technologies*, is available for download on CITL's website ([www.citl.org](http://www.citl.org)), and a soft-bound copy is available from the Healthcare Information and Management Systems Society ([www.himss.org](http://www.himss.org)). Key findings were presented at the national conference on the business of telemedicine in Galveston, Texas, which is sponsored by the AT&T Center for Telehealth Research and Policy at the University of Texas Medical Branch at Galveston (UTMB) and the Electronic Health Network (EHN) of the UTMB.

“Our research findings have significant implications regarding how we can improve the delivery of healthcare in the future,” says Caitlin M. Cusack, MD, MPH, CITL senior analyst, and the report's lead author. “The current system, where primary care physicians manage as much of a patient's care as possible, with specialists seen as a last resort, does not seem to be the most effective approach to care. A collaborative model, with a primary care and specialist team involved early with a patient's care, has the potential to lead to significant cost savings.”

### **Focusing on Three Telehealth Systems**

In its report, CITL examined the cost-benefit of telehealth technologies with providers involved in varying levels of patient encounters:

- ***Store-and-forward*** technologies represent the collection and storage of clinical data or images that are forwarded for interpretation at a time that occurs later than a face-to-face clinical encounter. For example: A primary care physician takes digital images of a patient's rash and forwards them to a dermatologist. The dermatologist reviews the images and advises the physician on the care of the rash. This review may take place immediately, or hours or days later.
- ***Real-time video*** is the use of live video to conduct an interactive clinical encounter in real time. For example: A prisoner in a correctional facility with complex heart disease has regularly scheduled “visits” with a cardiologist located hundreds of miles away. The cardiologist “sees” the patient via the use of live video. The video allows the patient to “see” the physician as well. The cardiologist is able to ask questions of the patient in real time to help guide the medical assessment.
- ***Hybrid technology*** integrates both store-and-forward and real-time video technologies. As in the store-and-forward case, a primary care physician takes digital photos of a patient's rash. These

photos are forwarded to a dermatologist for review. A “visit” is scheduled with the dermatologist located hundreds of miles away. A live video is used during this “visit” so the dermatologist may speak with the patient, gather a history of the condition, and examine the rash not only on the digital photos, but via the video camera as well. This combined technology represents a robust system, which results in increased benefits that neither store-and-forward nor real-time video can realize alone.

*In its report, CITL found that the benefits far outweigh the costs of implementing these telehealth systems, and it recommends the hybrid system as the best investment for telehealth programs located in emergency departments, correctional institutions, nursing homes, and physician offices.*

### **Summarizing Benefits of Hybrid Model**

- There are 2.2 million patients transported between emergency departments each year at a cost of \$1.39 billion. Telehealth technologies would reduce these transports by 850,000, saving \$537 million a year.
- There are 94,180 transports made annually from correctional facilities to emergency departments at a cost of \$158 million in transportation and visit costs. The use of telehealth technologies could avoid 40,000 of these transports, saving \$60.3 million a year.
- There are 691,000 physician office visits made by prisoners each year, costing \$302 million. The use of telehealth technologies could avoid 543,000 inmate transports, saving \$210 million a year.
- There are 2.7 million transports made annually from nursing facilities to emergency departments at a cost of \$3.62 billion in transportation and visit costs. The use of telehealth technologies could avoid 387,000 of these transports, saving \$327 million a year.
- There are 10.1 million physician office visits made annually from nursing home facilities at a cost of \$1.29 billion. Telehealth technologies could avoid 6.87 million transports, saving \$479 million a year.

The Center for Connected Health, a division of Partners HealthCare and a leader in the use of technology to deliver quality care outside of the hospital or doctor’s office, provided research assistance for the report.

“Telehealth technology has enormous opportunity to increase quality while lowering the overall cost of care,” says Joseph C. Kvedar, MD, Director, Center for Connected Health and member of CITL’s Advisory Board. “As the fees for face-to-face provider services continue to increase, the cost-benefit picture of telehealth improves — while bringing care to patients where they are and when they need it.”

## **Improving Access to Care**

“On the national level, the value of provider-to-provider telehealth technologies has broad social implications for improving access to primary and specialty medical care for all patients, but particularly for those who live in geographically underserved locations,” says Blackford Middleton, MD, Chairman of CITL. “With telehealth tools, providers can responsibly treat patients’ health conditions before they become critical and manage chronic conditions before they lead to serious complications.”

According to a 2004 U.S. Department of Health and Human Services report about healthcare disparities, while 20% of Americans live in rural areas, only 9% of primary care physicians and 10% of specialists practice there, leaving thousands of people without adequate physician-to-patient ratios. Access to specialty care can also be an issue in urban settings, as evidenced by long wait times for various medical needs.

In addition to increased access to care, the report indicates other benefits of provider-to-provider telehealth technologies, including improved quality of care, reduced admissions and referrals from emergency departments, reduced wait times for outpatient consults, increased provider productivity and provider education, and avoided transports from correctional facilities. There is also evidence that the use of telehealth technologies in ambulances can speed the time to diagnosis and to initiating potentially lifesaving interventions.

## **Weighing Barriers to Implementation**

“Along with the value of provider-to-provider telehealth technologies are barriers, the most significant of which are associated costs borne by provider organizations, such as emergency departments and nursing homes, while the payers enjoy the accrued savings,” says CITL’s Eric Pan, MD, MSc., senior scientist and contributing author. “This finding has critical implications to the entire healthcare system and is a reflection of the third-party payer system. It should provide an impetus for payers to support the implementation of telehealth systems so they, too, can reap the benefits.”

CITL identified correctional facilities, which have closed healthcare systems, as protected from the cost-benefit barrier experienced by emergency departments, nursing homes, and physician offices. Correctional facilities bear the costs and accrue the benefits of a robust telehealth technology system, and CITL’s analysis suggests that they should supplement their healthcare programs with telehealth technology.

“Telehealth and telemedicine technologies are being adopted at a slow pace as the result of a variety of barriers, many of which the ATA is working hard to overcome,” says Jonathan Linkous, President of the American Telemedicine Association (ATA) and member of CITL’s Advisory Board. “Gaining provider confidence around the clinical and financial value of these technologies, along with

concerns about medical liability and the current reimbursement model that favors face-to-face visits, are challenges ATA hopes to address.”

CITL also studied the cross-state telehealth technology barrier created by the national model of medical licensure, which requires physicians to be licensed in any state where they practice medicine. This model has proven difficult to overcome, limiting the pool of clinicians who are willing to participate in telehealth. The report recommends that a new medical licensure model be developed to support cross-state licensure of physicians.

CITL’s research did not consider commonly known telehealth technologies used on inpatient floors, home monitoring, interpretive services, or continuing medical education, and it recognizes their significant value as well. Therefore, the report’s findings may be considered conservative within the broader review of the costs and benefits of all telehealth technology systems.

### **Looking Ahead**

“In the final assessment, the integration of telehealth technologies into clinical practice could produce quantum leaps in the efficiency of the national healthcare system,” says Alexander Vo, PhD, Executive Director, AT&T Center for Telehealth Research and Policy at the University of Texas Medical Branch at Galveston. “Healthcare stakeholders, providers, and payers should welcome the dramatic reduction in costs associated with unnecessary medical tests, improved disease prevention, and improved disease management, which will result from a large, nationally based telehealth deployment.”

CITL expects to publish its next report, *The Value of Personal Health Records*, in the Fall, 2008. CITL has previously published reports on the value of information technology-enabled diabetes management (ITDM), the value of standardized national healthcare information exchange and interoperability (HIEI), and the value of computerized provider order entry (CPOE) in ambulatory care.

### **About the Center for Information Technology Leadership (CITL)**

Chartered in 2002 by Boston-based, nonprofit Partners HealthCare System, CITL assesses the value that information technology (IT) brings to healthcare. Using a rigorous approach, CITL performs research, disseminates findings, and provides additional services designed to help healthcare providers and other stakeholders improve quality and reduce cost using IT. For more information, visit [www.citl.org](http://www.citl.org).

### **About AT&T’s Center for Telehealth Research and Policy at the University of Texas Medical Branch at Galveston and the Electronic Health Network at the University of Texas Medical Branch (UTMB)**

The AT&T Center for Telehealth Research and Policy at UTMB at Galveston, the only center devoted to the scientific study of telemedicine and the development of telehealth policy in the United States, was

founded in 2002 with a grant from the SBC Foundation (now the AT&T Foundation) ([www.attcenter.utmb.edu](http://www.attcenter.utmb.edu)). The Electronic Health Network (EHN) at UTMB was created in 2004 to centralize all of UTMB's skills, competencies, and technical resources into one entity. The EHN is charged with operating, analyzing, and making available to others the systems and programs that prove effective in the area of telehealth and telemedicine ([www.telemedicine.utmb.edu](http://www.telemedicine.utmb.edu)).

#### **About the Health Information Management Systems Society (HIMSS)**

HIMSS provides leadership in healthcare for the advancement and management of information technology and management systems ([www.himss.org](http://www.himss.org)).

#### **About the Center for Connected Health**

A division of Partners HealthCare and a leader in the use of technology to deliver quality care outside of the hospital or doctor's office. The organization is developing initiatives in telehealth, remote care, and disease and lifestyle management programs to better manage and monitor patient health, offer expert second opinions and provide convenient, personalized medical care. Using consumer technologies and online resources such as the Internet, cell phones, digital cameras, and sensors, the Center for Connected Health is helping to connect leading medical specialists with patients — in their homes, offices, and around the world ([www.connected-health.org](http://www.connected-health.org)).

#### **About the American Telehealth Association (ATA)**

The ATA is the leading international resource and advocate for telemedicine, promoting access to medical care for consumers and providers via telecommunications technology ([www.americantelemed.org](http://www.americantelemed.org)).

#### **About Partners HealthCare**

Partners HealthCare, located in Boston, is an integrated health system founded by Brigham and Women's Hospital and Massachusetts General Hospital. In addition to its two academic medical centers, the Partners HealthCare System also includes community and specialty hospitals, community health centers, a physician network, home health and long-term care services, and other health-related entities. Partners HealthCare is one of the nation's leading biomedical research organizations and a principal teaching affiliate of Harvard Medical School. Partners HealthCare is a non-profit organization.

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