

THE TELEHEALTH PROMISE
Better Health Care and Cost Savings for the 21st Century

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Executive Summary

The growing cost of medical care and gaps in coverage are creating enormous pressure on both providers and public policymakers to identify new strategies for delivering cost-effective and quality care to all citizens. Many health care experts believe that part of the answer lies with telehealth applications made possible by the increasing power of information technology and the spread of broadband connectivity. Indeed, we believe widespread implementation of telehealth could save the U.S. health care system \$4.28 billion just from reducing transfers of patients from one location, such as a nursing home, for medical exams at hospitals, physicians' offices, or other caregiver locations. When appropriate diagnosis and care can be provided remotely via telemedicine, a patient transfer creates unnecessary cost as well as hardship for the patient.

By taking advantage of these new telehealth tools, a number of institutions including the University of Texas Medical Branch (UTMB) are increasingly delivering health care to patients at remote locations to provide quality care and also cut costs by reducing the need for in-person visits.

Preliminary data from small telehealth initiatives have yielded promising results. The ability to transmit medical images and data in real time and to simultaneously link care providers for direct consultation means care can be provided with little regard for geography.

With telemedicine, physicians at remote hospitals can link to distant specialists for real-time guidance in emergency situations to save lives without the delay of long ambulance rides while a patient deteriorates. Difficult transfers of patients to doctors' offices from nursing homes, between emergency rooms, or from institutions such as prisons to medical care providers can be substantially reduced by resorting to online communications. Expectant mothers living long distances from medical care providers can receive quality prenatal care through online consultations and remote monitoring. Individuals with chronic illnesses or those recently released from hospital care can take advantage of remote monitoring programs to go about their daily routine with confidence that potentially worrisome changes in vital signs will be instantly communicated to care givers.

UTMB, for example, has built 8 virtual physician studios, along with numerous telemedicine stations that enable it to conduct over 200 remote medical exams each day. Among those served by UTMB are inmates in Texas state prisons, who receive quality health care without the expense and security risks of taking them off site to visit a doctor's office for routine health issues. In our experience, at least one transfer per year is eliminated for 95 % of the 130,000 Texas correctional system's prisoners each year. Since 1994, UTMB has provided inmates with over 250,000 consultations at a net savings to taxpayers of about \$780 million. UTMB wanted to test its be-

lief that its successes had broader implications for national health care. Working with the Center for Information Technology Leadership (CITL), it aimed to find out the extent of cost savings possible from a national embrace of telemedicine. The resulting study, summarized in the pages that follow, concluded that “the benefits of national implementation of telehealth technologies far outweigh their costs.”

CITL’s projections focused on a subset of telehealth, primarily those in which there are healthcare providers at both ends of the teleconsult, and, therefore, represent only a portion of telehealth’s potential benefits. The projections, which show net annual savings of \$4.28 billion once infrastructure investment is recouped, do not consider remote monitoring, interpretative services such as teleradiology, or other telehealth approaches that save money by identifying and treating emerging medical issues sooner.

Cost Savings

The savings estimates assume a combination of “store-and-forward” technologies that involve transmission and interpretation of medical data with “real-time video” consultations involving a patient and one or more physicians. Of particular value is the ability to link a patient and his or her primary care physician to a remote specialist (or specialists) by video – eliminating the need for a separate, follow up consultation with the patient. In addition to reducing the number of in-person visits, this three-way consultation will substantially reduce redundant or overlap-

ping tests that are ordered separately by multiple providers – the most significant source of cost savings.

Instituting telehealth on a national basis will require substantial infrastructure investment and benefits would not exceed costs until the fourth year of implementation. By year six, the cost-benefit ratio would reach steady state and achieve a peak level of net savings that continue year after year. The steady state savings follow:

- A 38% reduction in transfer from one hospital emergency department to the emergency room at a second hospital for a cost savings of \$537 million annually.
- A 79% cut in transfers from correctional facilities to physicians’ offices and a 42% reduction in transfers to emergency rooms would generate a combined cost savings of \$270.3 million a year.
- A 14% cut in transfers from nursing homes to emergency rooms for a cost savings of \$327 million a year.
- A 68% cut in transfers from nursing homes to physicians’ offices for a cost savings of \$479 million.
- A \$3.61 billion savings as a result of physician-to-physician consults, primarily from a 45% reduction in unnecessary or redundant tests.

- After accounting for additional costs, the reduction in transfers, office visits and tests produces a net annual savings of \$4.28 billion between years six and ten and somewhat smaller savings in years four and five of implementation.

Challenges and Policy Recommendations

Full integration of telehealth into the U.S. health care system will depend on our ability to address certain key barriers, especially insurance reimbursement models that favor face-to-face medical consultations; concerns about liability in cases involving telehealth interventions; and licensure rules that prevent health care providers from telehealth consultations across state lines.

The current economics of telehealth may reduce the incentive for its adoption by caregivers. While society and individual patients benefit from more cost-efficient care, providers of care worry that their revenues may decline in a telehealth environment. Providers must bear the cost of required infrastructure investments, but current insurance reimbursement policies tend to favor traditional medicine, including face-to-face consultations, and may not adequately compensate them for telehealth services.

Maximizing telehealth's potential also requires intelligent broadband networks to provide secure transmission over the public Internet in a way that minimizes the latency risks that

can ruin images or disrupt real-time communications.

Resolving these issues will require thoughtful adjustments in public policy, including:

- Develop a standardization of Medicare and Medicaid reimbursements across states.
- Identify and develop policies that encourage reimbursement for telehealth services from private insurers and company health plans.
- Review of liability laws to determine whether adjustments are needed to clarify their application to telehealth services.
- Review of the medical licensing system to determine whether adjustments are necessary to eliminate barriers that will slow the adoption of telehealth.
- Explore state and local initiatives that would accelerate the implementation of telehealth through cost sharing and pooling resources.
- Promote enhancement of existing information technology that will facilitate and support telehealth and complementary services.
- Encourage broadband adoption and the deployment of smart networks that provide fast, reliable and secure transmissions for telehealth services.

Telehealth promises improved outcomes and enhanced life quality for patients; it can expand access to quality health care despite geo-

graphic barriers; facilitate easier and more regular contact between patients and care providers by reducing the need for in-person consultation; and it can reduce the national cost of health care by reducing unnecessary tests, in person visits and patient transfers.

UTMB believes that the integration of telehealth into the American health care system can offer unparalleled access to high quality care to every citizen no matter where they live. The combination of sophisticated video conferencing, electronic

medical records, proven disease management protocols, and telemonitoring can revolutionize medical care.

UTMB has seen it work. Now, the rest of America should experience it as well.

In the pages that follow, UTMB examines the savings projections outlined by CITL, discusses some of the barriers to telehealth and also details some policy recommendations to accelerate its widespread adoption.

The Telehealth Promise

The continuing growth of health care expenditures, which now comprise more than 14% of the annual gross domestic product in the United States, and no evident way to stem the rising tide has helped push health care to the top of the country's policy agenda. Per capita spending is more than double that of any other nation in the world,¹ yet more than 47 million Americans remain uninsured, and it is unclear who will pay for their care.²

A growing number of medical and technology authorities believe that health care information technology (HIT) can play an important role in addressing these challenges.³ Microsoft Chairman Bill Gates, for example, has argued that "many of the same concepts and approaches that have transformed the world of business ... can be adapted to the particular requirements of health care."⁴

Gates spoke primarily of an Internet-based health care record system that would digitize individual's personal health data and make it readily accessible to any health practitioner selected by the patient. But IT technology also has opened the door to changes in the way care is administered. Just as the Internet makes it possible to store and share health information, it also has created a new medical sub-set called telehealth in which caregivers can consult with patients and other practitioners, diagnose, test, monitor, prescribe and provide treatment instructions – all in real time – even though they are separated from the patient by hundreds or even thousands of miles.

Telehealth could play a key role in controlling costs, improving access, and simplifying communication and paperwork, while also providing high quality care. Dr. David Brailer, the former national coordinator for health care information technology, has identified telehealth as a key part of the national strategy for adoption of HIT.⁵

National interest in telehealth as a potential solution remains high, as indicated by nearly annual activity in Congress around the issue. In 2001, the Agency for Healthcare Research and Quality (AHRQ) commissioned and published a report on the state of telehealth use for the care of the Medicare population and a companion report on pediatric and obstetrical telehealth solutions.⁶ The work was done through AHRQ's Evidence-based Practice Centers, and the intent of the report was to provide guidance for policy-makers focused on three major areas of telehealth, defined by its authors W.R. Hersh and colleagues as: 1) store-and-forward telehealth, 2) self-monitoring/testing, and 3) clinician-interactive telehealth. The summary findings showed that, while the number of telehealth programs in all three categories was growing, evidence of their efficacy and value were insufficient to make definitive policy statements.

Over the past 15 years, a variety of medical centers and clinics have initiated a variety of telehealth programs. The University of Texas Medical Branch's telemedicine program, for example, now performs

more than 200 remote patient examinations each day. Since an initial contract with the State of Texas in 1994, UTMB has conducted more than 250,000 telemedicine consultations with the state's prison inmates at a net savings to taxpayers of about \$780 million (internal estimates).

Importantly, UTMB surveys of patients whose primary care is provided by telemedicine shows a high degree of satisfaction. UTMB surveyed 880 patients who had formerly relied on emergency room visits to address medical issues, but now visited a telehealth clinic operated by UTMB. Among patients who had participated in telehealth for more than two years, 90% rated online service on par with in-person care and 92.5% said they would recommend it to others.

A paper distributed by the Internet Innovation Alliance in October 2007, catalogued a variety of localized successes. It noted a Veterans Administration study that showed a 40% cut in emergency room visits and a 63% reduction in hospitalizations in a small remote monitoring program. Other initiatives reported by the paper include: The REACH program of the Medical College of Georgia, which connects rural hospitals to stroke specialists during the critical three hours after a stroke; The University of Arkansas ANGELS program which links physicians at more than 40 sites with pregnant women in rural communities to enhance prenatal care; and the Missouri Telehealth Network, which had conducted more than 11,000 interactive video consultations and some 57,500 teleradiology exams by 2007.⁷

While encouraging, these individual success stories do not provide a quantifiable assessment of the potential national impact from wide adoption of telehealth and its incorporation into the health care system. To obtain such a measure, UTMB engaged with the Center for Information Technology Leadership (CITL) to model the value of telehealth technologies in provider-to-provider settings over a ten-year period.

Through a sponsored project by the O'Donnell Foundation, the AT&T Foundation, the Harris and Eliza Kempner Fund, and the AT&T Center for Telehealth Research and Policy at the University of Texas Medical Branch (UTMB), CITL searched the published evidence, interviewed experts, and developed a taxonomy for both telehealth encounters and technologies. Using this taxonomy as a framework, evidence was synthesized to develop a model using the best-available data to project the costs and benefits of telehealth technologies over ten years.

Drawing from the CITL findings in the report, *The Value of Provider-to-Provider Telehealth Technologies*, UTMB here examines the potential for telehealth as well as some of the barriers, infrastructure needs, and public policy requirements for enabling telehealth to achieve its full potential.⁸

Methods

In its report, CITL examined the value of only a subset of telehealth technologies: those in which there are health care providers at both ends of the clinical teleconsults. That is, there are providers at both the patient side and the remote or far side locations. They did not consider telehealth technologies used on inpatient units, home monitoring, interpretive services (telepathology and teleradiology), or continuing medical education. The lack of inclusion of these other uses of telehealth does not imply lack of importance and impact and thus the findings in the report may be considered conservative, with the benefit of these unconsidered technologies likely to increase the economic impact significantly. In addition, the same equipment can be and is often used for other telehealth-related services not covered by this report.

In its report, CITL primarily modeled three major levels of telehealth technologies: store-and-forward, real-time video, and a combination of the two, aptly named the hybrid level, to compare and contrast the costs and benefits in various healthcare settings. Store-and-forward technologies represent the collection, storage, and transmission of clinical data or images for clinical interpretation at a time removed from a face-to-face or real-time clinical encounter.⁹ Real-time video entails the use of live video to conduct an interactive clinical encounter in real time. Hybrid technology is the integration of both store-and-forward and real-time video technologies.

This last category provides the added capability of concurrently transmitting high-resolution images and other medical data, such as from an electronic medical record, in real time during a videoconferencing clinical encounter. In practice, these technologies would be integrated; CITL modeled them singularly in order to compare and contrast their effects on their own. Also, individual specialties were not modeled separately. If they were examined in isolation, the findings might differ considerably from those projected in the report.

In addition, costs and benefits were projected over a 10 year period, with acquisition and installation of systems and national adoption of telehealth occurring along a sigmoid curve, beginning with an initial roll-out at 5% at year one and reaching 100% at year 5. Recurring capital costs were set at 20% and would occur throughout the modeling period. Likewise, benefit realization was also assumed along a sigmoid curve, with individual stakeholders realizing a 50% benefit in the first year of adoption reaching 100% of potential benefit at year 6. Usage gaps accounting for encounters that would not be treated via telehealth or the success rate at which patients would be successfully treated with telehealth were also incorporated into the model. In order to account for the uncertainties of specific projections, a factor of $\pm 25\%$ was used for parameters where no published measures or expert estimates were available. Finally, an advisory board consisting of nationally recognized

telehealth experts provided inputs and critically reviewed the processes and results throughout the project period.

Major Findings

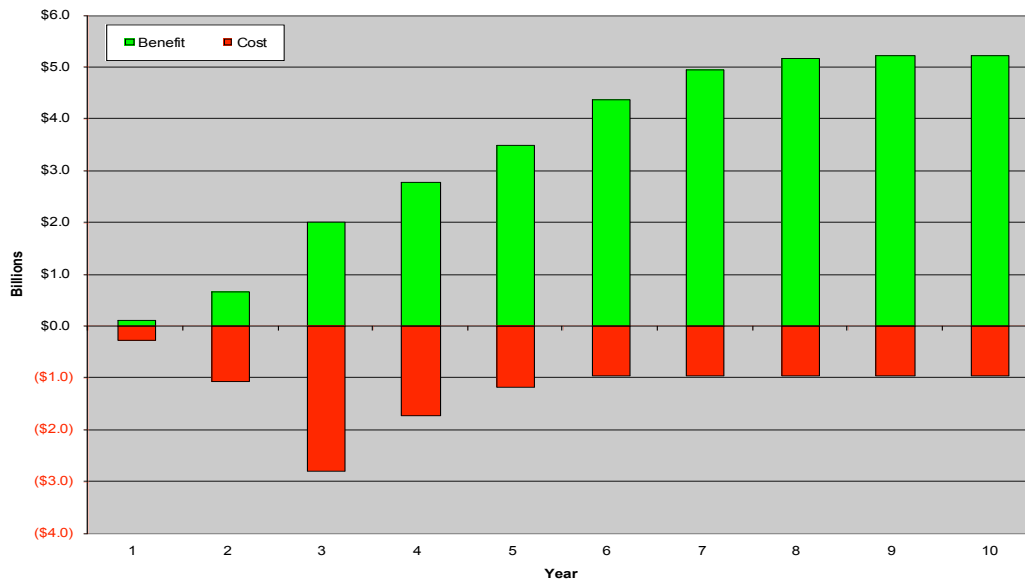
While CITL modeled the three levels of telehealth technologies across a number of parameters, the following consists of excerpts of significant benefits of these technologies associated with major domains in health care where these technologies can have a sizable influence at a national level: emergency departments, correctional facilities, nursing facilities, and outpatient settings.

The study determined that the benefits of a national implementation of telehealth technologies far outweigh

their costs, with hybrid level of telehealth technologies identified as the most cost-effective system. With a five-year roll-out, the first-year national cost for hybrid technology is \$254 million, with a mid-implementation, third year peak of \$2.78 billion, and a steady-state, ongoing annual cost of \$950 million. Nationwide implementation of hybrid technologies reaches a break-even point in year five, with a total annual net of \$4.28 billion in the steady-state.

The following graph displays the national annual cost and benefit cash flow of the hybrid level in a national deployment scenario over ten years.

Cost and Benefits of Telehealth Over Ten Years in Billions



Emergency Departments

For the health care system as a whole, the cost to equip all U.S. emergency departments with hybrid telehealth technologies could easily be covered by savings from a reduction in transfers between emergency departments. From a baseline of 2.2 million patients transported each year between emergency departments at a cost of \$1.39 billion in transportation costs, hybrid technologies would avoid 850,000 transports for a cost savings of \$537 million a year.

Those outside the medical profession may not be aware of the frequency of transfers from one emergency department (ED) to another emergency department. Especially in rural areas, patients often must be moved from one emergency department to another because the first cannot provide required specialty care. A prime example of this is a potential stroke victim needing assessment by a neurologist for anticoagulation therapy. A telehealth linkup, such as made possible by the REACH program in Georgia, could eliminate the need for a transfer in that situation, while also providing a quicker response.

Recent estimates indicate that up to 50% of the 4,516 emergency facilities in the United States have difficulty providing at least one type of physician specialty for consultation;¹⁰ in cases where rapid diagnosis and treatment is linked to outcomes, patients are often transferred. With over two million annual transports between emergency facilities,¹¹ telehealth technologies can greatly reduce costly patient transports.

With telehealth, providers can receive specialized guidance, and their patients can receive specialty care, thus avoiding the transport of many of these patients. The existing literature demonstrates that telehealth successfully decreases the number of transfers between emergency departments when specialty care is unavailable at the originating emergency department.^{12,13,14,15,16,17,18,19,20,21,22} A majority of this work has focused on radiology and neurological consultations for trauma and potential stroke victims.

Correctional Facilities

CITL projected the impact of telehealth on the reduction of visits from correctional facilities (CF) to emergency departments. While many correctional facilities have onsite healthcare providers, these providers may be unable to manage emergent healthcare matters, often because of lack of expertise in evaluation or management of the inmate's presenting symptom(s). Telehealth can enable an inmate's healthcare to be managed at the correctional facility. Avoiding a transport eliminates the cost of vehicles and correctional officers to accompany patients and the cost of security at the healthcare facilities.

In addition, if an inmate can be managed on-site, the correctional facility avoids the cost of the emergency department visit. Telehealth programs in correctional settings have demonstrated a decrease in patient transports to emergency departments.^{23,24,25} Programs in New

York State and Texas, including UTMB's, have reported that telehealth technologies avoided 38.0%⁵⁶ and 36.0%⁵⁷ of patient transports, respectively.

Savings from reducing transports to emergency departments and physician offices, and by avoiding the costs of an emergency department visit would cover the correctional facility's outlay for hybrid telehealth equipment. Hybrid technologies could cut transports from correctional facilities to emergency rooms by about 42% (from 94,180 to 54,180) and cut costs by \$60.3 million from the current 158 million.

Telehealth also would reduce transports from correctional facilities to physician offices by almost 79% and trim costs to \$92 million from the current \$302 million annually.

Researchers at UTMB found that telehealth avoided at least one trip for care for 95.0% of prisoners examined,²⁶ and a series of papers by researchers at the Virginia Commonwealth University documented significant net savings from reducing physician visits within months even after accounting for the cost of new equipment.^{27,28,29}

Nursing Facilities

Hybrid telemedicine technologies can cut transports from nursing homes to emergency departments by about 14% for a cost savings of about \$327 million annually. The number of transports would be cut by 387,000 from the current 2.7 million and costs would fall from \$3.62 billion to \$3.29 billion.

Physician visits would fall far more dramatically, down about 68% for a savings of \$479 million. Right now, nursing facilities must arrange 10.1 million trips to physicians' offices each year at a cost of 1.29 billion.

Finding primary care physicians willing to cover nursing home facilities can be difficult. It is not uncommon, therefore, for coverage to occur infrequently, leaving lesser-trained individuals to the day-to-day management of resident care; these individuals may be unable to make acute decisions in a perceived urgent situation. In the absence of this knowledge, nursing home patients are transported to emergency departments, especially when such questions arise during off-hours. With almost 1.5 million nursing care residents in approximately 16,100 nursing facilities throughout the United States,³⁰ telehealth would not only reduce costs, but would also reduce the risks involved in transporting frail patients.

Telehealth would enable nursing staff to consult with a patient's physician, another primary care physician, or a specialist.^{31,32}

Outpatient Setting

In the outpatient setting, numerous studies show that patients can receive specialty care through store-and-forward technologies or videoconferencing that eliminate the need for a separate visit to a referred specialist.^{33,34,35,36,37}

A series of reports from the United Kingdom^{38,39,40} has shown that fewer tests and procedures are ordered at a

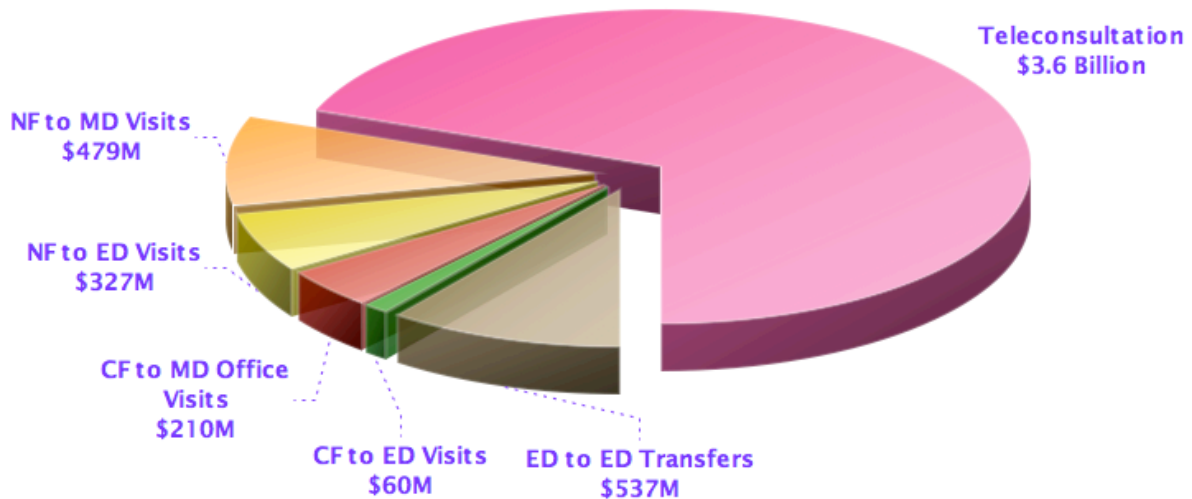
teleconsult than at an in-person visit, most likely because of the early involvement of the specialist and their ability to order targeted testing for their patient's condition. In addition, in a teleconsult, specialists have access to test results ordered by the primary care provider that are frequently unavailable at the time of an in-person specialty consultation. This bi-directional information sharing reduces redundant tests.

There is a loss to the system (though a benefit to payors) from physician-

to-physician hybrid teleconsults when considering only professional fees, which would be reduced. These losses would be far outweighed by involving specialists early in the care of a patient and reducing the number of redundant or unnecessary tests. In reducing face-to-face visits and redundant and unnecessary tests, hybrid technologies are projected to save \$3.61 billion.

The following pie chart depicts the net annual savings of the hybrid level across the aforementioned domains.

Net Annual Savings From Telemedicine



Additional Benefits

Beyond this report, CITL suggests additional benefits from the use of telehealth technologies in provider-to-provider care settings. Telehealth technologies can lead to a reduction in admissions from emergency departments, as well as a reduction in the need for referrals from emergency departments to outside specialists. The impact of increasing access to care is potentially large, improving the quality of care given to individuals, and likely improving clinical outcomes.

Increasing the speed of a diagnosis in cases where rapid diagnosis is linked to improved outcomes also is impacted by telehealth technologies, such as is the case with management of acute strokes. In addition, the use of telehealth technologies in ambulances can help speed diagnosis and the initiation of important, potentially lifesaving interventions.

Other benefits of telehealth technologies include the following:

- Provider education access
- Improved quality of care
- Reduction in hospital admissions from emergency departments
- Reduction in referrals from emergency departments
- Reduced wait times for outpatient consultation
- Increased productivity of health care staff
- Reduction in patient travel time and expenses

In previous reports, healthcare technologies frequently have costs borne by provider organizations (e.g. hospi-

tals and provider offices), while providing savings that accrue to payors.⁴¹ A similar finding was found with provider-to-provider telehealth technologies. This finding has critical implications to the entire healthcare system and is a reflection of the traditional third-party payor system.

Barriers

Despite these positive economic findings, the CITL report noted a number of barriers to the implementation and full adoption of telehealth technologies, which must be addressed. Major barriers include:

- Reimbursement model that favors face-to-face visits.
- Concerns around medical liability.
- Lack of cross-state licensure for physicians and other health practitioners.

A report by the U.S. Commerce Department's Office of Technology Policy observed that telehealth does not easily fit with today's economic model in which most health care is paid by a third party (a private insurer or a government program) rather than by the patient. While an individual would have no difficulty in recognizing a telehealth intervention as cost-effective, a third party payor usually reimburses on the basis of pre-set rules. Traditionally, third party payments have been based on patient "visits" in the same location as the caregiver and also for certain services, such as an X-ray, in which the patient visits a facility. Telehealth does not fit within those rules and third party payors are adjusting

their definitions at a varying pace.⁴² Caregivers must bear the upfront costs of moving towards telemedicine. Unless they are assured of payment for such services, caregivers will not have an economic incentive to embrace telemedicine.

Similarly, caregivers must be confident that telehealth does not potentially expose them to additional liability or additional expense for liability insurance. As with uncertainty about insurance reimbursements, caregivers' willingness to move towards telehealth will be reduced to the extent that their liability risk could increase.

Finally, providers need to know that cooperation with telehealth initiatives in other states does not conflict with licensure rules. Medical providers are licensed to practice by state authorities within the boundaries of that state. Typically, licenses to practice are not transferable to other states. This creates a potential gray area if a caregiver in one state participates in a telehealth intervention involving patients in a different state. Again, providers need certainty about the rules.

Broadband practices and other connectivity issues represent other potential obstacles in the way of the implementation and adoption of telehealth technologies.

Telehealth and Broadband

While some forms of telemedicine can work effectively over dial-up connections, always-on broadband is essential for some telemedicine applications and significantly enhances

others that depend on uninterrupted real-time transmission.

In general, broadband can:

- Enhance health care information transmission and sharing
- Expand access to care
- Improve quality of care
- Streamline data and record keeping
- Promote the use of remote monitoring devices
- Advance the development of emerging technologies for diagnosis and treatment
- Increase efficiency in systems management

The nature of an effective and proficient telemedicine practice depends largely on its operational protocols and networks. While the variance for what constitutes an effective telemedicine program may differ across standards of practice, all are dependent upon the efficiency of their networks. Although CITL reported very significant savings from national implementation of the hybrid telehealth technologies, current limitations within the national IT infrastructure may prevent full realization of these savings. The difficulties associated with the current system for telemedicine are seen by the effects of rapid growth in internet traffic, driven in large part by the popularity and expansion of on-line video. These higher traffic volumes have increased potential to create congestion that causes transmission delays or jitter that can distort and impair both the audio and visual quality of health care data or images. These delays can make medical images unusable or destroy the feasibility of emerging telehealth services such as home

monitoring or prevent procedures in which experienced providers guide and perform remote operations.

Telehealth services via hybrid technologies work best across efficient high-speed IP or broadband networks. In addition to a reliable and efficient mechanism for the transmission of health data and communication between providers and patients, high-speed broadband facilitates the utilization of medical peripherals such as electronic stethoscopes, otoscopes, and dermoscopes as well as remote monitoring devices. Currently, such efficient telemedicine services and programs have been provided primarily over private networks. This is due largely to the concern that the public Internet, in its current state, has an inability to provide uninterrupted services. In order for telehealth services to be effectively adopted nationally, service quality and reliability has to be guaranteed if it is to be offered using the public Internet.

In its report to Congress, the Joint Advisory Committee (JAC) on Communications Capabilities of Emergency Medical and Public Health Care Facilities, found an imperative need to modernize and invest in broadband systems and networks. The investment into an interoperable, survivable, and standards-based infrastructure is critical for health care communications and services in disaster scenarios, which require coordination at the local, regional, and national levels. With a broadband infrastructure, health information and telemedicine applications are accessible, providing the

necessary tools for emergency responders and health care workers.

As the JAC noted: “Many of the emerging real-time life-saving technologies (remote surgical procedures, tele-presence networks, and even converged voice and video) require very consistent and predictable handling of traffic by the network. Packet loss, delays in packet transmission (“latency”), and inconsistent packet delivery interval times (“jitter”) have significant impact on a variety of emerging real-time health care applications. To reduce latency and jitter, managed networks are generally needed that can prioritize real-time (and potentially life-saving) communications ahead of packets used for file transfer and e-mail.”⁴³

Systems Management and Policy Recommendations

The reliability, the efficiency, and utility of an effective telemedicine program require an intelligent and flexible network that is capable of delivering high quality medical data in real time even during times of high traffic loads. They also must be constructed and managed in a way to protect the privacy of sensitive health data.

Given the ever-expanding traffic and growth of the Internet, additional investments in network infrastructure will be required to expand capacity. Moreover, standards for managing networks are called for in order to give priority to vital services such as telemedicine and emergency response.

Given the current barriers and concerns discussed, policy recommendations directed towards a wider adoption of telehealth through legislative changes and an expansion of the current network infrastructure include:

- Develop a standardization of Medicare and Medicaid reimbursement across states.
- Identify and develop policies that encourage reimbursement for telehealth services from private insurers and company health plans.
- Review of liability laws to determine whether adjustments are needed to clarify their application to telehealth services.
- Review of the medical licensing system to determine whether adjustments are necessary to eliminate barriers that will slow the adoption of telehealth.
- Explore state and local initiatives that would accelerate the implementation of telehealth through cost sharing and pooling resources.
- Promote enhancement of existing information technology that will facilitate and support telehealth and complementary services.

- Encourage broadband adoption and the deployment of smart networks that provide fast, reliable and secure transmissions for telehealth services.

Telehealth promises improved outcomes and enhanced life quality for patients; it can expand access to quality health care despite geographic barriers; facilitate easier and more regular contact between patients and care providers by reducing the need for in-person consultation; and it can reduce the national cost of health care by reducing unnecessary tests, in person visits and patient transfers.

UTMB believes that the integration of telehealth into the American health care system can offer unparalleled access to high quality care to every citizen no matter where they live. The combination of sophisticated videoconferencing, electronic medical records, proven disease management protocols, and telemonitoring can revolutionize medical care.

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