The State of TeleMedicine and TeleHealth in Texas

A Special Report of the Texas Statewide Health Coordinating Council and Recommendations for Ensuring a Strong Telemedicine/Telehealth System in Texas

Texas Statewide Health Coordinating Council

A Collaborative Effort With the Texas State Telemedicine/Telehealth Workgroup

Statement of the Chairman

In the *2001-2002 Texas State Health Plan Update*, the Statewide Health Coordinating Council (SHCC) briefly examined the potential impact of telemedicine and telehealth (TMTH) in addressing the maldistribution of health professionals and improving access to health care in medically underserved areas in Texas. However, on November 9, 2000, at the request of numerous stakeholders from within the TMTH community, the SHCC convened the first of four TMTH stakeholder workgroup meetings to discuss the current efforts and future opportunities for collaboration on TMTH.

Fourteen months, numerous meetings, and thousands of work hours later, the SHCC presents the final product of this process. *The State of Telemedicine and Telehealth in Texas: A Special Report of the Texas Statewide Health Coordinating Council and Recommendations for Ensuring a Strong Telemedicine/Telehealth System in Texas* represents the combined efforts of over 100 experts and stakeholders in the field of TMTH.

The SHCC has reviewed the work of this group and believes that the resulting report and its recommendations provide an important first step in improving the health of all Texans through the rapidly expanding, ever evolving TMTH technologies. Additionally, the SHCC believes that the report will provide a sound basis for state policy makers as they approach future decisions.

The SHCC recognizes that these expanding technologies offer new portals for access to and delivery of medical care and provide powerful tools for health care professionals. However, the SHCC would emphasize that the technology provides a tool to enhance the care delivered to patients, rather than being an end in itself. Without a quality health care workforce in place, especially in urban and rural medically underserved areas, all the potential benefits of advanced technology will be for naught. Access to quality health care providers must remain the primary focus of health workforce planners and decision makers.

The SHCC would like to recognize and express sincere appreciation for the hard work and commitment that each member of the TMTH workgroup brought to this project. Their service was invaluable.

Next, I would personally like to thank each of the members of the SHCC TMTH Committee, who remained dedicated and diligent throughout the lengthy process. Without their hard work, this special report would not be a reality.

And finally, we want to give special recognition to the staff from the Texas Department of Health, Office of Strategic Health Planning. These individuals remained committed and enthusiastic throughout the project and we sincerely appreciate their contribution.

The SHCC looks forward to working with the Legislature and with state and community leaders to ensure a quality of health care for all Texans. We believe that Texas is on the right track in preparing our state and its people for a future in which every individual is informed, is productive, and enjoys equal and full access to quality health care and optimal health status.

Ben G. Raimer MD

Ben G. Raimer, M.D., Chairman
Texas Statewide Health Coordinating Council

STATEWIDE HEALTH COORDINATING COUNCIL

A VISION

We envision a Texas in which all are able to achieve their maximum health potential - A Texas in which:

* **Prevention and education are the primary approaches for achieving optimal health.**

* **All have equal access to quality health care.**

* **Local communities are empowered to plan and direct interventions that have the greatest impact on the health of all.**

* **We, and future generations, are healthy, productive and able to make informed decisions.**

A Healthy Texas is a Productive Texas

Texas Statewide Health Coordinating Council
February 2002

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Executive Summary

Introduction

The Statewide Health Coordinating Council (SHCC) is a voluntary 17-member council with five ex-officio members and 12 members appointed by the governor. The Council is charged with reviewing and assessing statewide health issues related to ensuring a quality health care workforce for Texas. As part of the *2001-2002 Texas State Health Plan Update*, the SHCC examined the potential impact of telemedicine and telehealth (TMTH) in addressing the maldistribution of health professionals and improving access to health care in medically underserved areas. As the SHCC explored the complexities of this subject, it became clear that there was no central repository for TMTH information. It also became apparent that there was no single body moving toward development of a strategic plan to identify and coordinate use of the technology for improving access to care and promoting efficient delivery of cost-effective, quality health care.

On November 9, 2000 the SHCC convened the first of several stakeholder workgroup meetings in which representatives of state agencies, Texas health science centers, other institutions of higher education and other interested members of the TMTH community met to discuss the current efforts and future opportunities for collaboration on TMTH. Members of this group arrived at a consensus that they would support a SHCC recommendation for formulating a state TMTH master plan that would guide individual agencies in their TMTH projects and funding. On May 29, 2001 the SHCC met and voted to continue serving as convener of the state TMTH stakeholder workgroup and committed SHCC staff and resources to the production of this "white paper" on the status of TMTH in Texas.

In May 2001, the 77th Texas Legislature passed SB 789. This bill was an omnibus telemedicine bill intended to address expanding the availability of TMTH services and establishing a regulatory framework for the delivery of those services. The legislation was passed after the development of this white paper had begun; however, it is important for the recommendations in the paper to be considered in context of this legislation. The details of SB 789, along with other legislation, are discussed in greater depth in the first section of this report.

In this report, the SHCC has sought to provide an accurate picture of the status of TMTH in Texas. Extensive background information is provided in Section I, while Section II provides an inventory of TMTH projects. A survey of public and private TMTH projects in Texas was conducted in the summer of 2001 and the results are included in Section II. Section III addresses the maldistribution of health professionals throughout the state and identifies areas in which TMTH can provide solutions to these problems. Sections IV-IX of this report are the products of content expert breakout groups originating from the membership of the larger stakeholder workgroup. The members of the workgroups and their affiliations are listed at the beginning of each section. In the expert group reports, the members present recommendations that relate to their specific content areas only. The report also presents recommendations that the SHCC believes are necessary to ensure that all future decisions relating to TMTH within the state are based on sound business practices and strong collaborative efforts. Section X contains the broad recommendations that the SHCC members believe are necessary to guarantee an efficient, cost-effective, coordinated TMTH network within Texas. Section X also includes many of the specific recommendations presented by members of the expert content workgroups for consideration by all health policy decision makers as they fashion a long-term solution for the problems that have been identified within the current TMTH system.

Recommendations for Ensuring a Strong TMTH System in Texas

The SHCC proposes three broad recommendations for consideration by policy decision makers. The SHCC believes that the future success of TMTH in Texas hinges on the implementation of these broad recommendations. Until these recommendations are addressed, attempts to successfully implement the other specific recommendations presented in this report will be met with limited success. It should be noted that the broad recommendations might require statutory changes to provide the mandate, the resources and the manpower to enable the appropriately designated agency or body to effectively implement the coordinative function. The broad recommendations are as follows:

1. **Designate a single agency or body to serve as the authority and coordinator for TMTH information and projects within the state.**
   An agency or body should be designated that can serve as the authority and recognized expert on TMTH information for current and future TMTH providers, grantees and policy makers. This entity should produce a Texas unified TMTH state plan, which would serve as a point of coordination for all TMTH projects within the state.
2. **Develop and encourage interagency collaboration.**
   Collaboration needs to take place not only between clearly related agencies, but also between other agencies that have either direct or indirect connections to TMTH.
3. **Develop and encourage international, border, and interstate TMTH initiatives and information exchange.**
   International, border, and interstate information exchange and coordination is vital to creating and sustaining a successful system for implementing specific projects such as emergency response to a disease outbreak or a biological or chemical attack, as well as for all other recognized TMTH activities.

The SHCC also supports many of the recommendations of the expert groups and believes that their recommendations represent a core of actions that, when implemented within the framework of a clearly defined coordinative authority, should improve the delivery of TMTH services in Texas. The following section outlines recommendations related to each subject area:

Section III: Addressing the Maldistribution of Health Care Professionals

The SHCC's original interest in TMTH grew from its investigation of modern technologies to ameliorate the lack of health professionals in rural and inner-city areas of Texas. As the state with the second largest land mass and an estimated 21 million residents, Texas confronts a unique set of problems in delivering high-quality health care services to its residents. The use of modern telecommunications technology offers the potential for innovative approaches to retention strategies, particularly when coupled with clinical resources available through academic health science centers, medical schools, tertiary care centers and regional health care facilities. The third section of this report focuses on using TMTH to address the maldistribution of health professionals.

1. Adequate Continuing Medical Education for health care providers should be accessible, both to individuals and groups, through TMTH and electronic media.
2. Rural health care providers should have ready access to specialists. To facilitate access, electronic consultations and other communications systems should be further developed for rural health care providers. Mechanisms for remuneration for these services should be put into place.
3. The needs of underserved areas should be assessed to guarantee a match between the needs and the capabilities of TMTH.

Section IV: Licensing and Scope of Practice

TMTH offers potential solutions for providing health services across vast distances to populations in underserved areas. However, even though TMTH technology knows no boundaries, health professionals must be licensed and regulated at the state level. Therefore, issues relating to interstate and/or international licensure are potential barriers to the expansion of TMTH. Section four of this report focuses attention on these issues.

1. As licensing boards review changes in rules and regulations, consideration should be given to how proposed changes might impact services delivered through TMTH.
2. Those agencies that have not addressed delivering services through TMTH should review possible avenues of service delivery and identify legislative, rule and/or policy changes that would need to be in place to facilitate providing TMTH services by their licensees.
3. Regulatory agencies should review licensing issues that exclude providers licensed in other states from providing TMTH services, and consider developing provisions for TMTH licensing and/or interstate licensing if appropriate for that profession.
4. All licensing boards that require continuing professional education to maintain licensure should accept credits earned through TMTH.

Section V: Infrastructure

To be successful, TMTH network systems require the design, construction, and/or coordination of compatible, sufficient infrastructures, equipment, networks, uninterruptible connections, and operator capabilities. Lack of coordination in establishing an infrastructure for TMTH has often resulted in inefficient and ineffective use of the limited resources that are available. This has resulted in duplication of effort and the installation of "islands" of non-communicating proprietary systems. The fifth section of this report addresses these issues.

1. The future entity assigned the responsibility for coordinating TMTH services should identify, coordinate and synthesize existing networks available for TMTH initiatives to promote the use or expansion of TMTH activities.
2. The Standards Subcommittee of the Health and Human Services Commission's Telemedicine Advisory Committee should build upon Section V of this report in developing and implementing standards and specifications for telemedicine technology, application, certification and training.
3. The State Legislature should address strategies to reduce the impact of high inter-Local Access Transport Areas (inter-LATA) long distance rates that limit the development and sustainability of rural TMTH links.

Section VI: Training and Technical Assistance

During the November 9, 2000 meeting, the TMTH workgroup members listed the lack of training and technical assistance to TMTH providers as major obstacles to the fully effective use of TMTH. Utilizing all of the state-of-the-art equipment, such as network connections with unlimited bandwidth, will not be effective if users are not provided adequate training and technical assistance. Training initiatives should address problems caused by the lack of familiarity or acceptance of advanced technologies applied to health care that are shared by many patients and health care providers. Section VI of this report examines these and other issues.

1. An interactive TMTH training web site should be developed and maintained.
2. Resource sharing across organizations throughout the state should be encouraged through technical assistance as well as group and on-line training.
3. Training and technical assistance workgroup expertise should be utilized as a peer review in order to assess the accuracy and validity of content changes and updates before posting.
4. Recipients of state funds should be required to allocate resources for training and participation in the coordinated training efforts.
5. Vertical and horizontal integration technology use should be promoted into basic educational curricula.

Section VII: Reimbursement

Private insurance third-party payers, including managed care plans, have been reluctant to pay for TMTH services. Due to concerns relating to the lack of controls and processes to prevent billing fraud and abuse for TMTH services, federally funded programs such as Medicare and Medicaid have historically provided limited coverage. However, without adequate reimbursement, the long-term survival of TMTH is in question. Thus, understanding the barriers to third-party reimbursement and how to overcome them must be a priority. Section VII of this report concentrates on a discussion of these issues.

1. The Texas Department of Insurance should continue to monitor commercial third-party payers and request that they report areas of TMTH services covered, rates of reimbursement for those services, claims payment data and utilization data for TMTH services reimbursed, acknowledging that limitations in the data may exist, to facilitate the evaluation of the effectiveness of SB 789, (77th Texas Legislature).
2. The Health and Human Services Commission (HHSC), through the recommendations of the Telemedicine Advisory Committee, should proceed with the implementation of the TMTH reimbursement policy for Medicaid and the Children's Health Insurance Program (CHIP).
3. The state Medicare intermediary for Texas should be required to expedite state response to changes in TMTH reimbursement as outlined in the Centers for Medicare and Medicaid Services (CMMS) reimbursement memoranda regarding TMTH.
4. Entities responsible for approving grants or contracts for TMTH projects should guarantee that all projects that receive funding include a plan for sustainability of the project beyond the period of the grant or contract and should also include a cost/outcome evaluation component for the proposed project.
5. The state should consider continued development of pilot programs to explore the reimbursement for, and broadening of, TMTH applications to include areas such as home health, case management, long-term care and other health services for which TMTH might increase access to and quality of health care.
6. State agencies and commissions with TMTH interests and responsibilities should continue to partner with counterpart agencies and commissions in other states with the goal of improving TMTH payment polices and services covered.

VIII: Project Planning and Accountability

Although many individuals believe strongly in the potential of TMTH for providing cost-effective services, not much "hard data" is available to support that belief. Decision-makers need to know the value added by TMTH. Lack of solid evaluative information is a significant barrier to the deployment of TMTH. A framework needs to be developed for TMTH project evaluations that encourage the sharing of project information. It is believed that this may eventually facilitate cooperative evaluation efforts with private sector TMTH projects. Section VIII of this report focuses on a discussion of these issues.

1. A project design, implementation, and evaluation framework needs to be developed for future TMTH projects that place a greater emphasis on accountability for the use of existing infrastructure and other resources.

IX: Privacy and Security

Issues surrounding privacy and security of medical information are a major concern and potentially significant barrier to the implementation of a successful TMTH system. In many respects, TMTH does not alter existing issues relating to the privacy and confidentiality of medical records. However, the addition of this new technology offers new challenges in maintaining secure records. Section IX focuses on the need for establishing standards to maintain privacy and security of information transmitted through TMTH systems. All recommendations presented below, unless otherwise indicated, would become the responsibility of the agency or body designated to coordinate TMTH services in Texas.

1. The agency should provide training to prepare decision-makers to classify data and to select the appropriate protection policies, procedures and techniques for the data.
2. The agency should develop and maintain a web page to be utilized for web-based training on technical issues, processes and procedures, legal requirements and personal rights.
3. A program of public education should be developed and delivered by the agency that focuses on providing information relating to legal requirements and the systems and processes that exist throughout the TMTH service delivery process that serve to ensure the privacy of the patient and the medical record.
4. Geographically located "super users" could be designated by the agency or body and used to provide technical assistance in specific areas and to support local technicians.
5. The agency or body should guarantee that standards and procedures are continually reviewed and revised to remain current.
6. A strong quality management process developed and implemented by the agency or body will enhance the ability of standards and procedures to meet stakeholder needs and expectations.
7. An ongoing self-review and monitoring process should be developed and implemented as an integral part of the overall quality management program to ensure that policies, procedures and equipment are actually meeting privacy and security objectives.
8. The integration of the telecommunications infrastructure, the security infrastructure and TMTH systems will require ongoing attention by the designated agency or body as each continues to evolve.

New Challenges – New Opportunities

Texas faces unique challenges in delivering health care services to its citizens due to the state's geography, demographics and economy. Through the production of this report and the development of substantive recommendations to strengthen the TMTH system within the state, the SHCC believes that an important first step has been taken toward improving the health of all Texans. Additionally, it is believed that the report will provide a sound basis for state policy makers to use in formulating future decisions and a starting point for the production of a Texas unified TMTH state plan. Members of the SHCC encourage policy makers to take quick action to capture and build on the momentum and energy created by the combined efforts of the workgroup members.

Section I: Background

Section I: Background

New Technology – New Opportunities

The telemedicine/telehealth (TMTH) projects and networks now operating are just beginning to test the potential of TMTH to deliver health care, health education, and distance learning services safely and efficiently. What is known today about TMTH represents only an initial snapshot of a technology that is changing and expanding daily. The current TMTH environment in Texas is diverse and widespread. It consists of institutions of higher education, libraries, state and federal agencies and professional associations that are working to promote telehealth technologies and strategies.[1]

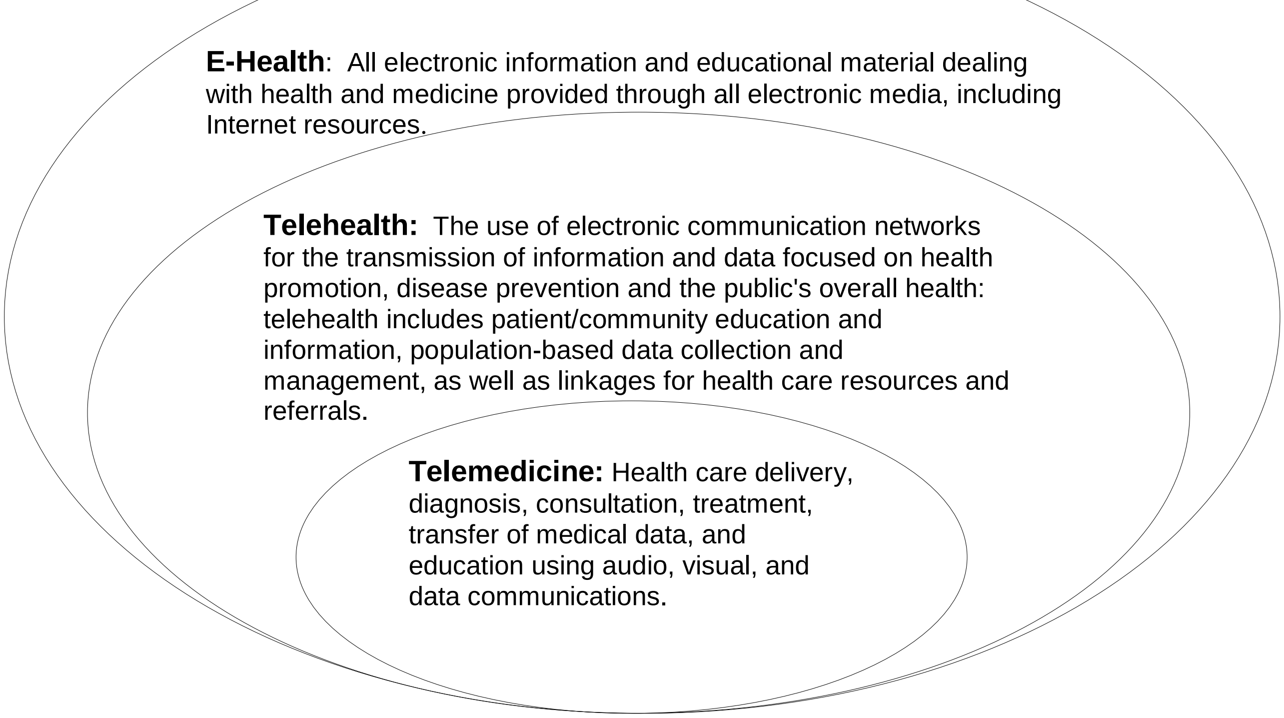
TMTH has the potential to bring a significant increase in professional information and educational opportunities to health providers in medically underserved areas. In addition, TMTH can also help attract and retain health professionals in rural areas by providing ongoing training and collaboration with other health professionals.[2] However, TMTH cannot be seen as a panacea for all problems facing medically underserved areas. There has been some fear that this technology will be used to remove physicians from medically underserved areas and replace them with computers and cameras. The purpose of TMTH is not to replace doctors who are currently practicing in underserved areas, but to enhance the quality of care that a patient receives and facilitate access to specialty health care.

E-Health, Telemedicine and Telehealth

Definitions of telemedicine and telehealth have been the subject of much confusion, heated debate and controversy. While SB 789 (77th Texas Legislature), discussed further on in this section, uses very narrow definitions of telemedicine and telehealth that are suitable for purposes of legislation, the TMTH workgroup elected to use broader definitions to more fully encompass relevant applications of the technology.

Electronic health (e-health) is much broader than telemedicine or telehealth (see Figure I-1). E-health is the overall field that encompasses telemedicine and telehealth along with all electronic information and educational material dealing with health and medicine provided through all electronic medicine sources, including Internet resources. It covers the use of digital data transmitted electronically, for clinical, educational and administrative applications, both locally and at a distance.

Figure I-1: Definitions



Telehealth is the use of electronic communications networks for the transmission of information and data focused on health promotion, disease prevention, and the public's overall health including patient/ community education and information, population-based data collection and management, and linkages for health care resources and referrals. Telehealth includes patient/community education and information; population-based data collection and management, as well as linkages for health care resources and referrals.

Telemedicine is a subset of telehealth. The definition of telemedicine that we are using for this plan is health care delivery, consultation, diagnosis, treatment, transfer of medical data, and education using audio, visual, and data communications. Some have argued that telemedicine is in actuality a large group of subspecialties (teleradiology, teledermatology, telecardiology, teleneurology, telepsychiatry, teledentistry, etc.) rather than a specialty itself.

There has been a tendency to use the terms telehealth and telemedicine interchangeably. Much of the research and published literature has concentrated on the clinical applications of telemedicine rather than on telehealth. Many of the barriers to creating an effective TMTH system are specifically related to the clinical practice of telemedicine (scope of practice, interstate licensing, reimbursement, etc.). However, much of what will enable successful telemedicine practice will also enable expansion of telehealth. Both use much of the same equipment and networks. The same types of professionals and consumers use both systems. The infrastructure and technology that is required for a telemedicine system can also be used for telehealth applications and vice versa. While much of the content of this paper will focus on clinical telemedicine services, it is only because telemedicine involves the most complex issues.

Telemedicine and Telehealth in Texas

The use of TMTH in Texas is not new. In one form or another, the practice has existed since the invention of the telephone. At the simplest level, a nurse providing clinical advice over the telephone is telemedicine. Texas Health Science Centers and hospitals have been experimenting with technology to improve the delivery of health care in medically underserved areas since the advent of electronic communications.

Technology now allows for the transmission of high-resolution still images (e.g., x-rays), as well as real-time images, such as echo cardiograms. As a result of the rapid expansion of the Internet alone, consumer demand for, and the availability of, a wide range of self-health promotion, education, care, and in-home telehealth applications are emerging. With advances in technology, there is the potential for TMTH to have an impact on the lives of an increasing number of Texans. TMTH can advance health care delivery in Texas by providing access to a broader range of services such as radiology, mental health, and specialty medical consultations to communities and individuals in underserved urban and rural areas.

In remote rural areas, where the distance between a patient and a specialty health professional can be hundreds of miles, TMTH can mean access to health care where little had been available before. In emergency cases, this access can mean the difference between life and death. In particular, in those cases where fast medical response time and specialty care are needed, TMTH availability can be critical.[3]

With great opportunities come great challenges. TMTH cannot reach its full potential until many barriers are overcome. Medically underserved areas cannot benefit from TMTH until there is a telecommunications infrastructure in place connecting the communities with providers. Communities cannot access TMTH services unless there are networks and/or Internet service providers available in their areas. Unless these communities have sufficient Internet bandwidth, effective TMTH consultation cannot occur. Unless there is training on the use of the technology and ongoing technical support, communities will not be able to use TMTH equipment effectively, if at all. Unless there is some way to address the high cost of transmission due to inter-LATA (Local Access and Transport Area) charges, TMTH will not be an affordable alternative to people in remote areas. Until the issues surrounding reimbursement for TMTH services are addressed, providers will not be able to recoup investments in equipment and infrastructure. Issues surrounding privacy and security of medical records must be addressed in order for TMTH sessions to comply with new Health Insurance Portability and Accountability Act of 1996 (HIPAA) and other privacy regulations.

Current TMTH Planning Efforts

There have been several planning efforts in the TMTH field during the last decade. In February of 1997 a consortium of TMTH stakeholders formed the Texas Telemedicine Planning Project (TTPP). This planning project focused exclusively on clinical applications of TMTH. TTPP provided an outline of the issues involved, an extensive inventory of current TMTH projects and a vision for TMTH in Texas on which this plan can build.

There are also several plans produced by state agencies that complement sections of this plan. However, none of these plans encompass the breadth of issues necessary for a comprehensive telemedicine/ telehealth state plan.

Table I-1: State Agency Plans Impacting Telehealth and Telemedicine

Agency	Plan Title
Texas Higher Education Coordinating Board	Master Plan for Distance Education
Texas Telecommunications Infrastructure Fund Board (TIFB)	TIFB Master Plan (contains a section on telemedicine)
Texas Telecommunications Planning Group (General Services Commission, Department of Information Resources, Comptroller of Public Accounts)	Strategic Plan for State Government Telecommunications Services
Texas Health and Human Services Commission	Medicaid Telemedicine Consultation Advisory Committee Report

To the greatest extent possible, this Statewide Health Coordinating Council (SHCC) supports a plan that will use current plans and coordinate efforts among state agencies in order to avoid duplication of effort.

TMTH Legislation and the 77th Texas Legislature

The 77th Texas Legislature passed S.B. 789, an omnibus telemedicine bill intended to address expanding the availability of TMTH services and establishing a regulatory framework for the delivery of those services. The legislation was passed after the development of this white paper had begun; however, it is important for the recommendations in this paper to be considered in the context of S.B. 789.

It is also critical to note that the provisions for funding S.B. 789 are contained in Article IX, Part II, Section 11.26 of S.B. 1 (Other Contingent Provisions of the General Appropriations Act), which calls for certification of available funds by the Comptroller's office before monies can be released to state agencies. HHSC has received notice from the Comptroller's office that they do not anticipate being able to certify any contingency funding this biennium. HHSC is moving forward with implementing as much of the legislation as possible and developing policy to integrate telemedicine into Medicaid and CHIP. Certain provisions of the legislation, such as the reimbursement system, cannot be implemented until funding becomes available. Additionally, there were no funds appropriated for S.B. 1536 and H.B. 2700, so implementation of the pilot projects (discussed in Section II) is dependent on developing a reimbursement strategy that utilizes existing funding. Appendix I-A contains the PowerPoint slides presented in a briefing by Nora Cox Taylor of the HHSC Medicaid Office to the TMTH State Plan Workgroup.

Major provisions of S.B. 789 include:

I. Definitional Changes

S.B. 789 amends Section 57.042, Utilities Code to define a "telemedical consultation" to mean "a health service initiated by a physician or provided by a health professional acting under physician delegation and supervision for purposes of patient assessment by health professional, diagnosis or consultation by a physician, treatment, or the transfer of medical data, that requires the use of advanced telecommunications technology, other than by telephone or facsimile, including:

- compressed digital interactive video, audio, or data transmission;
- clinical data transmission using computer imaging by way of still-image capture; and
- other technology that facilitates access to health care services or medical specialty expertise.

S.B. 789 makes the following major definitional changes in statutes related to the Telecommunications Infrastructure Fund Board (Utilities Code), Medicaid (Government Code), Texas State Board of Medical Examiners (Occupations Code), and Texas Department of Insurance (Insurance Code):

- A "telemedicine medical service" is a service initiated by a physician or provided by a health professional under physician delegation for the purpose of diagnosis, consultation by a physician, treatment, or transfer of data, using interactive audio or video, still-image capture, or any other technology that "facilitates access of health care services or medical specialty expertise".
- A "telehealth service" is any service that does not fit the definition of a "telemedicine medical service," in other words, a service initiated or provided directly by a nonphysician provider within the scope of their license or certification.

II. Advisory Committee

The bill establishes an advisory committee under the Health and Human Services Commission (HHSC) to coordinate state TMTH efforts, evaluate policies for the use of telemedicine medical services, monitor programs receiving reimbursement, and coordinate the activities of state agencies interested in the use of telemedicine services.

The advisory committee will also report on telemedicine utilization to the Lieutenant Governor and Speaker of the House not later than December 1 of each even-numbered year on (1) the effects of telemedicine medical services on the Medicaid program; (2) the number of physicians and health professionals using telemedicine medical services; (3) the geographic and demographic disposition of physicians and health professionals using telemedicine medical services; (4) the number of patients served; and, (5) the cost and utilization of telemedicine medical services on the program.

III. Medicaid Reimbursement System

The following changes were made to the Medicaid reimbursement policy:

- Remote sites are no longer restricted to rural or underserved areas.
- Hub sites are no longer restricted to academic health science centers and rural health facilities.
- Eligible health professionals now include physicians or any individual licensed to perform health care services delegated and supervised by a physician.
- Eligible services are no longer limited to consultations, but may be any physician-initiated or delegated service for the purposes of patient assessment by a health professional, diagnosis or consultation by a physician, treatment or the transfer of medical data including interactive audio, video, still-image capture, or any other technology that facilitates access to services.
- HHSC must ensure that facilities and providers of telemedicine medical services make a good faith effort to ensure that existing health care systems and medical relationships are protected in areas where services are provided.
- Telemedicine providers will be required to notify a patient's primary care physician before services are delivered.
- HHSC may use corrective action plans to ensure compliance by providers.
- HHSC may review programs in other states to determine the most effective method of reimbursement.
- An approval process must be established before providers can be reimbursed.
- A separate provider identifier (through TDH/NHIC) for telemedicine providers needs to be established.

Additionally, there were no funds appropriated for S.B. 1536 and H.B. 2700, so implementation of the pilot projects described in this white paper is dependent on developing a reimbursement strategy that utilizes existing funding.

IV. Rulemaking

- HHSC and the Texas Telecommunications Infrastructure Fund Board (TIFB) are to establish minimum standards that facilities must meet in order to be reimbursed for telemedicine medical services, including standards for hardware, software, and electronic transmission.
- The Texas State Board of Medical Examiners (TSBME) is required to develop, in consultation with HHSC and the Texas Department of Insurance (TDI), rules regarding appropriateness and quality of care, fraud and abuse, supervision, limits on the number of nonphysicians that a physician can supervise, and the need for a face-to-face consultation within a certain number of days after a telemedicine service if the physician has never seen the patient.
- The TIFB is required to establish an assistance program to help facilities and physicians in accessing TIFB grants. TIFB is also required to fund an automated system to integrate client services and eligibility requirements for health and human services across agencies. TIFB and HHSC must also adopt rules prescribing the criteria under which entities that currently do not qualify for TIFB funding (mainly for-profit facilities) can receive grants. The joint rules will prioritize funding based on the provision of Medicaid and charity care.

Statewide Health Coordinating Council

As part of the *2001-2002 Texas State Health Plan Update*, the SHCC examined the potential impact of TMTH on addressing the maldistribution of health professionals and improving access to health care in medically underserved areas. As the SHCC explored the complexities of this subject, it became clear that there was no central repository for TMTH information. It also became apparent that there was no single body moving toward development of a strategic plan to identify and coordinate use of the technology for improving access to care and promoting efficient delivery of cost-effective, quality health care.

On November 9, 2000, the SHCC convened a meeting of agencies and institutions of higher education to discuss the current efforts and future opportunities for collaboration on TMTH. This November 9 group arrived at a consensus that they would support a SHCC recommendation for formulating a state telehealth master plan that would guide individual agencies in their telehealth projects and funding.

The November 2000 meeting identified several issues. One recurring issue was high inter-LATA telephone rate charges. The costs incurred by providers to transmit information were cited time and again as a major obstacle to TMTH delivery. In general, the participants agreed that a state telehealth plan should facilitate the market delivery of broadband telecommunications services (including telehealth services) to all counties of the state. Other issues identified at the November 2000 meeting included how to:

- Avoid duplication of services;
- Use TMTH to insure access to high-quality medical care;
- Provide cost-effective and sustainable services;
- Provide training and technical assistance;
- Optimize inter-networking – seeking economy of scale benefits;
- Formulate realistic reimbursement systems;
- Develop a system that provides privacy and security and prevents fraud;
- Strengthen local health care/economic development;
- Use blended funding at the community level;
- Facilitate the implementation of broadband access across the state;
- Incorporate TMTH into state public health emergency response efforts; and
- Promote/implement a State TMTH Plan and/or a State Office of TMTH.

In order to address these concerns, the SHCC convened a meeting of the Texas State TMTH Plan Workgroup on April 30, 2001. Using the "California TMTH Coordination Project Strategic Plan"[4] as a model, the purpose of the workgroup was to develop a TMTH state plan to identify current projects, barriers to successful expansion of TMTH throughout the state and strategies to overcome those barriers. The goal identified by the workgroup is to implement, through a planning process involving a broadly representative consortium of stakeholders, a TMTH state plan for Texas in order to:

- Insure that the benefits of THTM technologies and resources are maximized;
- Mitigate problems that waste resources; and,
- Identify and secure needed resources.

Key Issues

Formulating a state TMTH plan is an ambitious undertaking. While future plans may include more information, the first plan should focus on eight key issues:

1. A description of the current status of TMTH in Texas;
2. The benefits of TMTH in addressing the maldistribution of health care professionals;
3. The current issues involving licensure and scope of practice;

4. The current issues in regard to infrastructure, technology and electronic transmission costs, particularly in remote and underserved areas;
5. The current training and technical support issues;
6. The current issues surrounding reimbursement for TMTH services;
7. The current issues surrounding the issues of privacy, security, protection against fraud; and
8. How to evaluate TMTH programs for effectiveness in order to ensure the sustainability of TMTH programs.

TMTH in Texas

As stated above, TMTH is not new to Texas. The most common uses of TMTH in patient care are in cardiology, dermatology, orthopedics, pediatrics, pathology, and radiology. Providers and health-benefit payers have embraced TMTH applications of radiology and cardiology in particular, because technology evolved relatively early in those areas and its use conformed to traditional practices of doctors mailing x-rays and electrocardiograms for consultations. Use of TMTH also is growing in psychiatry and mental health services, emergency-room care, nursing homes, home health, and geriatric care.[5]

Telehealth applications have been extensively used at all Texas Health Science Centers. New technologies have allowed greater opportunities for distance learning, teleconferencing and many other applications. The second section of this report presents an inventory of the current TMTH projects operating in Texas.

Maldistribution of Health Care Professionals

The SHCC's original interest in TMTH grew from its investigation of modern technologies to ameliorate the lack of health professionals in rural and inner city areas of Texas. As the state with the second largest land mass and an estimated 21 million residents, Texas confronts a unique set of problems in delivering high-quality health care services to its residents. The third section of this report focuses on using TMTH to address the maldistribution of health professionals. It is hoped that through the use of TMTH, consultative services can be provided in rural areas while enhancing the quality of care that a patient receives and providing contact with a health care professional where it otherwise might not be available. TMTH has the potential to bring a significant increase in professional information and educational opportunities to health providers in medically underserved areas. In addition, TMTH can help attract health professionals to rural areas and retain them by providing ongoing training and collaboration with other health professionals. The use of modern telecommunications technology offers the potential for innovative approaches to retention strategies, particularly when coupled with clinical resources available through academic health science centers, medical schools, tertiary care centers and regional health care facilities.[6]

Licensure, Standards, and Scope of Practice

TMTH offers the potential to provide health services across vast distances to underserved areas. However, even though TMTH technology has no boundaries, health professionals who use TMTH must be licensed and regulated at the state level. Therefore, issues relating to cross-state licensure are potential barriers to the expansion of TMTH. Cross-state licensure is also important in public health emergencies where reserves of out-of-state health care providers may be needed to assist with the medical response to disease outbreaks in jurisdictions in Texas. Services of out-of-state providers could be carried over TMTH networks. Section four of this report focuses attention on these issues.

Infrastructure and Operation

To be successful, TMTH network systems require the design, construction, and/or coordination of compatible, sufficient infrastructures, equipment, networks, uninterruptible connections and operator capabilities. Errors and oversight in setting up telecommunications infrastructure can later pose significant challenges to the success of projects.[7] Given the limited resources available, a coordinated TMTH plan would help to prevent duplication of effort or the installation of "islands" of noncommunicating proprietary systems. The fifth section of this report addresses these issues.

Training and Technical Assistance

At the November 9, 2000 meeting of the State TMTH Workgroup, members listed the lack of training and technical assistance to TMTH providers as a major obstacle to the fully effective use of TMTH. All of the most up-to-date technology, such as network connections with unlimited bandwidth, will not reach its potential if users are not given sufficient training or technical assistance. Training initiatives should address problems experienced by many patients and health care providers that are related to lack of familiarity with, or poor acceptance of, advanced technologies applied to health.

Securing a good source of technical assistance is important prior to start-up of the project. Often, the only readily available source of technical advice may be equipment vendors. Thus, network participants must develop a critical mass of technical expertise at both the receiving and sending sites. This responsibility cannot be vested in one individual per location, but rather must involve enough persons to cover all the hours that the network is utilized. Training on this equipment also should be extended to those health professionals who will need to be familiar and comfortable with this technology as they move from training to practice.[8]

Reimbursement

Private insurance third-party payers, including managed care plans, have been reluctant to pay for TMTH services. Federally funded programs such as Medicare and Medicaid historically provided limited coverage. Without adequate payments, the long-term survival of TMTH is in question. Thus, understanding the barriers to third-party payment and how to overcome them needs to be a high priority. Section VII of the report will concentrate on a discussion of these issues.

Project Planning and Accountability

Although many individuals believe strongly in the potential of TMTH for providing cost-effective services, not much "hard data" is available to support that belief. Decision-makers want to know the value that is added by TMTH. Lack of solid evaluative information is a significant barrier to the deployment of TMTH. A framework needs to be developed for TMTH project evaluation. The framework should allow projects to share information with each other and may eventually facilitate cooperative evaluation efforts with private sector TMTH projects. Evaluation will be the focus of Section VIII of this report.

Privacy and Security

Lack of privacy and security standards affect several of the legal challenges facing TMTH (e.g., malpractice) and have profound implications for the acceptance of TMTH services. Privacy and security issues are of particular concern in using TMTH technologies for treating HIV, mental illness, substance abuse, and other conditions that carry a social stigma. In many respects, TMTH does not alter existing issues relating to the privacy and confidentiality of medical records. The fundamental concerns in protecting patient confidentiality are the same whether a health care provider treats a patient face-to-face or through TMTH. Even the privacy issues related to using video and audiotapes, storing still images, and maintaining electronic records, all of which are a part of TMTH practice, have been identified and addressed to some extent.[9]

However, TMTH will make transmitting sensitive personal information to third parties and storing patient records in electronic form common. The customary privacy and confidentiality in the medical setting cannot be guaranteed in TMTH because the patient's records and medical history are conveyed not only to the consulting health care provider, but also, by necessity, to several individuals outside the traditional medical team. The transmission procedure requires technical staff at both ends. In small communities, it is possible that the patient knows the nonmedical personnel socially, thereby compounding the sense of loss of privacy. Thus, the nature of the provider/patient relationship changes with TMTH, challenging traditional, as well as legal, concepts of privacy and confidentiality.[10] Patient concerns about the more intrusive video images, the presence of additional and unseen persons, and the concern about a loss of control over medical information may limit patient disclosure of medically relevant information and lead to patient rejection of TMTH. These concerns can be addressed through a combination of legal, technical and administrative security measures, as well as patient education. However, TMTH providers must be more vigilant about privacy and security than traditional providers.[11] We will discuss these issues further in Section IX of the report.

New Challenges New Opportunities

Texas faces unique challenges due to the geography, demographics, and economy. By contributing to a future state TMTH plan for Texas, it is hoped that the SHCC's efforts will lead toward improving the health of all Texans. It is also hoped that this report will allow those interested to be in a position to develop, advocate, and implement strategies that can address TMTH barriers and foster new ways of tackling these problems. The purpose of a TMTH state plan would be to describe TMTH barriers and to provide the policy makers with steps they can take to help reduce these barriers and to stimulate the development and utilization of TMTH networks. Close examination of the TMTH activity that results will enable policy makers to answer critical policy questions about costs and benefits.

Endnotes

1 Texas House Research Organization, "Telemedicine in Texas: Public Policy Concerns." May 5, 2000. p 1.
2 Ibid.
3 House Committee on Public Health Texas House of Representatives "Interim Report 2000" January 17, 2001. http://www.house.state.tx.us/house/commit/reports/pubhealth.pdf
4 California Telehealth/Telehealth Coordination Project, "Strategic Plan" May 24, 1995. http://www.dnai.com/~william/htmldocs/strat1.html#summary
5 Texas House Research Organization, "Telemedicine in Texas: Public Policy Concerns." May 5, 2000. p 4.
6 Statewide Health Coordinating Council, *2001 Update to the Texas State Health Plan*. December 2000. p. 224.
7 National Telecommunications and Information Administration, "Telemedicine Report to Congress," January 31, 1997. http://www.ntia.doc.gov/reports/telemed/
8 Ibid.
9 California Telehealth/Telehealth Coordination Project, *Strategic Plan*, May 24, 1995. http://www.dnai.com/~william/htmldocs/strat1.html#summary
10 Ibid.
11 Ibid.

Section II:
Current Status of Telemedicine/Telehealth in Texas

Section II: Current Status of Telemedicine/Telehealth in Texas

Telemedicine and telehealth operate in a fluid environment because of the accelerated evolution of TMTH technology. impacting TMTH makes it a fluid environment. Because of this, SHCC staff conducted a survey of TMTH projects in Texas to get a snapshot of public and private TMTH projects underway in Texas during the summer of 2001.

The Survey

The goal of the survey was not only to list all active TMTH projects in Texas, but also to collect information on key issues that can be used by planners and policy makers for the TMTH State Plan (Appendix II-A(1) and (2): Survey Instruments). The following sources were used to develop the survey instrument:

- Association of Telemedicine Service Providers' 2001 Survey of Telemedicine Program Activity
- Texas Telemedicine Strategic Planning Project Survey from Draft Report Texas Telemedicine Strategic Planning Project 1997 (co-sponsored by Center for Rural Health Initiatives and Texas Telehealth/Education Consortium)
- Pennsylvania: Telemedicine Initiatives Survey
- Telemedicine Information Exchange's Active Programs Survey
- Rural Policy Research Institute's Telehealth Survey
- Price Waterhouse Coopers' Telehealth Victoria Survey

In addition, experts in TMTH reviewed the survey before it was finalized.

Three main sources were used to identify survey participants: (1) Texas Infrastructure Board's list of grantees under public health initiatives (Appendix II-B: List of TIFB Grantees), (2) survey results from the 1997 Texas Telemedicine Strategic Planning Project (Appendix II-C: TMTH Projects Contacted), and (3) Texas Hospital Association's (THA) list of participating hospitals (Appendix II-C). Between the contacts from the THA list and the TIFB surveys, 376 surveys were sent out.

Survey Results

There were 136 responses to the survey, which is a response rate of about 36 percent. While this is a relatively low response rate, it is important to note that many entities on the lists utilized did not have active TMTH projects, and therefore chose not to respond. In total, 78 active projects involving more than 270 different TMTH locations were identified (Appendix II-D: Survey Results).

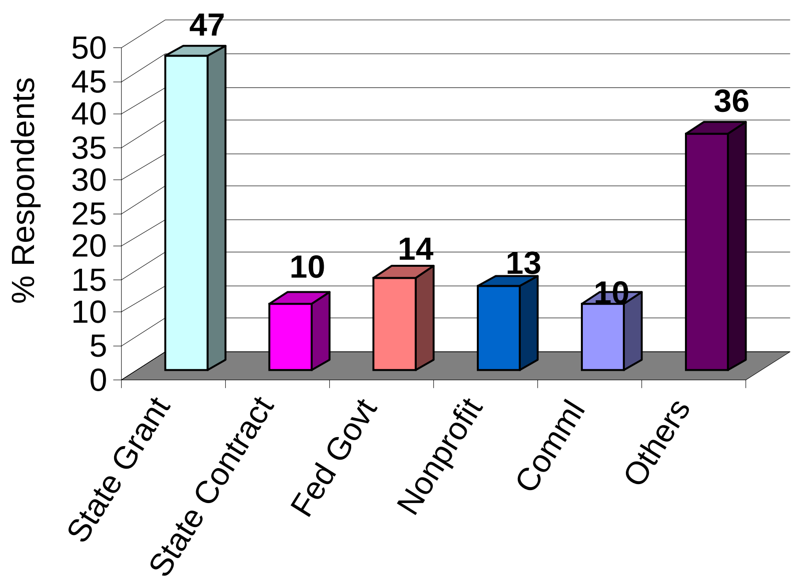
The survey results are summarized below.

Starting Date: Starting dates ranged from not yet started (although they have everything in place to begin the project) to as far back as the spring of 1989. The average time period since start of the project was 20 months.

Participating Locations: Participating locations varied from none to as many as 185 locations reported by Health Alert Network (HAN). Participating locations included a few international sites, which were associated with projects headed by M.D. Anderson Cancer Center and Texas Children's Hospital.

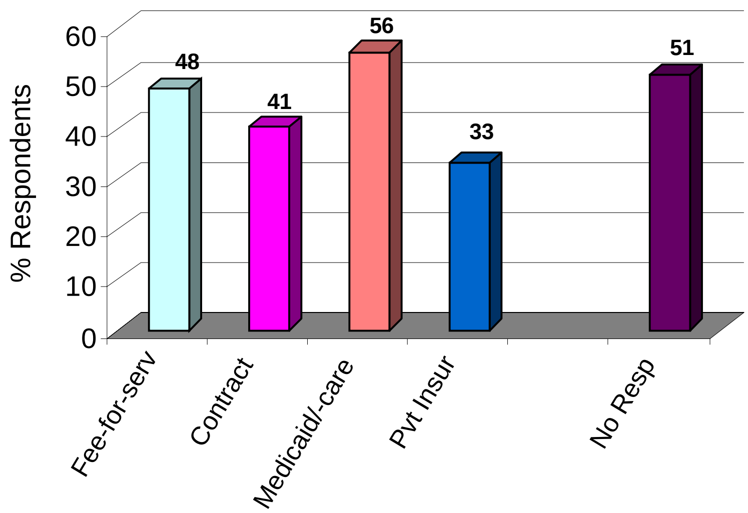
Funding Sources: About 47 percent of the respondents indicated state grant(s) as the funding source. Federal funding was identified as a source in about 14 percent of responses. In about half of the cases, the respondents indicated other funding sources, which were largely institutional sources.

Figure II-1. Funding Source



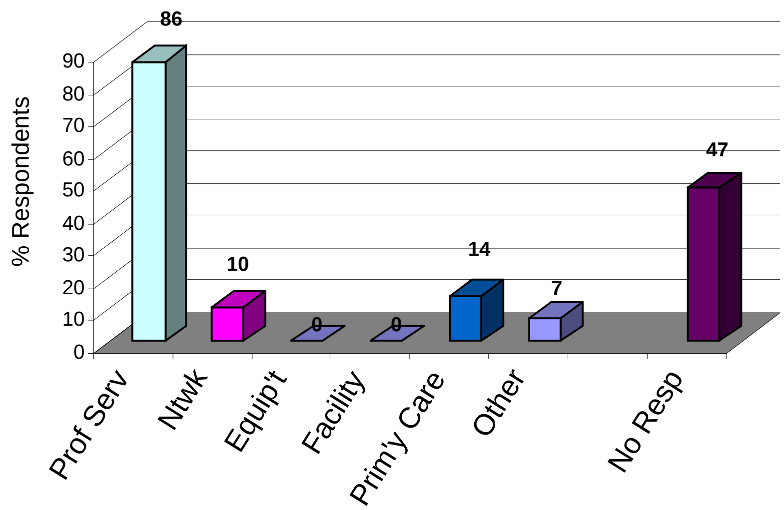
Revenues: Only half of the respondents' indicated that their projects produced revenues; the others either stated that their projects did not generate any revenues, or they chose not to reveal revenue information. Of those who responded, slightly less than 50 percent charged a fee for TMTH services. Medicaid/Medicare was a source of revenue generation for slightly less than half of the total respondents.

Figure II-2. Revenues



Cost Recovery: Only half of the respondents indicated a means of cost recovery. In almost 90 percent of the cases, professional services were charged by the project.

Figure II-3. Cost Recovery

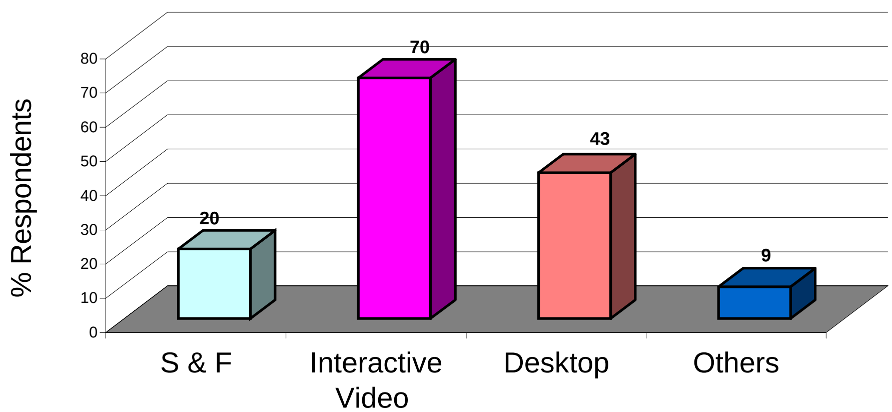


Total Project Cost: More than two thirds of the respondents provided data on the project cost, which ranged from $600 to $1.25 million. The average project cost was about $675,000.

Operating Cost Per Month: Two thirds of respondents provided dollar figures for monthly operating costs, which ranged from $110 to $100,000. The average monthly operating cost was approximately $8,300.

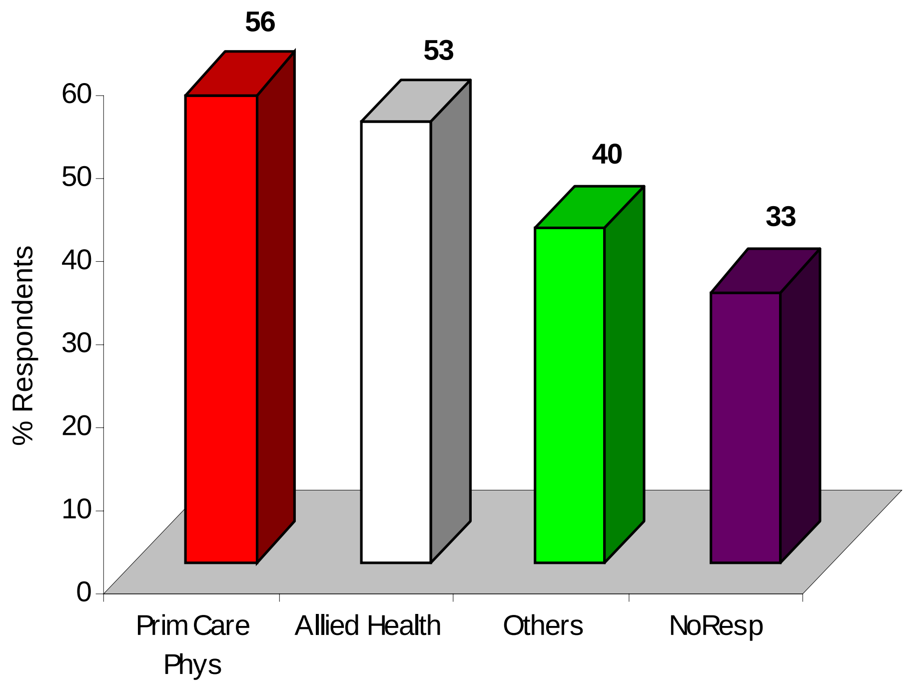
Technology and Connectivity: Almost 70 percent of respondents' projects use interactive video. Forty-three percent of respondents' projects use desktop technology in addition to interactive video. About 73 percent of respondents' projects have full T1 connectivity with some using ISDN, fractional T1 or the Internet. Most of the projects rely on dedicated networks for transfer of data, and only nine percent use public networks.

Figure II-4. Technology



Clinical Applications: Projects described in the survey use TMTH for a host of clinical activities. The most common clinical application of TMTH is mental health, followed by pediatrics and patient management. Orthopedics, neurology, general medicine, gastroentrology, dermatology, cardiology and emergency care are some of the other clinical applications of TMTH used at several locations. The settings for TMTH projects of survey respondents are hospitals, universities, rural clinics and outpatient clinics in most cases. Other settings include correctional institution clinics, school-based clinics and nursing homes. The presenters of the patients are divided almost equally between primary care physicians and other health professionals, such as nurses and physician assistants. About a third of the respondents indicated that specialists also serve as presenters. TMTH projects, on average, are involved in treating 261 patients per month, with a range from less than one per month to 3,500 per month in a school-based clinic system. There are a handful of institutions serving many more patients per month than most of the others.

Figure II-5. Presenters



Educational Applications: Over 60 percent of the respondents use their networks for some sort of educational purpose. Educational use is largely for staff training, patient education or continuing education. On average, about 77 students or professionals per year receive educational opportunities through the projects surveyed.

Administrative Applications: The survey data indicate that over half of the responsdents also use TMTH for administrative purposes. Specific applications include meetings, patient records, medical databases and financial management.

Project Evaluation: More than half of the respondents' projects underwent some type of evaluation during the last two years. Most of the evaluations were internal, and were based on many factors, including cost savings, patient/provider satisfaction, quality of care and program effectiveness.

TMTH Activities at Texas Health Science Centers

All of the seven Texas Health Science Centers have active and extensive TMTH networks. Two of the Health Science Centers, Texas Tech University and University of Texas Medical Branch at Galveston, have been recognized as leaders in the field of TMTH.

Texas Tech University Health Sciences Center (TTUHSC) is recognized as a pioneer in applying live interactive video to the practice of medicine, and remains on the cutting edge. TTUHSC is actively involved in the clinical applications of TMTH at its numerous clinics, as well as conducting TMTH research, development and training projects. TTUHSC has TMTH sites in 29 locations, including seven rural sites and 13 sites in correctional facilities.[1]

The University of Texas Medical Branch (UTMB) has a long-standing history of advancing the use of telecommunications technology for the purpose of improving health care delivery to rural and underserved populations of Texas. The UTMB telehealth program began with several demonstration projects, carried out in the early 1990s. These projects established the feasibility of using TMTH technologies for providing medical services to inmates in the state's correctional facilities, strengthening rural health care delivery through distance education, and delivering team-based care to special needs children. Since 1994, more than 40,000 interactive TMTH consultations have been conducted at UTMB, and the university has gained international recognition for its leadership in advancing TMTH applications. UTMB has 108 TMTH sites in 45 cities in eastern Texas.[2]

Texas State Agency TMTH Activities

Texas Department of Health

TDH Telemedicine/Telehealth/Health Informatics Survey

Analysis of Public Health/Community Health Workforce Needs and Infrastructure

TDH and its partners have conducted, or are in the process of conducting, assessments of the public/community health workforce. These include:

1. Analysis of community competencies for health professionals (See 1999 – 2004 Texas State Health Plan – Appendix C)
2. Survey of local health authorities (job duties, educational needs, etc. – in progress)
3. Survey of public health workforce knowledge and competency in relation to the essential public health services (conducted by Texas Public Health Training Center – in progress)

Continuing Education:

TDH provides specific continuing education services to enhance professional practice and assists other programs in providing continuing education contact hours in five basic areas. Each of the following areas offer Internet-based education and information relevant to the professions they serve:

1. Community Health Workers (*Promotoras/Promotores*). New program. Interested in obtaining funding for e-learning.
2. Certified Health Education Specialists (CHES).
3. Public/Community Health Nurses Continuing Nursing Education (CNE).

4. Public/Community Health Physicians.
5. Centers for Disease Control (CDC) Public Health Training Network Distance Learning Coordination.

<u>Program-Specific Telemedicine/Telehealth Education and Informatics Projects</u>

A number of program-specific TMTH and informatics projects are being planned or are currently underway. These include the following:

1. Bioterrorism Response/Health Alert Network
    - Educational materials and training via Internet and interactive video teleconferencing
    - TMTH consultation
    - Web-based bioterrorism information resources
2. Embryology
    - Regional staff training via interactive video teleconferencing
3. Epi X
    - Provides secure Internet communications with CDC regarding communicable disease outbreaks
4. Food and Drug Safety
    - Coordinate satellite downlink of programs available from the U.S. Food and Drug Administration.
5. HIV/STD
    - Internet-based hepatitis C training for prevention counselors and trainers
    - Basic HIV/STD interactive computer software training for regional and local public health and community health staff
    - HIV prevention counseling self-based computer instruction on CD ROM
6. Immunization/Vaccine Preventable Disease
    - Coordinate regional and local satellite downlink of programming from CDC
    - Some programs delivered via interactive video teleconferencing
7. National Electronic Disease Surveillance System
    - Planning and assessment completed
    - Application for funding for implementation of integrated data repository (Web-based "front end") for notifiable conditions
8. Newborn Screening
    - Training to hospitals and rural clinics on specimen collection and follow-up
    - Delivered via interactive video teleconferencing
9. TB Elimination/Texas Center for Infectious Disease
    - Video teleconferencing technology for TMTH consultation and training

10. Vital Statistics
    - Web-based training on the completion of vital records
    - Vital data available via the Web
11. Women, Infants and Children Program (WIC)
    - Data transfer and training to 300+ WIC sites throughout the state
    - Delivered via VSAT satellite and interactive video teleconferencing technology

TMTH Funding

Reimbursement for TMTH consultation is provided or in the planning process for several funding entities:

1. Medicaid
    - Reimbursement for face-to-face consultation
    - Specific criteria for hub and remote site providers
    - TMTH pilot project on the border (with Children's Health Insurance Program)
2. Children's Health Insurance Program (CHIP)
    - Planned future reimbursement (legislative initiative)
    - Criteria being developed
3. Children With Special Health Care Needs (CSHCN)
    - Planned future reimbursement (legislative initiative)
    - Criteria being developed

Texas Department of Criminal Justice (TDCJ)

TDCJ is arguably the most extensive single user of TMTH of all the Texas state agencies. UTMB contracts to provide primary and specialty care to more than 105,000 prisoners at 70 separate facilities in the eastern half of the state. Texas Tech University Health Science Center provides medical care to more than 31,000 offenders at 25 TDCJ units in the western half of the state.

Early Childhood Intervention (ECI)

ECI contracts with about 65 local programs for services. One of these contractors has done pre-service training and public awareness on a limited basis in collaboration with the Allied Health program at Texas Tech University.

Texas Commission on Alcohol and Drug Abuse (TCADA)

TCADA's Behavioral Health Integrated Provider System (BHIPS) project is a real-time, web-based, client evaluation and business system/database project.

- Technology used: Internet
- Connectivity: ISP

- Network type: combination (of dedicated and switched)
- Utilization of network: too soon to tell
- Clinical applications: mental health and chemical dependency treatment
- Settings: hospital, rural clinic and outpatient
- Presenters: chemical dependency and abuse counselors and business office staff
- Beneficiary count: approximately 900 patients per month
- Educational applications: staff training
- Students/professionals trained per year: approximately 50 as of April 2000. Anticipate training 1,100 in the next 18 months.
- Administrative applications: patient records, medical databases, financial management

Texas Department of Mental Health and Mental Retardation (MHMR)

MHMR has two TMTH projects at three state hospitals. The Region 4 project is at the North Texas State Hospital (NTSH) and the Terrell State Hospital (TSH).

- Technology used: interactive video
- Connectivity: full T1, native LAN (at NTSH)
- Network type: information not available
- Utilization of network: 15 percent TSH, percent NTSH
- Applications: mental health
- Settings: hospital
- Presenters: others (not specified)
- Number of beneficiaries per month: information not available
- Educational applications: CME at TSH, staff training at TSH
- Number of students/professionals trained per year: 10 at TSH
- Administrative applications: staff meetings at NTSH

The Kerrville State Hospital project:

- Technology used: combination
- Connectivity: fractional T1
- Network type: information not available
- Utilization of network: information not available
- Applications: mental health
- Settings: hospital
- Presenters: information not available
- Number of beneficiaries per month: information not available
- Educational applications: CME, staff training

- Number of students/professionals trained per year: information not available
- Administrative applications: information not available

Texas Rehabilitation Commission (TRC)

TRC does not currently purchase medical services via TMTH. However, TRC is considering the possibility of a limited pilot project in FY 2002 for postacute brain injury services.

State Agency Activities Tangentially Related to TMTH

There are several state agencies that, while not directly involved in TMTH, have a significant impact on the implementation of a TMTH system in Texas. State government in Texas has been actively involved in establishing telecommunications infrastructure and networks, which can be made available to local government. Other agencies work to facilitate the establishment of networks through grants and loan programs.

Texas Education Agency (TEA)

The Texas Education Telecommunications Network (TETN) is a statewide telecommunications infrastructure among the 20 regional Education Service Centers (ESCs) and TEA that provides compressed two-way video/audio and data transmission using dedicated T-1 lines. TETN was established to provide a 24-hour telecommunications network between the ESCs and TEA with the capabilities to connect to schools and other public institutions. By providing live, two-way videoconferencing between multiple sites, TETN improves communications, reduces travel expenses and reduces staff travel time for schools, ESCs, and TEA staff. Electronic data transfer of school data between ESCs and TEA is also simplified.

General Services Commission – TEX-ANN 2000

The General Services Commission (GSC) provides various Internet services for all state agencies, political subdivisions, and other eligible organizations, such as public institutions of higher learning, independent school districts, special districts created by Texas state law, city and county governments, entities owned by or a part of a city or county taxing authority, consortia and cooperatives made up of political subdivisions. Services offered include connectivity, access circuits, ports, PVCs, high-speed connections to the Internet, and web hosting and development.

The preferred GSC solution for providing Internet service is to provide a data transport solution through the TEX-AN 2000 Virtual Network back to the Network Operations Center (NOC) in Austin. From the NOC, GSC maintains large connections to the Internet. GSC has ongoing Internet connectivity contracts and is able to provide ISP-like service for eligible customers up to DS-3 speeds. For larger bandwidths (Internet connections DS-3 and above) GSC has signed contracts with several Internet providers including AT&T, Qwest, and Southwestern Bell Telephone.

TEX-AN 2000 leverages a public network solution that provides the full-featured functionality required to support TEX-AN users without incurring the expenses or responsibility for a state-owned infrastructure. The network provides a unified, scalable, flexible, and extremely cost-effective networking solution using asynchronous transfer mode (ATM) and frame-relay technologies, along with Cisco 8850s as the core network switches. Users benefit from the state-of-the-art technology provided in the public data network, as well as the full array of features offered with the public voice network, AT&T's Software Defined Network.

The Texas Telecommunications Infrastructure Gateway (TTIG) is a pilot project to study the feasibility of augmenting TEX-AN 2000 with more than 50 infrastructure and application connection points for customers. GSC has contracted with various vendors to implement the pilot project. If implemented statewide, the TTIG will support a standards-based platform for the coordinated and collaborated delivery of advanced educational, rural health care, and community networking services. This approach will provide equal access to both urban and rural communities and increase the number of network users. The statewide platform will allow significant cost containment and resource conservation through leveraging the bulk buying power of a larger user community. Pilot implementation will continue through fiscal 2001.

Infrastructure Loan and Grant Programs

Texas Department of Agriculture (TDA)

The Texas Department of Agriculture is very active in promoting economic development in rural Texas. TDA recognizes the importance of a strong telecommunications infrastructure to economic growth and stability. To that end, the Texas Agricultural Finance Authority (TAFA) was created in 1987 as a public authority within the Texas Department of Agriculture. TAFA provides financial assistance to creditworthy individuals and businesses in partnership with banks or other agricultural lending institutions through seven programs to eligible agricultural and nonagricultural businesses. These funds can be used for, among several other purposes, establishment of telecommunications infrastructure projects.

The Public Utility Commission of Texas (PUC)

Senate Bill 560, passed during the 76th Legislative Session, added several competitive provisions to the Public Utility Regulatory Act (PURA). Section 55.014 addresses the provision of advanced services. Beginning September 1, 2001, the section requires, upon a bona fide request, any telecommunications company that provides advanced services within urban service areas of Texas to provide rural areas of Texas serviced by the company advanced services at reasonably comparable prices, terms, and conditions within 15 months of the request.

Section 56.028 requires the PUC to provide reimbursement to non-electing local exchange carriers through the Texas Universal Service Fund (TUSF) for reduced rates for intra-LATA interexchange high-capacity (1.544 Mbps) service for schools, libraries, and nonprofit organizations (*See* P.U.C. SUBST. R. 26.410.).

During the 75th Legislative Session, the PUC was directed to create a Texas Universal Service Fund (TUSF) with the purpose of implementing a competitively neutral mechanism to enable all residents of Texas to obtain basic local telecommunications services to communicate with other residents, businesses, and governmental entities. As a result of changes in pricing policies in the transition to a competitive marketplace, targeted financial support may be needed to provision and price basic local telecommunications services in a manner to allow universal access to customers. The TUSF assists telecommunications providers in providing basic local telecommunications services at reasonable rates to customers in high cost and rural areas and to qualifying low-income and disabled customers. The TUSF is funded by a percentage of all retail receipts paid by telecommunications providers. The TUSF currently totals $549 million per year.

The TUSF supports the following programs: Link Up, which reduces the installation charges for eligible low-income customers; Tel-Assistance, which lowers basic monthly rates by 65 percent for low-income customers; Telecommunications Relay Service, which funds a statewide telecommunications relay service that allows individuals with speech or hearing disabilities to communicate using specialized devices and operator translations; Specialized Equipment Distribution, which provides specialized equipment for deaf and hard-of-hearing individuals at an affordable cost; and the Small and Rural ILEC Service Plan, which helps small and rural phone companies provide affordable telephone service to customers who live in areas that are unusually expensive to serve.

Texas Department of Economic Development

Texas Capital Fund Infrastructure Development Program

The Texas Capital Fund Infrastructure Development Program is an economic development tool designed to provide financial resources to nonentitlement communities. Funds from this program can be utilized for public infrastructure needed to assist businesses that commit to create and/or retain permanent jobs, primarily for low and moderate-income persons. Grants may be provided for construction of the first-time/initial public infrastructure of telephone and fiber optic lines. The minimum award is $50,000 and the maximum is $750,000 including administration costs. The award may not exceed 50 percent of the total project costs. Further information regarding the program can be found at http://www.tded.state.tx.us/TexasCapital Fund/tcf-infr.htm.

Texas Capital Access Fund

The Texas Capital Access Fund (TCAF) was established to increase the availability of financing for businesses and nonprofit organizations that face barriers in accessing capital. Through the TCAF, businesses that might otherwise fall outside the guidelines of conventional lending may still have the opportunity to receive financing. The essential element of the program is a "reserve account" which is established at the lending institution to enhance the creditworthiness of the applicant. This induces the financial institution to make a loan. Use of proceeds may include working capital or the purchase, construction, or lease of capital assets, including buildings and equipment used by the business. To be eligible, a borrower must be a small business (100 or fewer employees), a medium business (100 to 500 employees), or a nonprofit organization. The business must also be domiciled in Texas or have at least 51 percent of its employees located in Texas. Further information regarding the TCAF can be found at http://www.tded.state.tx.us/ TexasCapitalAccess.

Texas Leverage Fund

The Texas Leverage Fund (TLF) is an economic development bank offering an added source of financing to communities that have passed the economic development sales tax. The Texas Department of Economic Development may loan funds directly to a local Industrial Development Corporation (IDC) to finance eligible projects. Sales tax revenues pledged by the IDC need only be sufficient to cover projected annual debt service at the required debt service coverage ratio specified in the Texas Leverage Fund Program Guidelines. This allows cities to leverage their economic development sales tax and to pursue additional projects. Loan proceeds must be used to pay eligible "costs" of "projects" as defined by the Development Corporation Act of 1979, as amended. Under Section 4A of the Act, examples of eligible costs include land, buildings, machinery and equipment for manufacturing and industrial operations. Under Section 4B of the Act, examples of eligible costs include sports, athletic, entertainment and public park purposes and events. Further information regarding the Texas Leverage Fund can be found at http://www.tded.state.tx.us/TexasLeverageFund.

Texas Telecommunications Infrastructure Fund Board

The Texas Infrastructure Fund (TIF) was created by House Bill 2128 during the 74th Legislative Session. The mission of TIF is to help Texas deploy an advanced telecommunications infrastructure by stimulating universal and scaleable connectivity for public schools, higher education, public libraries, and nonprofit health care facilities. Appendix II-E provides an explanation of TIF public health grant types (PH1-PH5). TIF also affects technology training programs and encourages quality content that strengthens education, health care, and libraries in Texas. Priority is given to rural and underserved populations. TIF is supported by funds collected through a surcharge on Texas customers' telecommunications bills. The charge is a set percentage of intrastate access usage. TIF is charged with disbursing approximately

$1.5 billion in revenues through loans and a formal grant program. As of the end of fiscal year 1999, the TIF Board had funded 2,300 public school grants, 562 of 578 rural school districts, 227 school districts for distance learning, 57 of the 57 community colleges, 67 of the 75 universities, 592 of the 789 public libraries and branches, 410 of the 742 public and not-for-profit health care facilities, and 26 collaborative model projects. A typical TIF grant averages $75,000 and funds telecommunications equipment, wiring, servers, computers, distance learning equipment, printers, and related peripherals. Further information regarding TIF can be found at http://www.tifb.state.tx.us.

Coordinating Roles

Texas Higher Education Coordinating Board

The Texas Higher Education Coordinating Board (THECB) oversees distance education programs that are offered by state higher education institutions. THECB ensures the quality of such programs by requiring each institution to submit a distance education plan that is reviewed (and approved) by an advisory committee formed by THECB. These plans are expected to comply with accreditation standards of the Southern Association of Colleges and Schools and to adhere to THECB document, *Principles of Good Practice for Academic Degree and Certificate Programs and Credit Courses Offered Electronically*.

THECB also mandates specific notification and approval procedures for new institutional distance education programs. This process ensures the avoidance of unnecessary duplication of programs and the ability of THECB to collect and disseminate information about the state's distance education offerings. Toward this end, THECB established a single portal site, TexasDistanceEducation.com, in which any student can access and locate all available distance educations programs for any field offered at higher education institutions in Texas.

Finally, THECB has created a master plan for distance education in Texas that identifies many of the relevant issues affecting the implementation of comprehensive distance education programs for the state. The plan encompasses all disciplines at universities and health-related institutions.

Texas Department of Information Resources (DIR)

The Department of Information Resources provides strategic direction and policy development for the implementation and management of technology in state government. In line with its mission to ensure the most appropriate use of information resources, the department uses the strategic planning process to analyze and respond to changes in the information technology industry and utilizes sound business practices in promoting the cost-effective acquisition and application of technology. Although DIR does not provide services directly to the public, the department's efforts affect how other state agencies deliver services to the public.

One important service provided by DIR is the production of the *Strategic Plan for State Government Telecommunications Services.* This plan is intended to guide implementation of the telecommunications network for state government agencies. This network, known as TEX-AN, is a private-line network designed and managed under contract to a telecommunications provider. TEX-AN provides state and local government entities with cost-effective long-distance voice, video, and data services. The Telecommunications Plan supports the state's vision of widespread access to government services, a single face of government, and increased public/private sector cooperation, as these apply to the arena of telecommunications services.

Public Utility Commission of Texas (PUC)

The PUC plays an important regulatory and coordination role in the Texas telecommunications system. The PUC currently has original jurisdiction over approximately 71 electric and telephone utilities. The commission regulates local exchange carriers, but does not have jurisdiction over the rates or services of long-distance telephone carriers such as AT&T, MCI, or Sprint. The electric cooperatives were largely deregulated in 1999, which accounts for most of the reduction in the number of utilities regulated. The PUC continues, however, to regulate transmission rates for cooperatives operating within the Electric Reliability Council of Texas (ERCOT).

The PUC has produced several reports that are important guides to gaining insight into the Texas Telecommunications system. Two reports germane to TMTH include:

- *Advanced Services Availability in Rural and High Cost Areas.* Report to the 77th Texas Legislature (12/28/00).
- *Intrastate Switched Access Charges* Report to the 77th Texas Legislature (12/29/00).

Health and Human Services Commission (HHSC)

Health and Human Services Consolidated Network

The Texas Health and Human Services Consolidated Network (HHSCN) is an award-winning telecommunications partnership between government agencies that connects and manages networks from the data center to the desktop. Governed by a board of its constituents, the coop partnership was originally created by the Health and Human Services Commission (HHSC) to share network costs and services among Texas health and human service agencies. Since its inception in September 1994, the HHSCN has extended its services to other entities, including state agencies outside of the HHSC, organizations outside of state government, and even organizations outside the state of Texas.

The network provides a variety of services at a reduced cost by maximizing the use of existing equipment, technology and support structure. Since its creation, the HHSCN has extended its services beyond the health and human services agencies to other entities benefiting the people of the State of Texas. Some of the participants in this networking cooperating venture include:

- Texas Health and Human Services Commission
- Texas Commission For the Blind
- Texas Department of Protective and Regulatory Services
- Texas Department of Human Services
- Texas Rehabilitation Commission
- Texas Department of Mental Health and Mental Retardation
- Texas Youth Commission
- Texas Department of Health
- Texas Department of Licensing and Regulation
- Texas Workers Compensation Commission
- New Mexico Department of Human Service

Recent Legislation

Three bills were passed in the 77th legislature that contained significant implications for HHSC responsibilities for telemedicine (TM):

- Senate Bill 789 – relating to the regulation and reimbursement of telemedicine medical services.
- Senate Bill 1536 – relating to the application of technology in providing certain health services, including certain telemedicine and telehealth services.
- House Bill 2700 – relating to certain services provided through telemedicine.

While the 77th Texas Legislature passed SB 789, funding for the bill has not been forthcoming. The funding for SB 789 is in Part IX, Section 11 of SB 1 (Other Contingent Provisions of the General Appropriations Bill), which calls for certification of available funds by the comptroller's office before monies can be released to state agencies. HHSC has received notice from the Comptroller's office that they do not anticipate being able to certify any contingency funding this biennium. HHSC is moving forward with implementing as much of the legislation as possible and developing policy to integrate telemedicine into Medicaid and CHIP. Certain provisions of the legislation, such as the reimbursement system, cannot be implemented until funding becomes available. Additionally, there were no funds appropriated for SB 1536 and HB 2700, so implementation of the pilot projects described below is dependent on developing a reimbursement strategy that utilizes existing funding.

Establish a Telemedicine Advisory Committee

The advisory committee is to assist HHSC to coordinate state telemedicine efforts and assist HHSC in:

- Evaluating policies for the use of telemedicine medical services (S.B. 789),
- Monitoring programs receiving reimbursement (S.B. 789),
- Ensuring the efficient and consistent development and use of TM technology…under government-funded health programs (H.B. 2700), and
- Coordinating the activities of state agencies interested in the use of telemedicine services. (S.B. 789)

The committee must be established no later than December 31, 2001 and must report to the legislature on the results of pilot programs by September 1, 2003 (H.B. 2700).

Establish Telemedicine Pilot Programs

Senate Bill Pilot Programs

- Telemedicine Pilots. HHSC shall establish pilot programs in designated areas of the state for reimbursing health professionals for telehealth services.
- Home Health Care Pilots. HHSC shall establish a pilot program for delivering home health care services through home telemonitoring systems located in the recipients' homes, involving the following services: education on self-care and preventive health, monitoring medications and vital signs, or providing counseling or social support. The pilot must be implemented in a rural area, an urban area, a medically underserved area, and a border area. A report to the legislature is due December 1, 2004, including an analysis of the program's cost-effectiveness, quality of health care, patient satisfaction, and recommendations for continuation, expansion, or elimination.
- Teledentistry Pilot. The HHSC Commissioner shall appoint a program administrator to administer a pilot program that uses teledentistry and other methods of delivering dental services to provide dental services to students in one public school district in the state. The program administrator shall establish an advisory committee for the pilot program.

House Bill 2700 Pilot Programs

- Border Pilots. This bill charges HHSC with establishing pilot programs under Medicaid and CHIP for telemedicine medical services and telehealth services in the Texas Border area (not more than 150 miles from the border). The bill uses the same definitions for telemedicine medical service and telehealth services from SB 789. (Same pilots required in SB 1536 also.)

Senate Bill 1536 Pilot Programs

- Technology Pilots. This bill allows HHSC to establish pilot projects relating to technology applications for rehabilitation services, services for the aging and disabled, or long-term care services, including community care services and support.

Other Legislative Requirements

There were many telemedicine-related requirements for the Medicaid and CHIP programs. Some of the key provisions include:

- HHSC shall by rule develop and implement a system to reimburse Medicaid providers for telemedicine services.
- By December 1 of each even-numbered year, HHSC shall report to the legislature on the effects of telemedicine on the Medicaid program.
- HHSC and the TIF Board by joint rule shall adopt minimum standards for operating systems for telemedicine services.
- HHSC in consultation with the Texas State Board of Medical Examiners shall monitor and regulate the use of telemedicine medical services.
- The TIF Board and HHSC shall jointly adopt rules prescribing the criteria that health care facilities must meet to be eligible to receive a grant.

Endnotes

[1] Texas Tech University Health Science Center. TTUHSC Website, January 2002, http://www.ttuhsc.edu/telemedicine/

[2] University of Texas Medical Branch at Galveston. UTMB Center for Telehealth and Distance Education Website, January 2002, http://www.utmb.edu/telehealth/.

Section III:
Addressing the Maldistribution of Health Professionals Through Telemedicine/Telehealth

Section III: Addressing the Maldistribution of Health Professionals Through Telemedicine/Telehealth

TMTH has enormous potential to address ongoing problems with the maldistribution of health professions in Texas. The maldistribution of health professionals has a number of aspects, only some of which are discussed in this chapter. First, there are medically underserved areas (MUA) in Texas and health professional shortage areas (HPSA) that tend to be in rural areas and poor urban areas. Secondly, there are setting-specific shortages such as in home health care. Thirdly, there are diagnosis-specific shortages such as with certain mental health diagnoses.

The data on health professional shortages are striking. While the data on HPSAs and MUAs are illustrative of the current gaps in health care coverage, they cannot be used as the sole determinant of community needs. Assessment will still need to be done to determine the best mix of services needed by communities prior to commitment of resources. Some controversy still surrounds the validity and accuracy of the MUA and HPSA numbers; however, these designations remain the tool available for use. What is unequivocal and most pertinent is that current distribution of services leaves significant gaps.

All or parts of 171 of Texas' 254 counties have been identified by the Health Professions Resource Center (HPRC) as MUAs.[1] The MUA designation means that those counties do not have sufficient numbers of primary care physicians to meet the needs of the citizens of these areas. Those same counties or partial county areas are designated by the U.S. Department of Health and Human Services as primary care HPSAs. The number of medically underserved areas in Texas has increased in recent years as demonstrated in Table III-1.

Table III-1: Growth in Texas Health Professions Shortage Areas

Type of Health Professions Shortage Area	1980	1990	2000
Primary Care	79	153	245
Dental	40	39	107
Mental Health	14	35	190
Total	133	228	542

Source: Health Professions Resource Center, 2001.

Primary care HPSAs have increased by 60.1 percent since 1990; the dental HPSAs have increased by 174.4 percent from 1990; and, the mental health HPSAs have increased by 442.8 percent. Overall, the increase in all HPSAs combined was 137.7 percent from 1990 – 2000. Part of the increase is due to a more aggressive attitude toward designating areas as HPSAs.[2]

Figure III-1 and Figure III-2. These figures affirm the impression that there is a maldistribution of the human and capital health care resources in Texas, with most of the resources being concentrated in affluent urban and suburban areas.

Figure III-1. Texas Health Professions Shortage

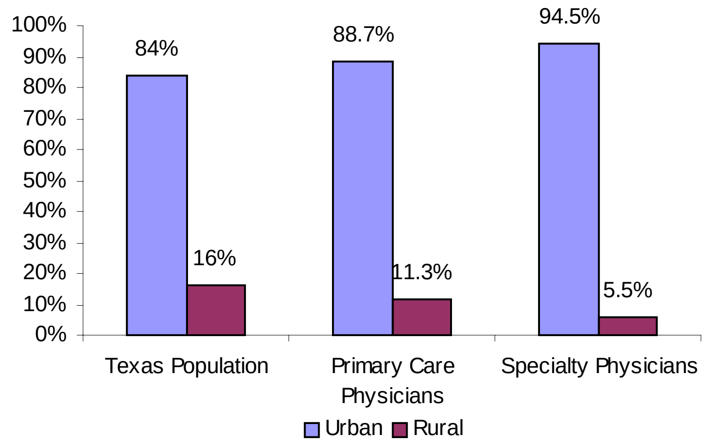
Figure III-2. Texas Health Professions Shortage Areas as of 2001

Approximately 84 percent of Texans live in areas designated as urban/suburban with the remainder living in rural areas.[3] Figure III-3 shows the percentage of physicians in urban and rural areas with a specialty of primary care (OB/GYN, pediatrics, internal medicine, family practice, and general practice); 88.7 percent are living in urban areas and 11.3 percent are living in rural areas. Among physicians of any of the other 70 specialty practices, the urban rural differential is 94.5 percent to 5.5 percent.[4]

One way to address the maldistribution of health care professionals in Texas is through the "redistribution" of specialists and the clinical resources available in urban and suburban health care centers to the medically underserved areas. TMTH may allow this redeployment to take place without physical relocation of these specialty providers, which will prove to be a cost-effective way to address these endemic problems.[5]

TMTH also serves an educational function by helping geographically isolated health care professionals connect to larger medical communities and resources. The availability of continuing education and consultations via TMTH is thereby likely to improve the recruitment and retention of health professionals in rural areas. Additionally, TMTH can generally improve public health in rural communities by providing timely public health information and training to local officials.

Figure 3-3. Primary Care and Specialist Physicians in Urban vs. Rural Areas



Source: Texas Health Professions Resource Center, 2001

The SHCC has previously pointed out that "The use of modern telecommunications technology offers the potential for innovative approaches to retention strategies, particularly when coupled with clinical resources available through academic health science centers, medical schools, tertiary care centers, and health care facilities. The availability of such services is greatly influenced by state and federal policies regarding access to such services by providers."[6]

Home Health

The need for increasing home health services is being driven by factors that include demographic trends; the shift in health care to more cost-effective approaches such as managed care and other risk-sharing systems; and the desire of patients, health care delivery organizations, practitioners, and employers to control costs while still providing quality care. As a result, the home health care market is poised to expand dramatically.

Home health care can be delivered using a variety of technologies, such as telephones, computers, monitoring devices, and interactive video (via cable television). Home-based TMTH could be particularly effective for post-acute hospital care and for monitoring patients with such conditions as asthma or diabetes. Monitoring allows preventive measures to be taken before problems get so severe that hospitalization becomes necessary.

Several testbeds are exploring the feasibility of using TMTH to provide care to patients in their homes. The Medical College of Georgia, in conjunction with several collaborators, is developing the "electronic house call." The project links 25 homes of patients with chronic illnesses to practitioners via the local cable television infrastructure by using a personal TMTH system with two-way interactive video, audio, and medical diagnostic instrumentation.

Other vendors have developed home TMTH systems that rely on standard telephone lines to connect homes with a monitoring center. These systems allow around-the-clock nurse monitoring with equipment that is leased on a daily fee basis.[7]

Mental Health Care

TMTH offers a tremendous potential for expanding the availability of mental health services in rural and medically underserved areas. For example, the following is a list of TMTH activities identified by the Rural and Remote Mental Health Services of South Australia.

Acute psychiatric assessments. Patients can be interviewed by means of videoconferencing by psychiatrists or psychologists with a primary health care professional in attendance with the patient. This is basically a consultation liaison service aimed at supporting the general practitioner/mental health worker in the acute management of their patients.

Intensive Inpatient Support. When a patient with a mental health problem is admitted under the care of their general practitioner to the local rural community hospital, the general practitioner can request urgent assessment and ongoing specialist psychiatric support via videoconferencing. This allows the patient and their family regular contact with a psychiatrist who can provide ongoing support and guidance to the treating general practitioner and hospital staff.

Discharge Planning. With the goal of effective integration of an inpatient back into the community, this service brings together the patient and the inpatient treating team with the treating GP/community health worker prior to patient discharge. Family member participation is also encouraged.

Nonacute psychiatric review. This is typically a follow-up service that evaluates management plan effectiveness and reviews the patient following an initial consultation.

Education. Sitting in with the patient during a psychiatric interview is a potent educational experience for the primary health care professionals. Educational support may also be offered at the completion of a clinical session, or educational sessions can be organized in a more formal lecture or tutorial format.[8]

Recommendations:

Adequate Continuing Medical Education for health care providers should be accessible, both to individuals and groups, through TMTH and electronic media.

Rural health care professionals should have ready access to specialists. To facilitate access, electronic consultations and other communications systems should be further developed for rural health care providers. Mechanisms for remuneration for these services should be established.[9]

Assess the needs of underserved areas so that there is a match between the areas of TMTH and the areas of need.

Endnotes

1 2001, Texas Health Professions Resource Center data.
2 Ibid.
3 Ibid.
4 Ibid.
5 California Telehealth/Telemedicine Coordination Project, "Project Report." November 1996, http://www.dnai.com/~william/TH-TM-REPORT/sect1.html
6 Statewide Health Coordinating Council, *2000-2001 State Health Plan Up*date. November 2000.
7 California Telehealth/Telemedicine Coordination Project, op cit.
8 "Mental Health Applications In Telemedicine," Rural and Remote Mental Health Services of South Australia. http://www.adelaide.net.au/~telemed/apps.html
9 "Recruitment and retention: consensus of the conference participants, Banff 1996." *Can J Rural Med* 1997; 2(1): 28-31 1997 Society of Rural Physicians of Canada http://www.cma.ca/cjrm/vol-2/issue-1/0028.htm

Section IV:
Licensing and Scope of Practice

Licensing and Scope of Practice Workgroup

The content of the Licensing and Scope of Practice section is the product of the expert content workgroup, which is a subgroup of the Texas Telemedicine/Telehealth Workgroup. The members of this group are as follows:

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Jenny Young	Texas Medical Association
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Jane McFarland	Texas State Board of Medical Examiners
Lawrence Jones	M.D. Anderson Cancer Center
Charles Horton	Health Professions Council
Kim White	Center for Rural Health Initiatives
Lynda Woolbert	Coalition for Nurses in Advance Practice
Bruce Gunn	Health Professions Resource Center
Don McBeath	Texas Tech University Health Science Center

Section IV: Licensing and Scope of Practice

TMTH offers the potential to provide health services across vast distances to underserved areas. TMTH technology knows no boundaries, but the health professionals delivering those services must be licensed and regulated by the state in which they practice. Consultation exceptions to medical licensure laws were enacted in most states before the advent of TMTH. Although these exceptions may be well suited to some TMTH situations, it is unlikely these exceptions were intended to apply to regular, ongoing TMTH links. In addition, because each state has its own statutes and rules concerning health professional scopes of practice, there are many challenges for TMTH.

Current Status Survey

In order to fully understand the current status of licensing within the state of Texas, the workgroup on Licensing and Scope of Practice developed a survey to get more information from the boards, advisory committees, and registries that make up the Health Professions Council. Survey questions and a summary of the responses can be found in Appendix IV-A. The survey was designed to assess each licensing board's ability to allow health care providers in other states to render health care services for Texas residents and how each board addresses THTM. The Health Professions Council membership consists of the Executive Directors of 12 independent agencies representing 33 health professions, and the Director of the Texas Department of Health Professional Licensing and Certification Division. The survey was sent to the council members in August 2001. Responses were received from all of the agencies/boards.

No boards reported rules prohibiting practice through TMTH; however, the Texas Midwifery Board requires prenatal infant and postpartum assessments to be performed in person. Twenty boards have reciprocity agreements with other states, or issue Texas licenses to professionals holding valid licenses in other states without re-examination. Three professions report only issuing temporary Texas licenses based upon licensure in another state. Only six boards currently address TMTH directly, or have a method allowing professionals from other states to practice within Texas without a license. All boards report relying upon complaints to detect unlicensed Internet providers. Most boards that require continuing professional education (CPE) to maintain Texas licensure allow part of the CPE to be obtained through the Internet, particularly if the CPE offering is interactive.

No agencies currently require additional education to perform TMTH services. The Licensing and Scope of Practice Work Group agreed that boards should not alter their educational requirements for licensees providing TMTH services.

Licensure

The rules, policies or guidelines of most Texas health profession regulatory agencies do not address TMTH, and licensing laws often prohibit practice across state lines. This lack of direction to licensees concerning delivery of TMTH services may inhibit some providers in those professions from initiating TMTH services.

In addition, even if networks and other TMTH infrastructure were in place in all parts of Texas, differing licensing and scope of practice regulations limit access to professionals in other states. However, language could be modified in the practice acts of health care providers who might be providing TMTH services.

The American Telemedicine Association and the Center for Telemedicine Law advocate a national telemedicine license for health care professionals. However, only two Texas health professional agencies currently have provisions in their practice acts that clearly enable out-of-state providers to deliver services to Texas residents through TMTH.

The Nursing Interstate Compact allows a nurse licensed in one compact state to practice in any other compact state, much as one who holds a Texas driver's license is allowed to drive in other states. So far, 15 states have joined the compact through legislative action, and each of those states must maintain or exceed certain licensing standards. Texas joined the compact on January 1, 2000.

The state of residence, known as the home state, issues the nursing license. If a nurse practices in another state under the multistate licensing privilege, known as the remote state, the nurse must know and conform to the laws, rules and regulations of that state. While only the home state can take disciplinary action against a licensee, a remote state can revoke the nurse's multistate licensing privilege, thus prohibiting the nurse from practicing within its borders.

The compact created a shared licensure information system called NURSYS. The system contains the licensing and disciplinary history of each nurse. Each compact state must report any significant investigation, denial of application, or adverse disciplinary action against a home state license or a multistate privilege to the NURSYS in a timely manner. For more details on the Nursing Interstate Licensure Compact, refer to the Board of Nurse Examiners Website, http://www.bne.state.tx.us/msr.htm. The Texas State Board of Medical Examiners (TSBME) offers a telemedicine license. Physicians holding an active, unrestricted license issued by another state may apply for a Texas telemedicine license. Applicants must be certified in a medical specialty by the American Board of Medical Specialties or the Bureau of Osteopathic Specialists and Boards of Certification. Exemptions are provided for episodic consultation by a medical specialist located outside of Texas who provides such consultation services on request to a person licensed in this state, who practices in the same medical specialty, and for consultation services provided to medical schools and other educational institutions by a physician located outside of Texas. TSBME rule defines “episodic consultation” as consultation on an irregular or infrequent basis involving no more than 24 patients of a physician’s diagnostic or therapeutic practice per calendar year. Multiple consultations may be performed for one or more patients, up to 24 patients per calendar year. (Occupations Code 151.056 and 153.004; TSBME rule 174.1-174.15)

Texas State Board of Pharmacy - Implementation of Telepharmacy Legislation passed by the 77th Legislature

The 77th Legislature passed Senate Bill 65, which amended the Texas Pharmacy Act to allow a community or hospital pharmacy to provide pharmacy services, including the dispensing of drugs, through a telepharmacy system in a facility that is not at the same location as the pharmacy. The bill allows for the dispensing of prescription drugs at a remote site with pharmacist supervision accomplished electronically by audio and video communication. The Board of Pharmacy adopted rules to implement this legislation at their November 2001 board meeting. These rules allow a pharmacy to provide remote pharmacy services using a telepharmacy system in a rural health clinic regulated under 42 U.S.C. Section 1395x(aa), as amended; a health center as defined by 42 U.S.C. Section 254b, as amended; or a health care facility located in a medically underserved area as defined by state or federal law.

Practice Issues

Given TMTH’s rapid technological changes, most clinical practice guidelines for TMTH are either in the early developmental stages or nonexistent. With the exception of the American College of Radiology that developed practice guidelines for teleradiology, there are no national specialty-generated technical standards, protocols or clinical guidelines for TMTH. The National Telecommunications and Information Administration (NTIA) is concerned that this lack of standards may have serious implications for TMTH safety and efficacy (NTIA, 1997).

There are several groups in the process of generating clinical practice guidelines. Both the American Medical Association (AMA) and the American Telemedicine Association (ATA) have studied a number of issues related to TMTH and have urged medical specialty societies to develop appropriate practice parameters. The American Academy of Ambulatory Care Nurses is currently developing practice standards for telephone-based nursing practice, and the American Nurses Association (ANA) is also in the process of developing general standards and guidelines for professional nurses practicing telehealth.

To some extent, the Licensing and Scope of Practice Work Group did not agree with concern that protocols and practice guidelines specifically for TMTH will negatively impact TMTH practice. While some health care services lend themselves better than others to delivery through TMTH, the standards for good professional practice should be the same whether the service is provided via TMTH or in a face-to-face encounter.

Scope of Practice

For purposes of this paper, "scope of practice" is defined as the boundaries of a health professional's practice as mandated by the Texas Legislature and enforced by the appropriate state regulatory board. Just as professional standards are the same, whether the encounter is delivered face-to-face or through TMTH, scope of practice should also remain the same. If a health care professional can perform a service under his or her scope of practice in a setting where the physician is present, then the same professional should be able to provide the same service at a remote TMTH site. Likewise, if a health care provider can perform a health care service under his or her scope of practice in a site separate from a physician, then that provider should be able to perform that service at a remote TMTH site with no additional supervision requirements.

There has been some controversy over who can be a "presenter" in a TMTH consultation. Since registered nurses regularly assess and present patients as part of their scope of practice in hospitals and clinics throughout the United States, they should be able to serve in the same capacity as presenters in TMTH. Advanced practice nurses (APNs), a group that includes nurse practitioners and certified nurse-midwives, can perform (under specific delegation of authority as set forth in the scope of practice laws and rules of the relevant regulatory agency) physical exams and order laboratory and radiological exams as part of their scopes of practice; therefore, supervision by the consulting physician in a remote site for these functions is not required.

There have been some changes in supervisory requirements for physician assistants (PAs) since the Medicaid Telemedicine Advisory committee issued its report to the Legislature in October 2000. Current requirements for supervision of PAs are in a face-to-face environment. Consideration should be given to allowing all or some of that required supervision to occur with the use of telemedicine and/or teleconference equipment. For additional information on APNs, PAs, and their relationships with physicians, see Appendix IV-A.

Currently, physicians in Texas have broad delegation authority. S.B. 789 (Acts of the 77th Legislature) requires the Texas State Board of Medical Examiners to set specific supervision standards for TMTH consultations. Other health professionals have more limited powers to delegate functions to personnel under their supervision. In the future, policy makers may wish to consider expansion of practice acts to allow some professionals broader authority to delegate to personnel at remote TMTH sites.

Recommendations:

In terms of licensing and scope of practice, we believe the best public policy for TMTH in Texas includes the following concepts.

- The scope of practice and professional relationships, as set forth in regulatory laws, should remain fundamentally the same in TMTH as in face-to-face encounters.
- The patient encounter occurs at the patient's location, as opposed to the health care provider's location.
- Issues associated with reimbursement should not be used to determine or assess scope of practice issues.
- TMTH has potential applications for virtually all health professions in Texas.

1. As licensing boards review changes in rules and regulations, consideration needs to be made on how proposed changes might impact services delivered through TMTH.
2. Those agencies that have not addressed delivering services through TMTH should review possible avenues of service delivery and identify legislative, rule and/or policy changes that would need to be in place to facilitate telemedicine/telehealth by their licensees.
3. Regulatory agencies should review licensing issues that exclude providers licensed in other states from providing TMTH services, and consider developing provisions for TMTH licensing and/or interstate licensing if appropriate for that profession.
4. The issue of who can present patients at remote sites and who can consult in hub sites should be determined by the professional's scope of practice.
5. All licensing boards that require continuing professional education to maintain licensure should accept continuing professional education credits earned through TMTH.

Reference

National Telecommunications and Information Administration, *Telemedicine Report to Congress*, January 31, 1997. Available at: http://www.ntia.doc.gov/reports/telemed/safety.htm.

Section V: Infrastructure

Infrastructure Workgroup

The content of the Infrastructure section is the product of the expert content workgroup, which is a subgroup of the Texas Telemedicine/Telehealth Workgroup. The members of this group are as follows:

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James L. Smith	SHCC Co-Chair, Texas Department of Mental Health and Mental Retardation

Membership

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Sam Tessen	Texas Telecommunications Infrastructure Fund Board
Clyde Gibson	Office of Rural Community Affairs
Shannon Porterfield	Texas Department of Information Resources
Eddie Esquivel	Texas Department of Information Resources
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Teresa A. Aguirre	Texas Association of Homes & Services for the Aged
Bobby Jones	Tarrant County Public Health Department
Scott Hermstein	University of Texas Medical Branch
Craig Walker	Health Care Computer Corporation
Jane Baker	Texas Health Care Association
Wendy Latham	Texas Telecommunications Infrastructure Fund Board
Walt Zielinski	University of Texas at Austin/Institute for Advanced Technology
Rick Melchoir	Rural Development Council
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Lisa Mantock	Scenario Based Engineering Process

Section V: Infrastructure

Introduction: TMTH Landscape in Texas

The prospects for TMTH in Texas are exciting. Public and private resources in Texas support some of the largest, if not the most diverse, TMTH projects in the world. For example, in Cuero a school nurse can connect to the local physicians office. This communication reduces student absences and keeps parents at work. On a larger scale is a network in El Paso that supports the care of burn victims and reduces the need for the patient to travel to a medical center in Lubbock for care. Finally, there are important networks in development, such as the Health Alert Network, a configuration of local health departments that will be connected to enable advanced disease tracking and outbreak alerts, including responding to potential bioterrorism threats or actual events.

TMTH infrastructure is far more complicated than installing workstations and video cameras. This chapter will attempt to provide a discussion of the related policy issues, the levels of existing infrastructure, some current and future projects, TMTH project management issues, an overview of TMTH technology, and finally, recommendations for the future. Appendix V-B includes the draft recommendations of the Telemedicine Advisory Committee on minimum standards for the provision of telemedicine medical services. A glossary of technical terms is also included in Appendix V-A

TMTH Infrastructure Policy Issues

There are a number of policy issues that effect the development and implementation of TMTH in a variety of venues. Addressing these issues are steps to maximize TMTH potential utility for Texas.

One of the most critical issues is the homogeneity of providers. These range from state agency entities such as academic health centers, institutions of higher education, public health clinics, to local political subdivisions (hospital districts) that collect taxes, to nonprofit federally qualified health centers such as community health centers and migrant health clinics, to rural health clinics, which can range from nonprofit to for-profit, to completely for-profit providers and hospitals. This is a critical issue because different provider types operate under different eligibility rules, different reimbursement issues, new Federal requirements on the privacy and security of patient information, and different licensure and certification requirements.

These differences affect the individual provider's ability to qualify for Telecommunication Infrastructure Fund grants, reimbursement for the delivery of TMTH services, and for availability of capital investment or the ability to secure such capital. This diversity makes standardization and regulation of TMTH initiatives very difficult because of the variety and complexity of needs.

Reimbursement is another critical issue. Reimbursement is discussed in greater detail in Section VII. However, reimbursement is one of the keystone issues of TMTH, and a discussion of infrastructure would be incomplete without some mention of its impact. Without adequate reimbursement by public and private third-party payers, TMTH projects cannot be sustained in the long term. Reimbursement is not categorically available for all providers according to the payor for the service provided to all populations. A provider could provide a clinical service to one patient via TMTH and receive reimbursement for it, while the same services to another patient with the same problem would not be reimbursed because one third-party payor elected to reimburse TMTH services while the second did not. Thus, it is not the provider's choice but rather the payor's choice. This renders a provider's investment in TMTH equipment subject to potential use determined not by the provider but by a range of payors.

This situation is further complicated by the fact that different payors establish different eligibility and reimbursement rules for TMTH for patients covered by their plan. Medicare reimbursement rules are different from Medicaid rules. It is up to the provider to determine the difference and figure out where TMTH can and cannot be used from patient to patient.

A third issue is that TMTH is a new phenomenon, unlike more established delivery modalities in clinical health care services. Different levels of standards exist or remain under development. The existence of quality assurance for TMTH remains elusive, and it is a work-in-progress. The accreditation process for certain types of health care providers, such as the Joint Commission for Health Care Organizations (JCAHO), exists for some, and it is nonexistent for others. Lack of availability and lack of consistency have resulted in different standards and different levels of required expertise and accountability.

The fourth issue that requires attention is increased costs of data transmission due to inter-LATA (local access transport areas) long distance charges. The costs incurred by providers to transmit information were cited time and again as a major obstacle to TMTH delivery. There are 18 LATAs in Texas, and each time a transmission crosses one of these boundaries, additional charges are incurred. For example, in order for a rural hospital in Llano trying to do a TMTH consultation with M.D. Anderson in Houston, the transmission could cross four different LATA boundaries. Increased transmission costs will limit the ability of providers to give quality services.

One problem in ameliorating the impact of high inter-LATA rates is a lack of outreach to providers and local exchange carriers concerning this issue. It should be noted that between HB 2128 (75th Session), creating the TIFB and the HB 2128 incentive rates for telemedicine projects for companies choosing to be deregulated (e.g. Southwestern Bell Telephone, GTE, etc.), and SB560 (76th Session) expanding the

HB2128 incentive rates to nonelecting Incumbent Local Exchange Carriers (ILEC), the rates are actually pretty good. SB560 allows rural ILECs to submit pricing for circuits at the same rate as the lowest rate offered by an electing company (SWBT at $260/month for a T1). The Texas Universal Service Fund (USF) reimburses the ILEC for the difference between actual tariffs and the incentive rates. The problem is that the project sponsors *and* the rural ILECs do not know about the SB 560 extension of the incentive rates to nonelecting ILECs and the reimbursement by the Texas USF for the difference in cost. More effort needs to be made to inform project providers and ILECs concerning this issue.

Finally, there is much discussion about the Health Insurance Portability and Accountability Act of 1996 (HIPAA), particularly related to privacy issues. This is a federal law, for which the final rules have only been recently released. With these privacy rules comes a set of standards that require personal data to be protected from the time it is given to a government or provider entity through its de-identification or destruction. Rules require the entity collecting personal data to, at the time of collection, also obtain a consent statement from the person to formally establish the person's intent with respect to any release of that data. There are specific controls over the storage, electronic transmission and use of personal data. These rules will have a significant impact on the ability of many TMTH providers to pay for the increased technology required.

On December 27, 2001, the President signed H.R. 3323, which extended by one year the compliance date for the final transactions and code sets rule. The transactions rule is authorized under HIPAA. The bill sent to President Bush, H.R. 3323 from Rep. David Hobson (R-Ohio), extends the deadline one year, to Oct. 16, 2003, if covered entities submit to federal officials a summary explaining how they will use the extra year to reach compliance. Absent submission of a summary of explanation, all covered entities (including providers, claims clearinghouses and most payers) must comply by the original Oct. 16, 2002, deadline. The bill does not affect compliance dates for the final medical privacy rule. Providers, clearinghouses and most payers must comply with the privacy rule by April 14, 2003; very small payers have an additional year to comply.[1]

TMTH Levels of Infrastructure

As stated previously, Texas has some of the largest TMTH networks in the world. Projects are diverse in scope and size, ranging from single clinics, to disease specific networks, to large networks involving a number of entities stretching out over hundreds of miles. TMTH infrastructure can support a variety of important public health functions, provide distance-learning opportunities, and support local and statewide economic development.

TMTH in Texas has gotten a boost from the Telecommunications Infrastructure Fund Board (TIF) that has been providing grants to public, not-for-profit entities since 1996. The TIF Board has spent over

$89 million dollars to assist in the development of a TMTH infrastructure. In the last round of funding for public, not-for-profit health care entities in 2001, approximately 400 individual sites were awarded over $23 million dollars. Grantees include MHMR centers, rural hospitals and community health clinics representing a variety of initiatives from basic infrastructure development to more advanced projects like telepharmacy.

In order to grasp the many levels that TMTH infrastructure operates on, it is useful to break down the entire telecommunications system in Texas into four discrete layers and then visualize TMTH infrastructure as capable of operating at each level.

Statewide infrastructures can be categorized into four general groups:

- The Public Utility Commission (PUC) at the state oversees the public infrastructure level and the Federal Communications Commission (FCC) at the national level. In almost all cases, private carrier companies or cooperatives own these public infrastructures. Internet service providers (ISPs) are now included in the public infrastructure equation. ISPs provide the basic access to services by providing access to the Internet and email services.
- The next level of infrastructure includes government agencies' network telecommunication infrastructures, and more specifically, statewide networks that are used to link government agencies. The TEX-AN network provides services for state government, and the services are made available to local governments. TEX-AN is a series of contracts for voice and data telecommunication services managed by the Telecommunication Services Division (TSD) of the Department of Information Resources. TEX-AN is built on the public infrastructure with minimal fiber or telecommunications systems directly owned by the state. State agencies use the TEX-AN network to build their own statewide networks. These agencies build statewide infrastructures using the TEX-AN contracts to connect field offices or political subdivisions to access centralized information and provide communication links. Each agency determines the use policy, access and security of their networks.

  The Texas Health and Human Services Consolidated Network (HHSCN) is an award-winning telecommunications partnership between government agencies that connects and manages networks from the data center to the desktop. Governed by a board of its constituents, the co-op partnership was originally created by the Health and Human Services Commission (HHSC) to share network costs and services among Texas health and human service agencies. Since its inception in September 1994, the HHSCN has extended its services to other entities, including state agencies outside of the HHSC, organizations outside of state government, and even organizations outside the state of Texas.
- Universities – private and public – have extensive data and video networks. State universities may use the TEX-AN network, but are not required to use it. Private universities are prohibited

from using TEX-AN, and information on their networks must be acquired directly from them. The major university systems have established extensive networks for information sharing, distance education, administrative, and TMTH purposes. These networks are highly utilized, and their use for nonuniversity purposes needs to be coordinated with each system.

- Finally, regionalized and stand-alone networks exist throughout the state. Many of these networks are public educational in nature, or funded by grants for specific initiatives.

TMTH projects can operate in just one layer of this infrastructure or can operate in all of the layers. For example, the State's emergency response capabilities, made more critical after the events of September 11, represent the type of TMTH infrastructure that incorporates all levels as discussed below.

New Directions

TMTH Infrastructure and State Emergency Response Capabilities

The potential exists to build on the existing TMTH infrastructure, not only to promote TMTH throughout the state, but also to accomplish another important goal of shoring up Texas' emergency response capabilities. TMTH networks play an important role in disease outbreak and bioterrorism detection.

The State Crisis Consortium and the Emergency Management Council are examples of existing linkages that can help TMTH infrastructure and state emergency preparedness complement each other. The State Crisis Consortium is a state multi-agency task force chaired by the Director of the Disaster Assistance and Crisis Response Services program at the Texas Department of Mental Health and Mental Retardation (TDMHMR).

The Consortium consists of a number of agencies, including representatives from the Attorney General's Office and the City of Austin Police Department, that also assist in advising the Consortium and in planning training and conference activities. The mission is to assist communities in preparing, responding, and recovering from traumatic events whether natural or man-made.

The Emergency Management Council is a state multi-agency council chaired by the governor of Texas. The purpose of the Council is to serve as a coordinating and advising arm to the Governor's Office and the Governor's Division of Emergency Management before, during and after any event that may threaten the livelihood and well-being of the citizens of the State of Texas. The Council is activated during any emergency and participates in planning and preparedness activities.

The Texas Health Alert Network (HAN) and Texas TMTH efforts should also be well integrated. Currently in development, the HAN links participating local health departments together into a single network. Data that may hold early signatures of bioterrorist events, or disease outbreaks should be able to flow over the HAN in such a way that outbreaks or events can be identified at an early stage. Delivery of specialized technologies and applications over the HAN will enhance the capability of local officials to perform bioterrorism or disease outbreak consequence management such as:

- Disease detection capabilities
- Improved health alert methods
- Knowledge management applications
- Integration of biosensors and intelligent agents
- Expert systems and decision-support tools
- "Just in Time" training

Emergency response systems should be "dual-use," that is, capable of doing both everyday health care and public health tasks, as well as emergency tasks. Then, local users will be well practiced in the use of the equipment when emergencies come. Dual-use also implies that distance learning can be accomplished over the networks when they are not being used for emergencies.

It is this kind of project that knits together providers from a variety of agencies and disciplines across the different infrastructure levels to provide a strong emergency preparedness system and demonstrates the dimensionality of TMTH infrastructure in that one focus, such as emergency preparedness, can serve as a basis for connection for other TMTH activities. The goal is to create fully integrated TMTH networks for multiple uses.

Community Involvement/Sharing TMTH Resources

The local community's involvement and support in adopting TMTH initiatives and, more importantly, in building a coordinated technology infrastructure is crucial to the statewide success of TMTH. The benefits of a coordinated technology infrastructure, in turn, will improve productivity and quality of life at the local level. To a large extent, the future economic development of cities and communities depends on the availability of information and access to services in nontraditional methods.

Many communities in Texas are leading the charge in technological advancements to promote community interests. The key for TMTH is for private, public and nonprofit leaders in those communities to support technology that is compatible and can perform multiple functions, including the facilitation of TMTH. For example, local nonprofit hospitals, clinics, and frontline physicians should be able to connect to the local schools, public health departments, community colleges, universities, libraries, and emergency management departments. Likewise, nonprofit hospitals and clinics can equip meeting rooms with distance learning and videoconferencing equipment. This can allow the community to take advantage of distance learning for community college courses, CEU credits, and computer education classes after hours, thus increasing network sustainability.

Getting local communities to build and implement technological applications that will serve as infrastructure for statewide TMTH will require education, coordination, and funding. Smaller communities may require assistance in planning and networking to be full partners in TMTH. Assistance is available through community partnerships, consulting services and grants and loans. For example, the Telecommunications Infrastructure Fund provides grants for telecommunications infrastructure development. TIF not only provides funds specifically for TMTH infrastructure, but also for community networks, which are innovative partnerships that can support TMTH within a more integrated community network structure.

Coordination and Oversight

Given the scope and diversity of TMTH, it is critical that some kind of central entity be developed to provide coordination and oversight, so that funds and effort are not spent re-inventing the wheel. There have been attempts to coordinate the infrastructure impacting TMTH. One way the 77th Legislature has tried to increase coordination was to create the Telecommunications Planning and Oversight Council (TPOC). SB 311 was the Sunset legislation for the General Services Commission. It mandated a number of significant changes in the state level delivery of telecommunication services.

One such change was the elimination of the Technology Planning Group (TPG) and replacing it with TPOC, a new, broader group made up of representatives from the following entities:

- Texas State Comptrollers Office
- Texas Department of Information Resources
- Texas Telecommunications Infrastructure Fund Board
- Texas Building and Procurement Commission
- “Large” State Agencies
- “Small” State Agencies
- Higher Education
- The University of Texas System
- The Texas A&M University System
- Public Education, K-12
- Local Governments
- 2 public members with telecommunications expertise

TPOC is charged with responsibility for planning and overseeing the implementation and maintenance of a single consolidated statewide network in support of the statewide vision for information resources management. The TPOC was given more authority to oversee the planning and financial functions of the state infrastructure. Through the Strategic Plan for State Government Telecommunications Services, the TPOC establishes the requirements for a single network to support the telecommunications functions of all state government entities and universities, and enable voice, video, and data traffic to share the same infrastructure. The progress made by state government toward accomplishing the goals set out in the Telecommunications Plan is reported by the TPOC to the legislature on October 1 of each even-numbered year.

The TPOC authority includes completing the following:

- Comprehensively collect and manage network configuration information about existing and planned networks throughout state government.
- Establish plans and policies for a system of telecommunications services to be managed and operated by DIR.
- Develop a statewide telecommunications operating plan for all state agencies.
- Perform strategic planning for all state telecommunications services.
- Develop a plan for a state telecommunications network that will meet the long-term requirements of state government for voice, video, and computer communications.
- Develop functional requirements for a statewide system of telecommunications services.
- Negotiate rates and execute contracts with telecommunications service providers for services.

- Develop service objectives.
- Develop performance measures for the operations and staff.
- Review the status of all projects every three months and include a review of the financial performance and a comparison between actual performance and projected goals.
- Make recommendations to the DIR Board on ways to improve operations of the state's telecommunications systems.
- Submit an annual report to the DIR and to each entity served by the state's telecommunications systems. The first annual report by the TPOC is due no later than Sept 1, 2002.
- Report biennially to the legislature not later than October 1 of each even-numbered year on the status of the current plan and on the progress state government has made towards accomplishing the goals of the plan.
- Evaluate requests for waivers and extensions to waivers based on cost-effectiveness to the state government as a whole and based on whether the requirement cannot be met at a comparable cost by the consolidated telecommunications system.

An important change to highlight is the transfer of the state technology and telecommunication purchasing resource to the Department of Information Resources (DIR). This is a critical component because all political subdivisions are eligible to purchase services and equipment through the state resource, typically at significant savings. An excellent example is the TEX-AN 2000 telecommunications state backbone utilized by many eligible health care providers in the delivery of TMTH.

The Need for Standards

An additional part of the need for project coordination to avoid the duplication of effort is the need to develop TMTH standards to ensure that deployed networks can communicate with each other. The costs of a TMTH application include installation costs and continuing operating costs involving hardware, software, telecommunications, education and training, and support personnel.

Misjudgments in the specification, design, and implementation of these systems are common and expensive, leaving organizations with countless and difficult decisions about future programs. Most of the frustrating aspects of TMTH technologies involve how well the components work together, and how flexible they are in different environments without extensive modifications.

Standards are the critical ingredient to successful implementations and the resulting impact on medical outputs. The scope of the standards should include the equipment, assets, practices, and technologies used in TMTH medical services by a health care facility, including standards for telecommunications, software, and training. The standards also address the minimum-security methods that ensure the integrity, privacy, and/or safekeeping of data in normal use of TMTH technology. In all instances, TMTH practices must comply with state and federal laws.

Under Senate Bill 789, passed by the 77th Texas Legislature, responsibility for defining standards for personal authentication and security was assigned to the Health and Human Services Commission (HHSC) and the Telecommunications Infrastructure Board (TIFB). These standards will probably become the default standards for other health care applications (See Appendix V-B: Senate Bill 789 Draft Minimum Standards).

TMTH Project Management Issues

TMTH infrastructure development is a complex process that involves intensive project management. The discussion that follows breaks issues into general project management categories and attempts to provide some direction and general guidelines that are by no means exhaustive.

Planning

TMTH projects are initiated for any number of reasons, and one of the most crucial steps is planning. Listed below are some basic guidelines:

- It is vital to define the project goals and terminology as precisely as possible since project participants may have conflicting ideas regarding the final product.
- TMTH must have a needs-driven approach; therefore a thorough needs assessment must be conducted prior to the project. The assessment must include clinical, administrative and educational needs, and must demonstrate how the technology can meet these needs.

- All players must be involved in the planning process. It is crucial to involve all health personnel and to coordinate with hospital administration as well as IT staff.
- Development of TMTH systems must take into account current referral patterns and are most successful when these are incorporated into the network.

Implementation

The complicated and expensive process of deploying the infrastructure includes:

- Capital resource requirements for development and implementation are extensive. Personnel, administrative and equipment costs must be taken into account.
- It is useful to have a "champion," a provider that can be a TMTH partner and who can "advocate" a TMTH project to other health care providers.
- Awareness of time-related issues. It takes time to work out relationships, build a network, test it, and modify it. It also takes time to work out health care staff reluctance to adopt new and unfamiliar technology.
- It is crucial to have an extremely explicit contract with vendors covering stipulations about proprietary software and system redesign if necessary.

Technology

Issues to consider when dealing with vendors and consultants include:

- Resisting the temptation to move immediately into the most complex technology available.
- Interoperability: Platforms, systems, or computer languages that are only used by one company should be avoided. Insisting on approved ANSI (American National Standards Institute) standards recognizes that with the careful development of an approved standard comes interoperability between applications, common hardware operation, maintenance and support opportunities, and usually more cost-effective products.
- Scalability: Many facilities will want to add or expand to their TMTH systems as they gain the resources and experience.
- Awareness that technology may not address some of the fundamental barriers to TMTH access, such as obtaining consults, disruption of referral patterns, and logistical and scheduling problems.

Utilization

Things to consider in order to increase utilization and sustainability include:

- The importance for entities to form partnerships like those discussed previously in this section.
- Incorporate TMTH as part of the statewide telecommunications plan. Shared use of bandwidth and economies of scale all work to increase sustainability.
- An overlooked aspect of installing new TMTH or health information systems is the need for specific training. It is extremely important for the training to not only include the actual hardware/

software operational training, but also the medical aspect of using a TMTH system in a consultation or session.

Security Issues

The issues regarding security are discussed in detail in Section IX of this document. However, as is true for many of the content sections, these issues do not exist independently of each other. A discussion of issues impacting infrastructure would not be complete without some mention of privacy and security issues. Security on LAN's, WAN's, and the Internet is very important and obviously especially so for health care data. Governmental regulations are being implemented to safeguard patient's rights to privacy as well as how to transact health financial reporting on the Internet. The full scope of the security discussion is far beyond the scope of this document, but the following gives an overview of the methods commonly used.

The first element of security is called authentication and is intended to limit access to those who are authorized to have the information. This is generally done by asking the user to present a valid form of identification, such as a password, a "key" or credit card, a proof of location, or a biometric proof such as a fingerprint or voice. The second element of security is limiting the physical access to certain computers and locations. A third element is the use of logging or audit trails. For example, software tools can be deployed to track that accesses what information and then generates a report that can be audited against assigned job functions. The fourth element is disaster recovery, where procedures are put in place to prevent the loss of critical information due to some form of disaster. This usually involves off -site storage and other controlled duplication of critical data. A fifth form of security that is being implemented by government rules is to require health providers to protect data even at remote access points such as third-party payers and data depositories.

The Basics of TMTH Infrastructure

Depending on the need and availability of communications infrastructure, TMTH uses a variety of transmission modes including ISDN, T1, ATM, DSL, satellite, microwave, digital wireless, local wireline, wide area networks, and the Internet. The combination of equipment and transmission technology enables the health providers to relate with other providers or patients using either live audio and video or through "storing" and later "forwarding" multimedia information. Services, such as specialist-assisted surgery or psychiatric consultations, usually require live video. The use of store and forward technology can be more convenient and much more cost-effective, except in certain areas where live transmissions are required.

The widespread availability of practical and affordable desktop workstations (PCs) should make it easier to employ TMTH and a variety of other applications, such as patient records, clinical information, and decision support systems. For this reason, TMTH systems should be designed using standard PC computers, operating systems, peripheral interface connections (serial, USB 1394, network adapters, PC audio, etc.).

The system network interface should be a standard Ethernet network interface and deploy IP-based protocols (standard Internet) and not use dedicated, expensive point-to-point connections. The video conferencing system should be based on ITU H.323 or H.324 protocols and provide interactive two-way video with two-way audio and two-way data. For legacy systems, this could be accomplished by the use of a protocol converter, gateway, or other device.

However, whether TMTH or other applications are employed still depends upon the proper assessment of the issues and needs. In other words, the challenge is to develop methods and tools for assessing the potential users' needs and for properly matching the characteristics of a particular set of TMTH technologies to those needs.

Infrastructure Group Recommendations:

A. Assess Current Services And Project The Need For Future Services

It is necessary to identify existing networks available for TMTH initiatives and coordinate the use or expansion of TMTH activities by coordinating access and use of these networks. Previous surveys of the statewide infrastructures have been attempted and various sources for the information exist. The biggest issue with completing a usable infrastructure database is determining the purpose for gathering the information in order to identify and target the appropriate entities for information collection purposes.

Information is needed about these four general categories of statewide infrastructures:

- The public infrastructure that is overseen by the Public Utility Commission (PUC) at the state level and by the Federal Communications Commission (FCC) at the national level. In almost all cases, private carrier companies or cooperatives own these public infrastructures. Access to these data varies and may be limited due to competitive efforts. Access to this information is available through the PUC or directly from the carriers. The need for this type of inventory for telehealth purposes needs to be determined on a case-by-case basis, or on a broader level, such as research for advancing services in rural areas. Various entities have already captured, or are currently attempting to capture, this information. As information access providers, Internet service providers (ISPs) are now included in the public infrastructure equation. ISPs provide the basic access to services by providing access to the Internet and email services.
- The next level of infrastructure is government agencies' network telecommunication infrastructures, and more specific, statewide networks used to link government agencies.

The TEX-AN network provides services for all state government and the services are made available to local governments. TEX-AN is a series of contracts for voice and data telecommunication services managed by the Telecommunication Services Division (TSD) of the Department of Information Resources. TEX-AN is built on the public infrastructure with minimal fiber or telecommunications systems directly owned by the state. An overview of the statewide network backbone managed by TSD is available. The need to identify all the endpoint users of the networks and their objectives should be determined as part of the development of any future survey instrument.

Access to the agencies' networks are internal policy determinations, and due to the recent terrorism threats, release of data on the agency network infrastructures may be restricted.

The need for information from all the agencies needs to be assessed and their potential use for TMTH applications must be determined. For example, information on the Department of Public Safety telecommunications network, composed of approximately 1500 locations, would not be useful for a distance learning (educational) event. The security requirements for access to information on DPS systems and networks would preclude use of the DPS system for anything but law enforcement needs. However, the use of the DPS network for a bioterrorism alert and notification of local law enforcement and regional bioterrorism contacts is inherent in the DPS charter. This type of specific use of networks is typical of state agencies' systems.

The Texas Health and Human Services Consolidated Network (HHSCN) is an award-winning telecommunications partnership between government agencies that connects and manages networks from the data center to the desktop. Governed by a board of its constituents, the co-op partnership was originally created by the Health and Human Services Commission (HHSC) to share network costs and services among Texas health and human service agencies. Since its inception in September 1994, the HHSCN has extended its services to other entities, including state agencies outside of the HHSC, organizations outside of state government, and even organizations outside the state of Texas.

The network provides a variety of services at a reduced cost by maximizing the use of existing equipment, technology and support structure. Since its creation, the HHSCN has extended its services beyond the health and human services agencies to other entities benefiting the people of the State of Texas.

Some of the participants in this networking cooperating venture include:

- Texas Health and Human Services Commission
- Texas Commission For the Blind
- Texas Department of Protective and Regulatory Services
- Texas Department of Human Services
- Texas Rehabilitation Commission
- Texas Department of Mental Health and Mental Retardation
- Texas Youth Commission
- Texas Department of Health
- Texas Department of Licensing and Regulation
- Texas Workers Compensation Commission
- New Mexico Department of Human Services

- Universities – private and public – have extensive data and video networks. State universities may use the TEX-AN network, but are not required to use it. Private universities are prohibited from using TEX-AN, and information on their networks must be acquired directly from them.

  The major university systems have established extensive networks for information sharing, distance education, administrative and TMTH purposes. These networks are highly utilized and their use for nonuniversity purposes needs to be coordinated with each system. Centrally available information on availability of the networks and contact coordination information could be gained from each of the universities. Actual use and access to the facilities will need to be gained on a case-by-case basis.

  Centralized information on video networks from universities, along with videoconferencing information from agencies, could be used as a basis for a statewide coordination effort.

- Finally, regionalized and stand-alone networks exist throughout the state. Many of these networks are public educational in nature or funded by grants for specific initiatives. The need for gathering information on regional, community or specifically funded networks needs to be determined before a statewide survey is contemplated. Many projects have been funded by state funds, but are so particular in nature or limited in range that the use of the facilities for statewide telehealth applications would not be appropriate, such as a dedicated point-to-point network in a city.

  Any information gathered should relate to networks that can access other networks in order to build a statewide gateway or to determine the feasibility of funding to connect to a statewide infrastructure. Much time could be spent collecting information that will not be useful for telehealth.

In summary, information on statewide network resources available to be used for telehealth projects would be invaluable in constructing a TMTH information network. However, information gathering should target application use, known interested parties, network use policies, and contact coordination information.

An initial survey should target specific information for coordinating existing statewide infrastructures interested or required to participate in TMTH initiatives. The Statewide Health Coordinating Council should request assistance from the Telecommunications Policy and Oversight Council and the Telecommunication Services Division of the Department of Information Resources for assistance in preparing a survey regarding infrastructure and identifying the survey audience.

B. Need for Coordination

The trend in both the private and public sectors is to establish a strategic project management office (PMO) to oversee, or at least gather, critical information about technology (IT) projects. Companies such as Lucent and Oracle and states such as California, Michigan, New York, and Texas have all established PMOs to coordinate the efforts of their IT deployment using project management standards and practices at an "enterprise" level. As a recent example, most states (including Texas), many companies and the federal government, established enterprise-wide project offices to deal with the year 2000 issue. In some cases, the PMO coordinated the efforts of the IT divisions to remediate the programming code. However, in many states, each individual agency was responsible for remediating its programming code, while the PMO was responsible for setting standards, monitoring the progress of agencies, coordinating among the agencies, the public, local governments and the federal government, and reporting on the state's progress.

Processes for developing and deploying IT projects are improved through the use of project management. A successful project is one that is delivered on time, on budget, and that meets the needs of the customer. By using project management techniques, the chances are greater of delivering successful projects. IT applications are an indispensable part of business. According to Gartner Group, an IT research firm: "with applications increasingly indispensable, but delivery increasingly complex, enterprises are more threatened than ever before by the risk of cancelled AD (application development) projects, ballooning costs or ever-receding delivery dates. The roles and skills of a project office, plus support for a consistent and disciplined approach to chartering, prioritizing and resourcing project work with attention to quality and project knowledge collection, can help mitigate these risks."[2]

Some of the Roles of a PMO

According to the META Group, an IT research firm, PMOs can address the management of specific major initiatives that involve multiple, complex projects with fixed deliverables and a project completion date. PMOs can also bring together the key business policy makers and knowledgeable IT personnel with strong project management, technical and business backgrounds to oversee and better coordinate all major projects across the enterprise with a key focus on the business imperatives behind them.[3] According to the Project Management College, PMOs can provide services such as:

- Project support: the project office can make the lives of project team members easier by assuming administrative chores in the areas of project scheduling, report production and distribution, operation of project management software, maintenance of the "visibility room," and maintenance of the project workbook. This could include maintaining a repository of "best practices" so that entities keep from "reinventing the wheel" when they launch a similar or related project.
- Consulting/mentoring: as organizations mature in project management, the project office satisfies an increasing need for internal project management consultants. These people will provide the organization with the expert insights it needs to execute projects effectively.
- Processes/standards: the project office is the unit within the organization that develops and promulgates common methodologies and standards relating to project management.
- Training: the project office trains project managers, team members, executives and clients regarding project management principles, tools, and techniques. Both training material and instructors originate in the project office.
- Project management: the project office can house a group of professional project managers who can be assigned to carry out the organization's projects.
- Project management software tools: as the project office matures, it becomes the focal point in the organization for software tools supporting the project management effort.[4]

Texas Example – Electronic Government Program Management Office

The 77th Legislature passed Senate Bill 1458, which created the Electronic Government Program Management Office (PMO) within the DIR.

The PMO was recommended in DIR's 2000 Biennial Report to the legislature and in Comptroller Rylander's *e-Texas* report (http://www.e-texas.org/recommend/ch01/eg01.html). The PMO is to provide an enterprise approach to the development and deployment of electronic government projects. In Senate Bill 1458, "electronic government project" means the use of information technology to improve the access to, and delivery of, a government service, including a project that uses the Internet as a primary tool for the delivery of a government service or performance of a governmental function. The PMO is charged with directing and facilitating the implementation of electronic government projects. As part of directing and facilitating projects, the PMO will:

- Establish and support standard business practices for managing electronic government projects;
- Coordinate and establish standards for implementation of electronic government projects;
- Identify and incorporate best practices for electronic government projects in such areas as the procurement of hardware, software, and technology services, project support, implementation strategies, project planning and scheduling, quality assurance, overall team coordination, status reporting, and technical standards;
- Provide risk management and quality assurance services for electronic government projects; and
- Coordinate with the TexasOnline Division on shared policy and operational issues and work together to increase opportunities for mutual success.

The PMO is charged with coordinating among state agencies by identifying the resources necessary for projects and opportunities among multiple agencies for the coordination of electronic government projects. The PMO will create state agency coordination teams, as appropriate, to reduce information technology expenditures and eliminate unnecessary duplication, and coordinate with local governments and the federal government.

In summary, with so many organizations involved in TMTH at all levels of government and in the private sector, and entities that are ready to implement or are actually implementing TMTH in Texas, future development would benefit from a single entity providing some level of coordination among the various entities to maintain the strategic direction set for TMTH.

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Section VI:
Coordination of Training and Technical Assistance

Coordination of Training and Technical Assistance Workgroup

The content of the Coordination of Training and Technical Assistance section is the product of the expert content workgroup, which is a subgroup of the Texas Telemedicine/Telehealth Workgroup. The members of this group are as follows:

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Section VI: Coordination of Training and Technical Assistance

Introduction

Technical training and technical assistance are crucial aspects of any successful technology project. A TMTH system presents vast training and technical assistance challenges because of the need for both technical expertise and health expertise to make the system work. Technical training and technical assistance can be viewed as points on a continuum. The more technical training a user has, the less technical assistance he may need and vice versa. Ideally, a single person (or group of persons) would have enough training to use the technology almost unassisted, or immediate access to technical assistance would allow for seamless use of the technology. In reality, the use of technology in TMTH environments falls all along the continuum. For example, technical assistance and training for TMTH applications is often provided as an apprenticeship method of learning. Organizations with TMTH equipment may have technical assistance service contracts, have a trained in-house specialist, or send personnel to training programs. Regardless of the arrangements, TMTH efforts can often be stymied by gaps in technical training and technical assistance. To complicate the matter further, both the technology sector and the health sector have been experiencing enormous growth and change rates and emerging trends making seamless coordination even more difficult.

To establish specific guidelines for TMTH technical training and technical assistance is unrealistic because of the different equipment models. However, general principles should be established and made available to all TMTH programs in Texas. Below is an attempt to draft these principles. Training must be accessible state/system-wide and for all levels of users.

- Training must be a dynamic process. Some participants in TMTH programs need to be convinced to “buy in.” Timidity and low self-efficacy when using TMTH equipment must be reduced. Dynamic training equips individuals to solve possible technology problems and instills self-confidence and confidence in the technology.
- Training must keep pace with the rapidly changing technology. Equipment that is purchased today must be maintained for tomorrow’s needs. Personnel should be knowledgeable in new applications and procedures in TMTH.
- Organizations must identify who is providing their training and technical assistance; the frequency of training and established curriculum; the parameters for technical assistance; and their internal and external training resources to be used.

- Training must be a “hands-on” process. When individuals leave a training session, they should feel confident in their newly acquired knowledge.
- All funded projects should have a training component. In several cases, the technology has been purchased, but ultimately will sit idle because personnel do not have the training, and thus the confidence, to use the equipment. By having a training allocation/requirement, the equipment is more likely to be used for its proposed purpose.

TMTH Technical Training in Texas

In general, most organizations providing TMTH opportunities are providing their own training for employees. Training is very site specific. Below is an outline of known academic training programs currently available.

- In spring 1999, Texas Tech University Health Sciences Center demonstrated its expanding commitment to TMTH by creating the Telemedicine Research and Training Center. The comprehensive nature of the Center’s mission and scope of activities will define it as not only the first of its kind in the nation, but also as one of the country’s preeminent centers for TMTH research, education, and service. Courses are available throughout the year for community leaders, physicians, administrators, and anyone else interested in learning more about TMTH. See http://www.ttuhsc.edu/telemedicine/institute.htm.
- The University of Texas Medical Branch (UTMB) has a long-standing history of advancing the use of telecommunications technology for the purpose of improving health care delivery to rural and underserved populations of Texas. The UTMB telehealth program began with several demonstration projects, carried out in the early 1990s. These projects established the feasibility of using telehealth technologies for providing medical services to inmates in the state’s correctional facilities, strengthening rural health care delivery through distance education, and delivering team-based care to special needs children. Since 1994, nearly 40,000 TMTH consultations have been conducted at UTMB, and the university has gained international recognition for its leadership in advancing telehealth applications. An outline of the proposed curriculum taught at UTMB is included in Appendix VI-A.
    - http://www.utmb.edu/telehealth/default.asp, and
    - http://video.utmb.edu/Video/news/Funding.html
- The Texas A&M University System Health Science Center has established a telehealth network of providers and community groups in order to bring TMTH to communities underserved in South Texas. Additionally, the School of Rural Public Health (SRPH) has a mobile unit equipped with state of the art technology that brings health care to the doorsteps of individuals historically isolated and without services. In keeping with its mission, educational services are also provided using this wide network throughout the system as well as Internet-based technology in order to meet the needs of the health care work force and the community at large. The SRPH currently

offers a Masters of Public Health (MPH) degree by distance. Training is available at the School of Rural Public Health and at the Center for Distance Learning and Research at Texas A&M University. Online resources for the curricula taught at Texas Tech Health Science Center and at the Center for Distance Learning and Research at Texas A&M University are available at the following websites:

- http://hscconcord.tamu.edu/sphy
- http://www.cdlr.tamu.edu

It is worth noting that there are myriad other resources for technical assistance and training both inside and outside Texas. There are certification programs for technical, administrative, and presenting TMTH personnel. Additional resources available include Internet sources provided by vendors, manufacturers, health and medical provider sites, as well as institutions of higher education. Conferences covering the training needs are also becoming more popular as TMTH applications multiply. However, although many training programs are marketed nationally, there is no national body overseeing the certification and/or credentialing processes.

Other States' Experience

Many institutions around the U.S. teach the skills necessary to operate a TMTH program. A list of some sites and programs is contained in Appendix VI-B. Below are a couple of examples:

The Public Health Informatics Fellowship Program at the Centers for Disease Control/Agency for Toxic Substances and Disease Registry will provide a unique training opportunity for professionals interested in this evolving field. Fellowship participants will be trained both in informatics and in public health. This experience will help equip them to guide the development, evaluation, and implementation of new public health surveillance and information systems, as well as the adaptation and support of existing ones. Since 1996 the Telemedicine Center at East Carolina University has offered a unique opportunity to observe and study the inner workings of a world-class TMTH program. Free access is provided to all technical infrastructure and courses are presented by the Telemedicine Center's senior staff and associates in an intimate setting. Classes are typically limited to eight attendees for maximum interaction opportunity. The Advanced Telemedicine Training is generally offered one week a month. See: http://www.telemed.med.ecu.edu/. The advanced program features knowledge-based instruction in a mature TMTH environment; interactive discussions with experienced program staff and clinicians; hands-on demonstrations with clinical diagnostic tools and an interactive video system; and six comprehensive training tracks and the ability to design a customized curriculum from over 40 training topics.

The Telemedicine Information Exchange at http://tie.telemed.org/ and Telemedicine 101, http://tie.telemed.org/telemed101/training.asp are web sites that list a host of institutions around the U.S. that teach the skills necessary to operate a TMTH program.

Barriers to Success and Strategies for Overcoming Barriers

The following barriers to both technical assistance and training were identified during the training and technical assistance work group session. Although not exhaustive, this list provides immediate obstacles and barriers that need to be surmounted in order to proceed.

1. Lack of awareness and comprehension of available TMTH technologies.

It is essential to the success of the TMTH industry that the most recent up-to-date information and communications in technology be maintained. In order to benefit fully from the importance and purpose of TMTH, it is imperative to operate using the latest technical equipment. The equipment used should not be limited to the operations of image transferring, but also needs to include the actual equipment used for surgery, operations, checkups, etc.

Given the other pressing demands on the practitioner’s time coupled with the rapid emergence of new technologies, awareness depends on the timely availability of credible information through readily accessible channels – channels which adhere to standards of objectivity and reliability that make them trustworthy in the eyes of the practitioners. Moreover, the practitioner training should impart the knowledge needed to access those channels, sufficient “technology fluency” to understand and evaluate the information those channels contain, and a professional commitment to the life-long activities necessary to keep one’s knowledge, skills and abilities up to date.

2. Absence of TMTH training standards.

TMTH should be a national effort. The practice and standards of medicine are recognized by the American Medical Association, so should the TMTH industry. The privatization should be regulated only to the degree of preventing confusion and chance of critical errors. Equipment standards should be obvious where all users are compatible along with rules and regulations established to prevent unfair trade.

Any effort to set standards in a rapidly changing field like TMTH is especially difficult. It is like trying to hit a target that is moving away from you rapidly at an ever-accelerating pace. Indeed, it is more like trying to hit many such moving targets because new technologies are being invented and promoted by sources all over the globe. At the same time, the process for setting standards is cumbersome and time-consuming. Standard-setting bodies often are saddled with rules and procedures that were developed in a bygone era when the pace of innovation was not as rapid and changes tended to be incremental rather than revolutionary. Moreover, the standards-setting process can be politicized as users of older technology fight a rear-guard action to preserve their place in the profession. This adds to the time consumed in the process or, in the worst-case scenario, results in no standards whatsoever as different factions in effect veto each other's positions for political or economic reasons that have little to do with the actual merits of a new technology or procedure. By the time a standard is set, three or four new iterations of the same technology and one or two wholly different alternative technologies may have already been introduced.

About the only way around this conundrum is to focus training standards on the concepts involving rigor, validity and reliability in the evaluation of technology rather than on proficiency in the use of the particular technology prevalent at the time a practitioner receives initial education and training in TMTH; set process standards rather than technology-specific ones. For example, how many hours of initial training should be devoted to the statistics used to evaluate clinical trial data; the basics of digital and analogy electronics; or the fundamentals of hardware and software engineering? How many hours of continuing education should the practitioner receive in these fields in addition to continuing education hours in his/her medical specialty?

3. Lack of sophistication in the use of basic technology.

TMTH is a highly competitive field. Often the competitive advantage goes to the practitioner who is the "first-mover" of a new technology. Thus, there is an inevitable tension between the incentives to move rapidly in deploying new equipment and techniques in one's practice versus the time it takes to master them fully. When formal training lags inevitably behind the technology curve and when technology-specific standards are missing, it is hard to regulate appropriate and skilled use.

The community of practitioners of TMTH necessarily will have to rely on two things to assure that new equipment and techniques are used properly.

The first is the practitioners' mutual commitment to professional ethics – to put the well-being of the patient ahead of any competitive economic advantage that could be gained through premature adoption and use of a technology before one is fully proficient at it. Thus, the first line of defense against unsophisticated or improper use of new technologies is (and always has been) the vigilance of the community of practitioners in policing themselves, reinforcing each other's commitments to professional competence, and reprimanding, or ultimately removing, those who violate the code of ethics.

The second aid to proper and sophisticated use is often contained in the nature of much of the new technology itself. The very electronics that make many new techniques possible also allow vendors or training programs to put together simulations that exactly duplicate clinical situations. Such simulations allow the user to practice techniques in "virtual reality" and receive feedback crucial to perfecting its use and gaining proficiency without putting real patients at risk. To the extent possible, vendors should include instructional simulations as part of the total “technology packages” they offer to practitioners.

4. Rapid rate of change in technology and assimilation of new technology.

Medical as well as information technology is growing at a rate that is difficult to keep up with. What was reported six months ago in medical journals might easily be out of date today. Because of this, it is absolutely necessary to make available and employ any new information as it becomes available.

The pace of technological innovation and the explosive growth of new and varied dissemination channels exacerbate all the other barriers.

<u>Sources of Innovation</u>. It also was easier for practitioners to keep up with developments in the field of TMTH when there were fewer innovators involved. In the early days of TMTH, the innovators tended to be clustered together in a few preeminent medical schools, research hospitals, and a small number of technology manufacturers clustered around them. Now, far more medical facilities are involved in developing new technologies. Even the military is on the cutting edge to develop TMTH for battlefield situations. More technology manufacturers have jumped on the bandwagon as they envision ample profits in this emerging field of medicine. Moreover, many of the new technologies are the product of multidisciplinary studies. Thus, instead of being consolidated in a handful of traditional medical sources, information about new technologies relevant to TMTH may be scattered across the professional literature that includes, but is not limited to, robotics, electronics, and software and hardware engineering.

<u>Dissemination of Information</u>. The Internet, it is said, “democratizes” knowledge. For the TMTH practitioner, that is both good news and bad news.

- The good news is that, at least in theory, relevant information about new equipment and techniques is more readily available, faster, and cheaper – often at no cost at all. For example, a practitioner can now learn about a new technique via his/her computer terminal while sitting at his/her own desk. In the past, the practitioner might have to give up a day or two of work, travel to a host institution and sign up for an expensive continuing education seminar to acquire the same kind of information.
- The bad news is that the Internet is “unfiltered.” In other words, it operates in a far different fashion from dissemination methods of a bygone era when a handful of institutions were the trusted “keepers of the knowledge.” Practitioners could trust the information from the traditional sources because they disseminated information only if it had been subjected to rigorous testing or verification. Now anyone with a computer can disseminate “information” as well as misinformation. A disreputable vendor with an untested product to sell can reach the practitioner as easily as can the trusted medical institutions and reputable vendors. And, short of relying on

prior contact with the same information supplier or its reputation, the practitioner has no way to assess the trustworthiness of information disseminated on the Internet.

What the community of practitioners needs is a central source of technology information that they can trust. While the source should be on the Internet to provide the advantages of ready, timely and low-cost access, it should be brokered and filtered by experts in both medicine and technology so it can be trusted to the same extent as was information exchanged among professionals in a bygone era when the dissemination was virtually monopolized and more tightly controlled by the key stakeholders within the profession.

5. Coordination of TMTH training.

A concerted effort should be required of all training providers in the TMTH industry to manage all areas of TMTH training coordination so that any new technology or other information will be fully recognized by the entire industry. Failing to include all those in the TMTH circle with current training information could be detrimental to others within the industry. The TMTH environment is dependent upon many areas of information. To coordinate this information, it is necessary to incorporate a central point of information dissemination that is recognized by the TMTH community.

Telehealth is by its very nature a multidisciplinary field with a wide variety of subfields. And in the absence of standards in this rapidly changing field, the curriculum itself is a moving target. Experiments by faculty and postdoctoral students have the potential to introduce revolutionary equipment or techniques that require different bundles of knowledge, skills and abilities of practitioners. Courses and sequences of prerequisites have to change to keep pace, but the curriculum development and approval and funding processes are slow and cumbersome. Moreover, the entities operating different portions of the long training pipeline (from foundation math and science courses in K-12) through undergraduate and medical school programs lack articulation. For example, even if the medical school curriculum changes quickly to incorporate a latest state-of-the-art technique, academic advisors at the undergraduate level and counselors at the high school level may not get a “heads-up warning” that they should be advising their aspiring premed students to take different courses (such as more computer application courses) to lay a solid foundation for success in their subsequent pursuit of studies in TMTH.

A large part of the problem is that communications tend to be horizontal, that is, across like institutions and entities at the same level (medical school faculty and postdoctoral research fellows to other faculty and post doctorates) rather than vertically from medical school faculty to “feeder” programs at the baccalaureate level; university science and chemistry or premed faculty with their peers at other institutions rather than with high school counselors and science teachers.

Just as important as central information dissemination through a trusted broker on the Internet is an Internet-based information exchange forum that aims at better articulation of education and training through "vertical" communication. Information about curriculum content and prerequisites at a variety of levels could be arrayed in "drill down fashion." That is, an opening page at an information site might contain information about core requirements in language stripped of technical jargon – for the consumption of high school students and career counselors. Each successive layer would be more detailed, perhaps with hotlinks to sites containing technical information written at a suitable level of sophistication for undergraduate medical education with minors and electives relevant to TMTH. Then there can be an even more sophisticated and detailed layer aimed at medical students; another for faculty and postdoctoral researchers working in highly specialized subfields.

6. Lack of funding specific to training.

Many federal dollars are available through various grants for emerging and evolving technologies. The problem is locating and/or accessing the money, and once located, determining whether the moneys are available for certain costs, which could be inconceivable. Organizations such as the National Science Foundation, the National Institutes of Health and the Health Resources and Services Administration make grant money available for health-related research, but using those dollars for what the grant specifies is the key.

There are several barriers to coherent funding.

- The "*silo*" approach Whereas TMTH tends to be multidisciplinary, available funds are usually awarded within discrete, traditional fields. The National Science Foundation has begun to call for multidisciplinary proposals, and other funding entities are adding weight in their grant proposal evaluation criteria for evidence of cross-disciplinary fertilization, participation and coordination. That is a good start, but TMTH would benefit from more movement in this direction.
- Interagency rivalry Funding is not consolidated within a single agency or entity. NSF, the National Institutes of Health, even the U.S. Departments of Energy and Commerce all have a hand at the federal level in funding portions of the TMTH ventures; however, they have disparate missions and objectives that work against coordination and articulation.
- Funding can be politicized By and large, funds used to be distributed according to the merit (as assessed by peer review) of grant proposals. Congressmen, seeing that some states like California, Massachusetts and Texas got disproportionately larger shares of federal funds than other states, sought to change the rules to spread the money around with geography and the political clout of recipients, entities, or their illness-specific patient constituencies having as much to do with funding allocations as do the merits of grant proposals.

- Funding may have short-term focus Funding is increasingly targeted to commercialization of equipment and products for highly visible returns on investments in the short run – to the neglect of long-term funding of basic research. Funding priorities are increasingly driven by a crisis mentality that assigns more weight to ill-informed popular fears and sentiments than to the long-term medical needs of Americans at large.

Collectively, these points suggest the absence of a master strategic plan that expresses the overarching priorities in the public interest and which identifies the roles and relative importance (and thus the priorities for funding) of each field or subspecialty. In 1945 Vannevar Bush (Franklin Roosevelt's wartime director of the Office of Scientific Research and Development), counseled the nation to extend the collaboration and coordination that had resulted in military victory in WWII into peacetime efforts to defeat disease. The NSF was established under V. Bush with that in mind, but the system has since disintegrated. Practitioners of TMTH would benefit from renewed efforts to devise a national strategic plan for comprehensive health care delivery with their role in that plan clearly articulated and with their funding priorities clearly defined.

7. Absence of standard TMTH training evaluation.

How well the coordination training is managed must be a major concern in the evaluation process of training. A central point of information is required to be put into place to gather pertinent TMTH information. A formal committee should be established to set training standards at least for the Workforce Education Course Manual (WECM) for occupations in TMTH that can be filled with associate degree holders. This method along with other related information and/or records should be maintained at a central point.

Until health professionals catch up with the technology curve and come to some consensus on standards for both the practice of TMTH and the education and training of its practitioners, it is impossible to standardize assessment instruments, credentialing standards, or the coding of data about students who go through related education and training programs. Agencies, such as the Texas Higher Education Coordinating Board, serve as catalysts to bring expert and knowledgeable practitioners from multiple related disciplines together that can facilitate a group discussion process aimed at reaching a consensus or learning objectives as the basis of future standards for student assessment and training evaluation. In the meantime evaluation should be based on:

- The entered employment rates of TMTH program completers in training-related fields, their employment retention and career advancement/earnings gains over time as proxy measures of employer satisfaction with the knowledge, skills and abilities they have acquired; and

- The transfer rate of students into higher level programs and successful degree-completion rates as proxy measures articulation and the value added at each stage of education and training to the practitioner's competency and proficiency.

In order to address these issues the following actions are recommended:

1. *Develop and maintain an interactive TMTH training web site.*

   Functionalize a coordinated effort at assessing, evaluating and disseminating information regarding training. The TMTH strategic plan will be available in electronic format in order to functionalize the effort across the State of Texas. The interactive web site and the strategic plan will encourage resource sharing across organizations throughout the state through the use of training, technical assistance, and on-line training.

2. *Encourage resource sharing across organizations throughout the state through training, technical assistance, and on-line training.*

   Establish dynamic mechanisms for setting and continually updating statewide standards for both generic and application-specific TMTH technologies. In order to be current and up-to-date with the ever-changing technology in this very fluid field, standards should be related to processes. Standards within the TMTH strategic plan must be usable and within a "trusted" document. Therefore, the statewide plan will incorporate frequent review and updating. The webmaster will utilize the workgroup expertise as a "peer review" in order to assess accuracy and validity of content change and updates before posting to the web site. The statewide plan will be user-friendly and will be a training tool itself, with acronyms clearly defined and pull-down menus that offer glossary term definitions and links to related sites. It will include training within the electronic version that addresses individual learning needs on different levels of training. It will address which educational programs presently exist, formal training programs, as well as virtual training sites and access to expert systems.

3. *Utilize the training and technical assistance workgroup expertise as a peer review in order to assess accuracy and validity of content change and updates before posting.*

4. *Require recipients of state funds to allocate resources for training and participation in the coordinated training efforts.*

5. *Promote vertical and horizontal integration of technology use into basic educational curriculum.*

   Promote integration of the uses of technology into basic educational curriculum, health professions education, continuing education, and other training programs. In addition to horizontal integration, or cross discipline training, the need exists for vertical integration with emphasis on under-represented groups. Vertical integration will assure that the future workforce has proper training and that individuals in the educational "pipeline" are properly prepared.

Section VII: Telemedicine/Telehealth Reimbursement Issues

Telemedicine/Telehealth Reimbursement Issues Workgroup

The content of the Telemedicine/Telehealth Reimbursement Issues section is the product of the expert content workgroup, which is a subgroup of the Texas Telemedicine/Telehealth Workgroup. The members of this group are as follows:

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Section VII: Telemedicine/Telehealth Reimbursement Issues

Introduction:

The Office for the Advancement of Telehealth has identified reimbursement for telemedicine/ telehealth (TMTH) as the biggest obstacle to success. While advances in telemedicine technology have made it easier to deliver care over very long distances, few public or private payers will pay telemedicine costs.[1] Work is being done at both the state and national level to change this factor. However, slowly evolving policy development and implementation of new rules and regulations continue to affect reimbursement for services.

Current State of Reimbursement

An evaluation of payment by the Health Care Financing Administration (HCFA), now the Centers for Medicare and Medicaid Services (CMS), from April 1999 through December 2000 showed that a total of 235 telemedicine services were paid by CMS, and that after the patients' deductible and coinsurance were accounted for, $15,082 was paid.[2] The *2001 Report to Congress* acknowledges a total of 301 teleconsultation claims and $20,000 in payments made by HCFA, as of September 30, 2000. Overall, less than seven percent of TMTH services billed met the government's reimbursement criteria.[3]

The limited reimbursement occurred because of restrictions on eligible Current Procedural Terminology (CPT) Codes during the period for which reimbursement was evaluated, as well as limits on who were allowed to be eligible presenters. In rural clinics, registered nurses (RNs), or other health professionals, are often the only staffs available as presenters. Until recently, RNs and many other providers were not reimbursable presenters for Medicare payment while, in fact, the majority of these presenters in telehealth networks are nurses. Telehealth encounters presented by occupational or speech therapists and clinical psychologists accounted for 3.6 percent of the total. Only seven percent of the 4,761 reported telehealth activities that occurred during 1999-2000 met the criteria of consultation in which a referring physician or an employee of the physician/practioner was a presenter.[4] These factors have had a significant impact on total federal reimbursement for services. The TDH survey of TMTH providers (referenced in Section II) indicates that Medicare and Medicaid provided only 14 percent of total reimbursements for TMTH services.

Private third-party payers, including managed care plans, have also been reluctant to pay for TMTH services.[5] One study confirmed that third party payers are very limited in their coverage of telemedicine services.[6] Currently, the Texas Insurance Code does not require a private payer (an insurer or HMO in the commercial market) to cover the cost of equipment, transmission, and storage. Although most commercial insurers cover teleradiology, most private payers do not cover the cost of equipment, transmission, storage of the information or preconsultation, whether face-to-face or via telemedicine or records examination, to make treatment decisions. The TDH survey of Texas TMTH projects undertaken for this report found that less than ten percent of payment for services could be attributed to commercial payers. The *2001 Report to Congress* indicates that, with few exceptions, private insurers have provided very limited coverage. New laws in Texas, California and Louisiana may change this.[7] It is hoped that the recently passed Senate Bill 789 (77th Texas Legislature) will improve payment for TMTH consultations by commercial payers.

Effects of Grant Funding

Most TMTH programs in Texas have been funded by public and private grants, or from the budgets of those institutions interested in exploring the utilization of TMTH technology. These programs have not had a specific focus on how reimbursement might be structured, but have concentrated primarily on technology and service delivery structure. While Texas grant projects have provided good data regarding the success of TMTH expansion of access and the kinds of services it is feasible to deliver, there is limited data specific to the structure of those services as they relate to reimbursement.

Information that integrates the cost-effectiveness of services and the level of reimbursement that would be required to support teletechnology and telepractitioners is not readily available for use in the pricing of TMTH services. Therefore, it is generally acknowledged that the greatest barrier to expansion of TMTH services is the lack of an adequate reimbursement structure to support the delivery of these services.[8] Until such reimbursement structure of TMTH services can be developed, the long-term viability of TMTH will be in question.

Data is emerging which supports the position that TMTH services provide cost-effective, quality alternatives that expand access to services. The University of Colorado demonstrated a $100,000 saving in their Department of Corrections utilizing TMTH technology.[9] The primary savings were in the elimination of transportation costs of $450 per trip per inmate. Texas Tech University estimates that it saves between $200 and $1000 in transportation costs per inmate telehealth visit.[10] The same kinds of savings might be demonstrated with expanded reimbursement coverage in rural settings. The outcomes of a recent Kaiser Tele-home health research project found that medication compliance, disease knowledge and ability for self-care were improved by the use of remote video technology with an average savings of $700 per patient.[11] Moreover, the technology allowed the patient to access the home care provider 24 hours a day, thus increasing patient satisfaction as well. More demonstrations of quality and cost-effectiveness that are linked to actual cost of service are needed to develop a viable reimbursement system for TMTH and to provide incentives for expansion.

Regulatory Environment Related to Reimbursement

Texas

Texas has been a leader in the development of TMTH services, but like all states, it has struggled with how to move from the piloting of TMTH services through grant-funded research projects to an integrated remote service delivery model that is widely available. In the 75th Texas Legislative Session, H.B. 2386 and H.B. 2017 were passed which directed the Health and Human Services Commission to establish a reimbursement system for telemedicine services. By August 23, 1998, telemedicine became a reimbursable service for Texas Medicaid. However, the conditions for reimbursement at that time were limited by the following:

- Reimbursement was allowable to consulting physicians who provided consultation to other health care providers (physicians, advanced nurse practitioners, or certified nurse midwives) in rural or underserved areas where advanced telecommunications technology was required (interactive video, teleradiology, and telpathology).
- Rural areas were defined as counties with populations of fewer than 50,000, and underserved areas were defined as a medically underserved area (MUA) or a medically underserved population (MUP) as defined by the U.S. Department of Health and Human Services.
- No separate reimbursement was allowed for telemedicine hardware or equipment.
- Only services that involved direct “face-to-face” interactive video communication with the client were reimbursable unless it was a currently reimbursed service such as teleradiology or telepathology.
- Current Procedural Technology (CPT) Codes for covered services that were identified by a TM modifier were used for billing at the same rate as face-to-face services, although no charge for equipment was allowed.
- Reimbursement was allowed only when both the hub and remote site providers were enrolled Medicaid providers who were authorized to perform telemedicine services.[12]

While this legislation provided a starting point for reimbursement of telehealth by Texas Medicaid, limitations on the types of services that could be reimbursed and on services to MUAs was problematic. Rules which only allowed the most limited applications of service, and did not allow for the types of presenters available who are in rural areas, such as nurses, made few services eligible in rural areas compared with the number of Texas counties that do not have physicians. Furthermore, limitations on counties with populations greater than 50,000 that are spread over wide geographic areas and have few healthcare providers who are eligible for reimbursement by Medicaid, need to be addressed.[13]

As a result of these and other factors that limit the expansion of TMTH in Texas, the 77th Texas Legislature passed SB 789, which makes changes to participation and reimbursement for telemedicine medical service providers under Medicaid, as well as for private payers. These changes have the identification of telemedicine services that are appropriate for reimbursement under Medicaid as their primary focus. It is critical to note that the funding for S.B. 789 is in Part IX, Section 11 of S.B. 1 (Other Contingent Provisions of the General Appropriations Bill), which calls for certification of available funds by the comptroller's office before monies can be released to state agencies. HHSC has received notice from the Comptroller's office that they do not anticipate being able to certify any contingency funding this biennium. HHSC is moving forward with implementing as much of the legislation as possible and developing policy to integrate telemedicine into Medicaid and CHIP. Certain provisions of the legislation, such as the reimbursement system, cannot be implemented until funding becomes available. Additionally, there were no funds appropriated for S.B. 1536 and H.B. 2700, so implementation of the pilot projects described below is dependent on developing a reimbursement strategy that utilizes existing funding (see Appendix I-A, Telemedicine Legislation 77th Texas Legislature).

The bill does the following:

- Expands the definition of health professional, allowing for potential reimbursement to providers other than physicians, advanced practice nurses and certified nurse midwives for telemedicine medical service and telehealth services.
- Directs the establishment of additional TMTH pilots, including ones in home health, teledentistry, jail diversion for mentally ill offenders, and home and community services.
- Requires the Health and Human Services Commission to evaluate the effectiveness and cost-effectiveness of services delivered by the pilots.
- Allows grant funding for expansion of TMTH services to increase the number of facilities with TMTH equipment.
- Does not allow private payers to refuse to cover TMTH services solely because they were not provided in a face-to-face encounter if those services would be covered if they were delivered face-to-face.
- Establishes a Telemedicine Advisory Committee at the Health and Human Services Commission to develop policies for the use of TMTH in the Medicaid and CHIP programs (please note discussion of SB 789 funding discussed above).

Certainly, the expansion of pilots that evaluate the effectiveness of broader uses for TMTH services in the areas of home care, community services, and community mental health services will potentially expand reimbursement of those services. What is less certain is the effect of requiring private payers to not exclude coverage for a service solely because it was provided using TMTH technology as opposed to face-to-face. The terms of the legislation do not prohibit exclusion by private payers for other reasons such as network limitations, or for cost-effectiveness reasons. With current reimbursement from TMTH services at ten percent according to the TDH survey of TMTH providers, improvement in payment by commercial payers is essential to the overall reimbursement picture for long-term viability of TMTH. It will be important for the Texas Department of Insurance to carefully monitor the services that are covered and reimbursed by private insurers in order to evaluate the effectiveness of S.B. 789 in expanding commercial coverage for TMTH services.

National

Federal regulation of TMTH has recently seen a number of changes. CMS regulations for Medicare and Medicaid have been clarified in several memoranda and in the *Federal Register* (November 1, 2001), expanding coverage for TMTH services. The CMS changes include:

- Expansion of the definition of Medicare telehealth services to include the following allowable CPT Billing Codes:
  - Consultations (99241-99275)
  - Office or other outpatient visits (99201-99215)
  - Individual psychotherapy (90804-90809)
  - Pharmacologic management (90862)
- Allows all eligible service providers to bill for services.
- Expands the sites eligible for payment.
- Allows for a reimbursement to the site of origination (site where the beneficiary of service is located) in addition to the CPT code (*Federal Register,* Vol. 66, No. 212).
- Includes a facility fee of $20, in addition to the Medicare Part B fee schedule, for the service for a distant site.
- Does not require a telepresenter at the origination site unless it is deemed medically necessary.
- In the area of home health services, while CMS will not reimburse for a telehealth visit (the definition of visit remains the same), under the prospective payment system it does allow the use of telecommunications to increase efficiency in the delivery of the service.

Changes in CMS regulations should increase the services eligible for reimbursement for TMTH. The allowance for payment to the site of origination provides a payment for all participants' time in the delivery of medical service through telecommunications. Allowing home health to utilize TMTH to increase the efficiency of prospective payment cases will encourage the expansion of its use in home care settings. As mentioned earlier, the use of TMTH in home settings has been shown to decrease cost without compromising quality or patient satisfaction.

Private Payer Response

It is important to consider the private payer response to state and national regulation of TMTH. Historically, the private sector has followed the public sector payment structure. On the private payer side, very little information has been compiled about coverage of TMTH. Texas data suggests that few private payers are covering TMTH consultation services, although most cover radiology and similar imaging services. Private fee-for-service and managed care providers have been slow to deploy TMTH. However, there are a few pioneers who have recently begun utilizing TMTH applications, such as Allina Health Systems of Minneapolis, Minnesota and Methodist Hospital of Indianapolis, Indiana.[14]

Reimbursement in Other States

Important recent legislative changes have occurred in California and Louisiana that may spur greater managed care use of TMTH. In 1994 Louisiana passed a law that specifies a certain reimbursement rate for physicians at the originating site and includes language prohibiting insurance carriers from discriminating against telemedicine as a medium for delivering services. California passed State Bill 1665 in 1996 requiring private managed care plans to cover telemedicine services.[15] There are no data available yet that indicate the extent that these legislative changes have improved private reimbursement in Louisiana and California.

The Texas Telemedicine Advisory Committee compiled a state-by-state table of TMTH services covered and reimbursed (See Appendix VII-A, Medicaid Telemedicine Reimbursement by State). The task force identified 18 states with reimbursement for TMTH services including physician consultations. California, Kansas and Montana specifically allow mental health consultations as well. Of special interest are innovations in some of the states noted by the advisory committee. Kansas allows home health care services to be delivered by TMTH as a result of a successful Kansas-managed demonstration project of nurse management of chronic disease using TMTH technology.

Nebraska is perhaps the most innovative, allowing reimbursement for TMTH direct care services if the service is not available within a 30-mile radius of the home of the individual. However, Nebraska excludes medical equipment and supplies, orthotics and prosthetics, personal care aide services, pharmacy services, medical transportation services, mental health and substance abuse services, and Medicaid home- and community-based wavier services (which allow states the flexibility to develop alternatives to placing Medicaid-eligible persons in institutional settings), if these services are not provided by a provider who meets practitioner standards for coverage. Texas, Kansas, Louisiana, and Nebraska allow practitioners other than physicians to be reimbursed for TMTH services. It is clear that for TMTH there is a patchwork of service coverage. Inconsistent reimbursement throughout the United States is a serious barrier to expansion of telehealth.[16]

Identified Barriers to Reimbursement

Barriers to reimbursement are primarily perpetuated by an inconsistent reimbursement structure for TMTH services. The lack of consistency results in an inability on the part of providers to predict revenues available to sustain the long-term viability of TMTH services. From a business perspective, reimbursement limits discourage expansion and the creative use of TMTH technology. The following points represent key barriers to sustainability of TMTH in Texas:

- Lack of reimbursement from commercial payers;
- Slowly evolving policy direction in Texas for TMTH reimbursement for Medicaid services;
- Slowly evolving state response to CMS/Medicare reimbursement memoranda regarding TMTH;
- A majority of current funding through demonstration projects. In the absence of reliable sources of reimbursement revenue, these projects, while productive in exploring service delivery, are not supportive of the long-term viability of TMTH;
- Lack of adequate data to support establishing a cost structure for TMTH, and the lack of outcome data on the comparative benefits of TMTH services to establish its cost-effectiveness;
- Lack of experience by practitioners in possible expanded uses of TMTH technology beyond physician consultations; and
- Variations in payment policy and services covered throughout the United States.

In summary, the lack of a consistent reimbursement policy has a dampening effect on the development of TMTH services. TMTH providers require assurance that the technology will generate reliable revenue in order to continue their efforts to improve and innovate with the technology. Moreover, in the absence of reimbursement potential, very few providers can afford to risk development of the technology because of the considerable outlay required for start-up of TMTH services.

Recommendations

SB 789 (77^{th} Texas Legislature) provides policy direction for the reimbursement of TMTH. Texas should continue to develop reimbursement policy as set out in SB 789 and also consider other avenues for improving TMTH services and reimbursement. Recommended strategies include:

- The Texas Department of Insurance should continue to monitor commercial third party payers and request that they report areas of TMTH services covered, rates of reimbursement for those services, claims payment data, and utilization data, acknowledging that limitations in the data may exist, for TMTH services reimbursed to facilitate the evaluation of the effectiveness of SB 789.
- The utilization of the Telemedicine Advisory Committee through the Health and Human Services Commission should expedite the implementation of reimbursement policy for Medicaid and CHIP.

- The state Medicare intermediary for Texas should be required to expedite state response to changes in TMTH reimbursement as outlined in CMS reimbursement memoranda regarding TMTH.
- Grant dollars for TMTH projects should be contingent on grantees getting contractual agreements for continued support for a period beyond that of the grant.
- Current TMTH projects should be studied to evaluate the cost and outcomes of TMTH services and that future grant dollars for TMTH projects should be contingent upon an evaluation of their cost structure and outcomes data.
- Continue development of pilot programs to explore the reimbursement for, and broadening of, TMTH applications to include areas such as home health, case management, long-term care and other health services for which TMTH might increase access to and quality of health care.
- State agencies and commissions with TMTH interests and responsibilities should continue to dialog with counterpart agencies and commissions in other states with the goal of improving TMTH payment polices and services covered.

Texas policy makers should continue to work with stakeholders in TMTH service delivery to identify reimbursement issues and concerns. It is generally held among the TMTH provider community that as TMTH applications are able to establish their cost-effectiveness in terms of manpower and the reduction of patient risk related to travel for services that reimbursement for services will be increased and the technology will become better established. However, in the short term the lack of reliable revenue for TMTH services is a major hindrance to TMTH development.

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[16] Office for the Advancement of Telehealth, "2001 Report to Congress on Telemedicine." United State Department of Health and Human Services, February 2001.

Section VIII:
Project Planning
and Accountability

Project Planning and Accountability Workgroup

The content of the Project Planning and Accountability section is the product of the expert content workgroup, which is a subgroup of the Texas Telemedicine/Telehealth Workgroup. The members of this group are as follows:

Leadership

BJ Avery	Co-Chair, Texas Optometric Association
Renato Espinoza	Co-Chair, TDH/Office of Strategic Health Planning
David A. Valdez	SHCC Co-Chair; HMO Representative

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Beth Stalvey	Texas Department on Aging
Craig Walker	HealthCare Commuter Corporation
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Glenda Walker	Stephen F. Austin State University
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John Holcomb	Texas Medical Association
John J. Nava	Mexican-American Physicians Association
Mary Faria	Seton Medical Systems
Michael Kelley	Texas Department of Criminal Justice
Michael Potter	Vector Research, Inc.
Steven A. Carriker	Association of Community Health Centers

Section VIII: Project Planning and Accountability

Project Evaluation as a Means for Accountability

Although many individuals believe strongly in the potential of TMTH to provide cost-effective services, not much hard data is available to support that belief. Decision-makers want to know the value that is added by TMTH. Lack of solid evaluative information is a significant barrier to the optimal deployment of TMTH in Texas. The exact nature, design and scope of the evaluations currently being conducted vary greatly among projects.

A project design, implementation and evaluation framework needs to be developed for future TMTH projects that places putting a greater emphasis on accountability for the use of existing infrastructure and other resources.

The framework should require that the need for any new project be fully documented, including the absence of adequate infrastructure and equipment, and a lack of access of a specified population to specialized health services, before a request for the acquisition of new equipment and operations is actually funded. Furthermore, any new project must be required to identify and measure health outcomes, cost savings, increased access, patient and provider satisfaction, and community support.

There is a need to create or designate a single entity in charge of coordinating the deployment of new TMTH initiatives. This entity should be the repository of data about existing networks, current TMTH programs and projects, and evaluation reports and other evaluation resources. This entity could implement the use of the framework by providing new projects with access to that repository of TMTH information as a source of examples of best practices or model programs. Access to that information will be invaluable to the development, implementation and evaluation of new projects; and it may eventually facilitate cooperative evaluation efforts with private sector TMTH programs and projects.

The framework selected should serve the needs of managers and professional evaluators alike. Professional evaluators are social science researchers who use basic methods and tools to gather the data necessary to determine the worth of a project in terms of its stated goals and objectives.

Only very large projects can afford to hire a full-time evaluator who can participate and interact regularly with the rest of the project team on all the phases of the project. The primary advantage of including an evaluator as part of the project team would be to monitor development and implementation of a project, and thereby provide early warning of unintended results. This inside view allows timely corrections that contribute to the attainment of the intended objectives.

In current practice, however, most professional evaluators work as independent consultants, and will be hired by a project during the development of a proposal, with the understanding that they will be hired as evaluation consultants if the project is funded.

The framework should guide the development of a project evaluation plan to respond to the following questions:

- What are all the intended outcomes of the project, and how will participants in the project benefit?
- How will the needs assessment, including identification of existing assets, be conducted to justify the project?
- How will the proposed objectives be measured, in particular, health outcomes?
- How do the different project activities relate to the success of the project?
- How will the TMTH technology help further the mission of the [applicant] organization in serving the citizens of Texas?
- How will this technology make a difference in the lives of ordinary citizens?
- How will the project enrich the education of all the people involved, including providers, patients and the target community?

Many TMTH projects involve developing partnerships or working relationships with entities outside the primary health care organizations. These associations can be very valuable, so it is important to incorporate an evaluation of what the relative contributions of each partner are. The benefits could include: validation of the feasibility of the project from an unbiased outsider, expert consultation, alternative sources of funding, leverage for future funding, market place leverage, opportunities for shared technology, opportunities for providing enhanced services to patients, and opportunities for shared cost for staff and equipment. These partnerships or working relationships can also allow for shared findings regarding the benefits of the project to the community. Potential partners should be considered and engaged during the planning and design phase of the project. In this way partners become stakeholders who are part of the process from the onset. This ensures strong alignment of goals and objectives among partners. Project plans must consider a contingency plan should the partnership deteriorate or dissolve entirely.

There are many free resources available through the Internet that can guide project managers and professional evaluators. The resources include guidelines, check lists, templates, forms and instruments that are ready to use or adapt for the specific needs of TMTH projects.

An international resource

The Australian-New Zealand Telehealth Committee and the Commonwealth Department of Health and Aged Care jointly commissioned the development of a methodology for telehealth evaluation in Australia. The "Methodology for Telehealth Evaluation in Australia," issued in June of 2000, adds to the pool of knowledge and tools available to funding entities and health service providers for evaluating the costs and benefits of key telehealth applications in Australia. This document contains detailed templates and instruments to guide professional evaluators in developing a variety of evaluation designs. In addition the Australian-New Zealand telehealth home page contains a number of other documents and resources, most of which are of great usefulness to professional evaluators. See http://www.telehealth.org.au/.

A national resource

The U.S. Commerce Department's National Telecommunications and Information Administration (NTIA) operates the Technology Opportunities Program (TOP), which provides grants to nonprofit organizations, including state and local governments, across the country, and in Puerto Rico.

TOP grants, matched by contributions from the private sector and state and local organizations, extend the benefits of advanced telecommunications technologies to underserved communities and neighborhoods.

Although originally focused on the evaluation of educational programs and projects, TOP has developed a Project Evaluation Guide tailored specifically to health programs. Additional information and resources are found in the Technology Opportunities Program home page at http://www.ntia.doc.gov/otiahome/top/.

A Texas resource

The Texas Telecommunications Infrastructure Fund (TIF) has been a major state funding source for TMTH projects, including hardware, software, and operation funds. As part of the application process for funding, the TIF requires applicants to submit an evaluation plan that should answer the following questions:

- What are the intended outcomes of the project and whom will the project benefit?
- How will information be gathered about the project?
- How will it be known that the project meets its stated objectives?
- How do the different project activities relate to the success of the project?
- How will this technology further the mission of the [applicant] organization in serving the citizens of Texas?

- How will this technology make a difference in the lives of ordinary citizens?
- How will the project enrich the education and well-being of the target audience?

To assist applicants for funding, the TIF Board has developed materials and resources. These include a document entitled Evaluation Planning prepared by KPMG Consulting for project managers as well as evaluators. The KPMG document is relatively short and concise, and it contains links and references to other national resources, including the TOP program and the 1998 W.K. Kellogg Foundation Evaluation Handbook.

The Evaluation Planning document can be found and downloaded from the TIF web site at http//www.tifb.state.tx.us/Handbooks/whitepapers/EvaluationPlanning.DOC.

In conclusion, a good evaluation report should accomplish the following tasks:

- Document project accomplishments in terms of objectives and health outcomes.
- Generate information on what strategies work best, how projects should be structured, and how to overcome obstacles.
- Identify unmet needs and gaps.
- Document project costs and assess the value of benefits.
- Raise funds for project continuation, expansion or replication.
- Describe what kinds of participants benefit the most (and least) from project activities.
- Publicize project accomplishments.

Evaluation reports that follow guidelines such as those required by the TIF grant process and use other evaluation resources can become the data points to allow researchers to evaluate the progress made; the gaps in a state-wide effort to use telecommunication technology; and public funds to meet the health care, health education, and health information needs of Texas citizens who, because of geographic or social isolation, are not benefiting from the explosive advances being made in medicine and health care technologies.

Recommendations

1. A project design, implementation, and evaluation framework needs to be developed for future TMTH projects putting a greater emphasis on accountability for the use of existing infrastructure and other resources.
2. There is a need to create or designate a single entity responsible for coordinating the deployment of new TMTH initiatives.

Section IX:
Privacy and Security

Privacy and Security Workgroup

The content of the Privacy and Security section is the product of the expert content workgroup, which is a subgroup of the Texas Telemedicine/Telehealth Workgroup. The members of this group are as follows:

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Edna Ramon-Butts	Office of the Attorney General
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Lawrence Jones	M.D. Anderson Cancer Center
Maureen Finnegan	University of Texas Southwestern Medical Center
Timothy R. Manning	Texas A&M University
Vincent Friedewald III	University of Texas Medical Branch

Section IX: Privacy and Security

Introduction

The privacy and security of personal medical information is critical to the success of TMTH, regardless of legal implications. This section provides a logical framework for decisions regarding the manner in which those involved in TMTH can reasonably meet their privacy obligations. Following this short introduction are definitions of many of the terms used in later discussions of critical issues, current status and future expectations. Barriers to success are addressed in terms of internal and external barriers. The final division of the section, “Strategies for Overcoming Barriers,” looks at several ways to resolve barriers.

Definitions

The following definitions will be used throughout this section.

<u>Individual identification and authentication:</u> Collection of personal, medical or financial information at the person’s initial entry into any affected health care system; issue of any identifying token or knowledge (password, Personal Identification Number, SmartCard, LasarCard, digital signature, etc.) and subsequent processes using that token or knowledge.

<u>Data collection</u>: Interviews, online responses to questions, TMTH sessions, consultations, laboratory results, electronic data recording devices, etc., that result in the collection of personal medical data. This can be extended to include any data shared by a data collector with other entities.

<u>Informed Authorization (Consent)</u>: Granting or withholding consent to share protected personal information with other entities other than the one collecting such information and those to which access is specifically granted by law. This includes recording the consent and attaching it in some way to the information to which it applies; timely notification/request for expired consent statements; and notification of changes to consent statements. Consent applies to information in any format, including both printed and electronically stored data.

<u>Access:</u>

- Logical access: Granting access to protected personal data, either to handle/process the data or to use it directly, through the identification and authentication process.
- Physical access: Granting access to hard copy documents, computer systems or magnetic media containing protected personal data.

Transmission: Electronic transfer of protected personal data, including that data associated with TMTH sessions, consultations, store and forward data, prescriptions, data in transit between databases and terminal units or devices, enrollment data, report data, etc.

Storage and destruction: Storage of magnetic or hardcopy versions of protected data, including archival and scheduled/authorized destruction of data.

Usage: Utilization of data in accordance with the attached consent authorization or as authorized under applicable statute.

Personal access and update: Access by the individual person for any purpose, including copying, revision or changing any consent statement for that data.

Data integration: Linkage or integration of personal data held in different databases, whether in electronic or hardcopy form, including linking associated consent statements.

Re-identification: Process of determining or attempting to determine, after data has been disassociated with the person to which it refers, that person's identity.

Critical Issues

A number of issues are critical to implementing an operating environment that ensures the privacy and confidentiality of personal data.

Authority to impose standards: Under Senate Bill 789, passed by the 77th Texas Legislature, responsibility for defining standards for personal authentication and security was assigned to the Health and Human Services Commission (HHSC) and the Telecommunications Infrastructure Board (TIFB). These standards will probably become the default standards for other health care applications (See Appendix V-B: Senate Bill 789 Draft Minimum Standards).

Infrastructure: The amount and type of hardware, software, and telecommunications available within the public health system covers a wide spectrum. It is assumed that any facility that offers TMTH has broadband telecommunications available, but it does not necessarily follow that those capabilities exist outside of the TMTH facility. Operating systems (Windows, Windows NT, Unix, Netscape, Internet Explorer, etc.) vary greatly. Hardware ranges from the most current units to those that cannot access the Internet.

Cost: Considering the variability of the starting point for facilities, the cost to implement security features also offers a wide array of numbers. Some systems can accept solutions without modification while others must be completely replaced. Telecommunications costs currently depend on tariffs that offer little relief for circuits crossing LATAs. Operations may be cost prohibitive if maintenance and service calls must be answered from long distances and work cannot be performed remotely.

Scope: A major component of cost is the scope of coverage. Measures that are limited to the two facilities involved in a TMTH session are easier and cheaper to implement than those that include additional locations and people who, at one point or another, handle the data collected during the session. The personal information collected prior to and after the session must also be protected. All of this data must be stored securely. The costs will increase as wider protection is implemented (including personal data, medical data, billing data, employees in each location handling or storing any confidential data, etc.).

Standards versus proprietary elements: TMTH equipment is still evolving with most of the industry using proprietary protocols. A lack of standards may limit the ability of participants to share data if protocols are used. Protocols and data systems should be field tested prior to adoption.

Sustainability: The need for any TMTH solution to exist over time is critical. As standards evolve, as the scope of activities expands, as the demand for services grows, the expectation that a solution implemented now will still be viable in five years is doubtful. Implementation is also dependent on cost recovery of the capital and human investments necessary. Reimbursement rates from whatever source will determine whether such an implementation will be sustainable over time.

Risk and exposure: A certain amount of risk exists with TMTH. Critical to its future will be recognizing, mitigating and accepting those risks. At some point, liability will rest with some entity and must be accepted. The fact that TMTH has been in use for a number of years will help in both identifying and mitigating risks

Public trust: Absence of public trust by users in the benefits of TMTH and the confidentiality of their personal data will detract from users' willingness to participate. A part of this consideration will be the willingness of individuals to accept new business processes (personal identification and authentication) necessary for them and their providers. Trust in the ability and determination of providers to secure personal data will probably be the final determinant for many potential TMTH users.

Technology limitations: The technology available for TMTH grows routinely as research and development funds are invested in the field. Because of this, the technology is dynamic. Many limitations of today will be resolved in the near future, but such advances may negatively impact the development standards. Technology tends to remain proprietary as firms attempt to recoup their investments.

Linkage to fraud detection and prevention: The use of personal identification and authentication processes may prove beneficial in detecting and preventing fraud. If so, the losses avoided may be considered as opportunity savings that could be applied to funding TMTH and those processes that secure it.

Long-term data retention: The retention of data stored in magnetic forms poses several problems, which are related to both the media and the ability to read the media. Most magnetic media (i.e., CD ROM, microfiche, magnetic tape, microfilm, floppy disk) tend to lose viability after a period of time, especially if not stored properly. If that time is shorter than the retention period of the data, it must be recopied to a new unit. In the case of systems, the ability to read data may require that an old, outdated system be retained in order to access the data. That would also include any encryption devices, algorithms and keylists.

Appropriate: A much-used but seldom-defined term, "appropriate" must be considered in terms of stakeholder expectations, cost constraints, flexibility, scalability, compatibility with other stakeholders, risk exposure and the legal framework in which the solution will be applied. Appropriateness will vary by location and situation. This implies that a leadership decision is required and that a certain amount of risk could be associated with the wrong decision. The willingness to assume risk cannot be transferred, even through insurance (the standard means of transferring risk). At some level, a person becomes responsible and accountable for what is "appropriate."

Reasonable: As with "appropriate," "reasonable" implies that a conscious decision has been made as to what is, or is not, acceptable under the prevailing conditions. The "reasonable person" concept can only be relied upon when a prudent person with sufficient knowledge considers the situation and its demands in terms of the pertinent factors. Decisions regarding privacy and security must, of necessity, begin with the expectations of the stakeholders and progress through the full list of factors.

Current status

Legal/Legislative Issues

State legislation (Senate Bill 789, 77th Legislature) mandated the Health and Human Services Commission (HHSC) and the Telecommunications Infrastructure Board (TIFB) to jointly develop certain standards for the security and authentication of TMTH processes and equipment. Those two agencies are working through the process to develop and adopt rules that satisfy the mandate given to them. Those rules will establish minimum standards for TMTH equipment, security and authentication. Until rules are adopted, draft rules should be considered as guidelines for minimum standards (See Appendix V-B: SB 789 Draft Minimum Standards).

The draft rules being developed by HHSC and TIFB include a reference to *Practices for Protecting Information Resources Assets* (http://www.dir.state.tx.us/IRAPC/practices/index. html) issued by the Department of Information Resources (DIR). These practices offer additional information and direction regarding risks and mitigation techniques available. Before finalizing any decision on what is appropriate and reasonable, managers should refer to both the HHSC and TIFB rules and the DIR Practices.

With the adoption of the Health Insurance Portability and Accountability Act of 1996 (HIPAA) privacy rules comes a set of standards that require personal data be protected from the time it is given to a government or provider entity through its de-identification or destruction. Rules require the entity collecting personal data to, at the time of collection, also obtain a consent statement from the person to formally establish the person's intent with respect to any release of that data. There are specific controls over the storage, electronic transmission and use of personal data.

The overall intent of the HIPAA rules is to implement a standard of privacy and confidentiality for personal information. With specific exceptions, this standard allows individuals to determine future uses of personal data. Data may be used for billing and payment so that providers can receive payment for goods and services delivered to or on behalf of the person. Data that has been de-identified can be used for certain purposes, but cannot be re-identified.

Case law is being written to clarify the extent of coverage for privacy and confidentiality to be provided to individuals. This evolving body of law will surely be expanded as federal and state laws and rules become effective.

Under current laws and rules, liability is placed on any entity that holds personal data. That liability includes both civil and criminal penalties for the unauthorized release or use of personal data, depending on the circumstances. It is the responsibility of any entity that holds personal data to safeguard it. Failure to do that, whether through accidental or uninformed release or intentional misuse or abuse, brings liability under multiple statutes.

Personal data can legally be held and exchanged by providers and payers for certain purposes. Those purposes center on the normal functions of a health care provider and the entity that will pay for those services. Limits on the use and sharing of personal data restrict its use without the person's consent to those tasks related to standard business transactions. Once data is de-identified, it can be used for statistical analysis and reporting, public health and certain other research-related purposes.

The key to using personal data is the informed consent of the person. At the time data is collected, the person must give written consent for that data to be shared or used (except for the standard business transactions noted above). Consent must be granted after the person is informed of the specific uses to which consent is being given. Broad, general consent is not acceptable under rules and statutes; consent must clearly state the specific uses for which the data will be subjected.

Technical operating environment

The technical environment in which TMTH will function is as varied as can be imagined. Depending on the specific location of the facility, there is wide variability in operating systems, hardware, software and telecommunications. Because of this, interoperability is essential. Proprietary protocols used by equipment manufacturers limits the ability of providers to easily share data. Beyond that, the proprietary nature of local databases widely used inside of provider organizations and agencies further limits the flow and use of client data. Overall, the diversity of the technical operating environment is a limiting factor to the implementation and use of TMTH.

Considering the diversity in the technical environment and the privacy requirements imposed by rule and statute, a review of the current situation and potential future states warrants attention. Doing so based on technology is less productive than considering the business processes that the technology must support. Table IX-1, Risk Exposures in Privacy and Security Processes, considers business processes in terms of their exposures to risk, solution alternatives and related issues. This table is not all-inclusive but does address the primary processes and alternatives.

Future expectations

Solution sets: As the table above demonstrates, a number of solution alternatives exist that can reduce the risk of exposures to one or more of the critical business processes involved in TMTH. A brief discussion of these alternatives sheds some light on how they work and how they reduce exposures.

Identification and authentication: The need to positively identify any person who attempts to access personal data is obvious. How that is done efficiently and consistently for clients, providers and staff is less clear. Every access should come only after verification of identity and authorization. Personal identification and authentication can be based on any one or a combination of three things: what you have (a token, such as a SmartCard or LaserCard), what one knows (a password or personal identification number [PIN]), or what one is (a biometric, such as a fingerprint, retina pattern or voice pattern). Biometrics are the most reliable authentication, because tokens and knowledge can be stolen. The cost of implementing and using biometrics, however, are much higher than passwords and PINs. The major issue concerning the decision on what to use will balance and decide the degree of confidence necessary to gain and maintain public trust in the system.

Biometrics: Biometrics offers the ability to rely on "what the person is" as an identifier. Included in the broad scope of biometrics are fingerprints, voice recognition and retina scans. Difficulties exist with

Table IX-1. Risk Exposures in Privacy and Security Processes

Process	Exposure	Solution Alternatives	Related Issues
Data classification	· Misclassification of personal data leading to unauthorized release	· Hold all client data as confidential · Train staff to classify data correctly and implement processes and systems capable of separating data	· Finding/recognizing all client data possessed by an organization
Data administration	· Improper handling of access requests · Improper data storage and/or disposal · Incomplete data de-identification	· Train data administration staff on specific handling issues · Use double-signature process for data actions	· Broad distribution of client data · Multiple occurrences of the same data elements internal and external to the organization · Multiple (potentially conflicting) consents for the same data · Consent expiration
Personal identification and authentication	· Service rejection · Services and products withheld · Invalid data update · Inability to establish PKI session	· Picture identification · SmartCard · LaserCard · Biometric - Finger scan - Voice recognition - Retina scan · Digital signature · Personal Identification Number (PIN)	· Cost of implementation · Cost to maintain biometric devices · Periodic update of biometric matrices · Cost to verify digital signatures and transmissions · Handling of lost tokens and forgotten PINs and passwords
Data collection	· View data · Overhear data	· Physical security · Logical security	· Availability of closed, secure areas for staff or social workers to conduct interviews · Logical access management · Number and diversity of individuals involved in data collection
Consent to access	· Unauthorized data release	· Electronic consent (digital signature) attached to electronic data · Hardcopy consent attached to hardcopy data	· Identification & authentication procedure - Digital signature - Biometric

Table IX-1 Continued.

Process	Exposure	Solution Alternatives	Related Issues
Access	• Logical access - Unauthorized access to computer or magnetic data for read, write, or delete • Physical access - Unauthorized access to physical records or computers capable of accessing data - Unauthorized access to an area in which oral data is collected or discussed	• Logical access - Data encryption - Logical access controls based on personal identification and authentication • Physical access - Secure areas for data collection and/or discussion	• Cost of implementation of personal identification and authentication • Cost of physically securing areas • Cost to maintain personal identification and authentication equipment • Cost of computer systems, including databases, capable of supporting logical access controls adequate for maintaining profiles of users and data element protections
Data transmission	• Read, write, delete access	• Data encryption	• Encryption key management • Potential for lost data when encryption keys are lost or encryption algorithm is corrupted
Data storage	• Read, write, delete access	• Logical security • Data encryption	• Access management • Encryption key management • Potential for lost data when encryption keys are lost or encryption algorithm is corrupted
Data usage	• Misuse or abuse • Unauthorized release	• Access review • Usage review and audit	• Tracking information after release
Personal access and update	• Manipulation of data for personal purposes • Intentional misinformation	• Review of update requests by appropriate and competent author-cities	• Actual location and condition of personal records held by an organization, i.e., hard copy, magnetic media, microfiche, microfilm, x-ray or NMR images, recorded conversations or notes, centralized, widely scattered, etc.
Data integration	• Aggregation of data to provide a more complete set of personal data	• Access controls • Access review • Data encryption	• Value of aggregated data for eligibility evaluation • Value of aggregated data for increasing/improving services • Opportunity to eliminate individual agency/program databases
Re-identification	• Misuse or abuse • Unauthorized release	• Adequate de-identification criteria • Denied access to data that could potentially be used to re-identify • Usage review and audit	• Tracking information after release

each of these in that they require storage of a master biometric matrix for comparison. Because of changes in a person's body, scan matrices must be renewed periodically. Some scanning devices wear out with use. Underlying each of these technologies are proprietary algorithms and equipment. The proprietary nature of biometrics limits its utility in supporting portable health care.

Digital signatures: Issued by Certificate Authorities (CA), digital signatures consist of a hash function of an encryption algorithm and use public/private key encryption to encrypt data for transmission. Data is encrypted with a private key and can only be decrypted using a matching public key. Digital signatures and public/private key encryption are used to establish PKI (Public Key Infrastructure) sessions. Verification comes when the CA compares the data encrypted with the person's private key with the message; a perfect match authenticates the message as having been the message sent by the person. However, digital signature technology is also proprietary, which limits its use in supporting portability of health care.

Certification and validation of transmissions: Any transmission of personal data must be secured in some way. While some algorithms are in general use (secure socket layer – SSL), questions exist about the degree of protection they offer. SSL is associated with "pretty good privacy" (PGP), but that level of protection does not match that of Private Key Infrastructure (PKI) encryption and message authentication. At question is the degree of assurance required for any given transmission.

Data encryption: The use of an encryption/decryption algorithm and an encryption key to make data illegible to any entity that does not use the required algorithm and key. Issues associated with encryption are the particular encryption algorithm, the length of the key used (longer keys are harder to break), key management and the risk of losing data if an error occurs in the encryption process.

Transmission encryption: The use of encryption with data as it is being transmitted, whether via private circuit or Internet. As with data encryption, the value of transmission encryption is based on the security of the encryption algorithm and the security of the encryption key.

Storage: *Logical security*: Access to stored data through the software systems (operating system, database system, etc.) used to capture and store the data. Logical security normally depends on a combination of personal identification, password, personal identification number (PIN) and biometrics.

Physical security: Access to the hardware on which data is stored (computers, hard drives, data storage devices, etc.) and network systems that transmit the data (wiring, wiring patch bays, telecommunications equipment, etc.). Physical access is normally addressed by locking doors, limiting entry and logging all visitors.

Integration: The physical or logical linking of hardware, software, databases, facilities, etc. so that data is shared, more or less transparently, by users. True integration incorporates disparate pieces into a single system.

Portability and integration of medical records: The ability of a provider to access or a patient's ability to hand over personal medical data in a way that allows the provider access to read and use it immediately. Read can mean reading physical records or processing medical data through appropriate medical instruments or equipment. The key to portability is being able to access data immediately on demand, whether it is a file of papers, stored in a SmartCard or LaserCard that is read at the provider's facility or stored in a central database that is accessed remotely by the provider.

Logical access control: Administrative process to establish a profile for an individual that allows or denies access to electronic systems or data. This normally uses a series of identification techniques such as logon identification, passwords, Personal Identification Numbers (PINs) or biometrics to identify and authenticate an individual so the access control process can use the stored profile to determine whether access should be allowed or disallowed.

Education: Training aimed at informing those who handle personal data in such topics as data classification, data handling procedures, data storage and destruction requirements, and access controls. Education is the first line of protection for those who want to treat personal data appropriately.

Standards: The development and implementation of standards facilitates conformity within and across systems, which, in turn, reduces the need for translations or reconfigurations that can increase risk exposures. This is true for telecommunications protocols, digital signatures, biometrics, data encryption and TMTH equipment. Standard criteria to evaluate requests for access brings uniformity, as do standards for data storage, protection and destruction.

Operating procedures: Operating procedures actually implement standards and processes. Having uniform procedures for data classification and administration; client, provider and staff identification and authentication; client data collection and capture (enrollment questionnaire, TMTH equipment, etc.); client data verification and authorization/consent; data transmission and storage; access controls; and data de-identification. The consistency of operating procedures facilitates common privacy protections within and across organizations.

Barriers to Success

Just as there are a number of different measures necessary to ensure the privacy of personal data, there are also a number of possible barriers to their implementation. These barriers are both internal and external to the health care industry.

Internal Barriers

Building agreement and integration in the total health care community: Until agreement exists within the health care industry, any implementation will be uneven. Use or disuse of the various techniques will prevent some who want to use them from being able to do so. This will lead to either an outcry for full implementation or an abandonment of techniques. At some point, this latter result will probably result in a reduced level of protection for personal data and, because of it, an increased vulnerability for providers from unintentional disclosure of that data.

Clear operating procedures and guidelines: Failure to provide clear, understandable procedures and guidelines will lead to uneven application of privacy requirements and techniques. Knowing when, how and under what circumstances personal data may be used or released is predicated on matching situations and circumstances with legal requirements. Using privacy techniques appropriately depends on effective operating procedures so that protection is complete and continuous.

Coordination: As alluded to above, the requirement for coordination among the providers of various services and materials will become a barrier. Specific areas where coordination will be required include the following:

- Database integration: Being able to access data held by another will alleviate the necessity to transfer the data, but it will require a certain level of coordination of administrative and technical functions. The careful and secure integration of existing data will provide opportunities (within the confines of personal consent) to reduce the number of times the same information is collected and the number of places it is stored, consolidate information, reduce retrieval issues, and increase the ability to protect the data. On the other hand, without this coordination, data proliferation will continue, consent will be recognized locally (for each occurrence of the data) but not globally, and information critical to a person's treatment may not be available to caregivers.
- Software: The absolute coordination of software is not necessary so long as systems are open with appropriate interface capabilities. This will undoubtedly require some providers to change certain software systems. This coordination will be expensive both in terms of initial costs, but also in training and ongoing operational costs. The inability to integrate, or at least interface, software will inhibit the smooth flow of personal and billing data.
- Stakeholders: Coordination between stakeholders to securely move data between them on behalf of individuals will facilitate smooth coordination of services. A failure to establish an environment in which stakeholders can work together electronically will hinder TMTH in every respect.
- Funding sources: The ability to pay for capital and operating costs will depend on the ability of the many stakeholders to balance and coordinate funding sources. Some systems will undoubtedly be paid for in parts by several entities. The key for those funding sources will be to make

limited funds reach as far as possible without waste or abuse. Coordinating these efforts will be necessary to maintain the integrity of the system and the funding process.

Cost: One of the biggest reasons for disagreement will be the cost of privacy measures. While some techniques will be relatively cheap and easy, the ones most likely to be required for TMTH will be quite expensive to implement. Digital signatures, SmartCards, LaserCards, card readers, biometrics, biometric scanners, broadband telecommunications circuits, system administration … all of these cost money. Either directly, for equipment, or indirectly, in added administrative time, these techniques will add to the cost of delivered health services.

Reimbursement: As noted above, the method and amount of reimbursement for entities involved in TMTH will be critical to the concurrent implementation and use of privacy techniques. If the value of investments cannot be recovered by the various entities involved in TMTH, there will be little or no investment. If the reimbursement process is too lengthy and bureaucratic, it will add to the total cost to participate; and if those added costs cannot be recaptured, there will be little incentive to participate. This will be true regardless of the funding source or reimbursing entity.

Provider acceptance: The level of implementation for any techniques will be a direct reflection of the degree of provider acceptance and the cost/reimbursement structure.

Portability of consent: Consent to use/release certain data may change from one provider to the next as a person moves from one provider to another. Information that needs to be shared may or may not be available because of multiple requests to write the information down, multiple requests to sign consent forms, and multiple intended uses of the information. The ability to capture consents in such a way that a person can easily see what has been, and what has not been, consented to may well prove to be one of the most significant barriers to the ability to easily move data when it is necessary for quality of care.

External Barriers

The barriers outside of the health care system will significantly challenge those attempting to implement TMTH. Solutions to these problems will most likely come through public/ private cooperation or partnerships focused on specific issues.

<u>Telecommunications infrastructure</u>: The availability of broadband telecommunications circuits is critical to TMTH. But, if circuits are not available at affordable rates, TMTH will not be cost-effective. Current expectations that TMTH will not cost more than a "normal" face-to-face visit allow the consideration of all relevant costs, including both facilities, presenter, telecommunications, provider, transportation, etc. Reimbursement rates must allow providers to recover all costs. However, if the telecommunications

infrastructure does not exist in an area or exists only at costs that exceed acceptable levels, TMTH will not be viable in that area.

Digital divide: The split between the "haves" and "have-nots" tends to manifest itself more on a personal level than in the business arena. In the case of TMTH, it will not be as serious a barrier as the absence of affordable telecommunications circuits. The availability of computers in TMTH facilities will not be a limiting factor; but the availability of specific TMTH equipment may be.

Telecommunications protocols: TMTH equipment tends to use proprietary telecommunications protocols and internal data processing routines. This inhibits the ability to cross lines between equipment and manufacturers, which makes security measures even more difficult. Data translations are difficult enough without adding the complexity of incompatible encryption or authentication equipment. While this problem may eventually be worked out by agreements between manufacturers, it will be a significant barrier in the near term.

Technical diversity – interoperability: As with telecommunications protocols, equipment manufacturers build around proprietary devices and protocols. This significantly hinders the ability to connect devices. Data translation between proprietary internals is typically difficult and expensive. Without interoperability, facilities will have to either invest in multiple devices performing the same tasks or limit their ability to work with facilities using incompatible equipment.

Technical – encryption: The use of encryption to secure data for transmission and storage depends on the availability of cheap devices, reliable encryption algorithms and key management. Any of these could prove to be a limiting factor. Without doubt, encryption devices using proprietary algorithms will strictly limit interoperability. However, the use of computers connected through the Internet to create (for all practical purposes) a supercomputer to crack encryption algorithms has led to the decertification of compromised devices and algorithms. The availability of secure encryption will be critical. However, the fear of data being irretrievably lost because of lost encryption keys or equipment malfunctions also inhibits TMTH participants from embracing the technology.

Public acceptance: Increasingly, individuals fear the collection of personal data by any entity, whether public or private. The ability to conduct quick, easy Internet searches and accumulate significant amounts of personal information has fed concerns that anyone could obtain personal medical data as easily as they could obtain financial records. The mere existence of personal data in the hands of anyone, for any reason, distresses some individuals. Fear of release of personal information has fueled concern that individuals will conceal vital information, mislead health care providers, or simply decline to seek care. Two specific situations seem to be of concern.

- *Inadvertent release*: The release of personal information through mistake or malicious intent, though rare, causes more concern and receives more scrutiny than the lawful use of data. Data that has not been correctly classified or that has been mishandled in some way can become available to virtually anyone without much difficulty. The fact that such data are stored electronically makes access and propagation much easier.
- *Informed consent*: Convincing individuals to provide specific medical information to primary care physicians is one thing; but making the same information available repeatedly may be a problem. While the purpose(s) for which the information may be used must be clearly stated, clients must be informed that records may be stored electronically.

Cultural issues: Varying experiences among cultures with technology, combined with reluctance to share personal information, may limit willingness to accept TMTH. Consent forms must be developed in appropriate languages to ensure understanding.

These consent forms must be nonthreatening and at an understandable educational level for the target market. This should consider helping them to understand how they will be diagnosed and treated using TMTH. This dialogue between patient and provider can be helpful in understanding the dynamics of TMTH, confidentiality and security issues related to other cultures.

Marketing: The “sell” to various potential participants in TMTH must include efforts to create confidence in the ability of TMTH to protect the privacy of clients. A major part of marketing TMTH must be the measures taken to ensure the privacy of personal data, lest fears about the ability of TMTH systems and providers’ capabilities will control the issue and lead would-be participants away. Despite various efforts to identify and mitigate barriers, the potential exists that one or more will not be recognized. This should be an ongoing process with periodic review.

Strategies for Overcoming Barriers

There are a few viable strategies for overcoming the barriers listed above. While these strategies may seem simple, they can be quite powerful if constructed and used appropriately.

Technical awareness: Technology has a way of befuddling those who do not consider it their first language. Studying available technology, then selecting solutions appropriate to the situations and requirements will help, but efforts to demystify technology may still be necessary. This can be done through technical training, process simplification and clear procedures. A web page should be developed to make training materials available.

Training: Several areas must be included in training programs, including technical issues, processes and procedures, legal requirements and personal rights. Awareness of pertinent factors and how to apply them in various situations will help avoid inappropriate disclosure or use of personal data. The use of web-based distance learning should be considered as a way to deliver all forms of training supporting TMTH.

Education: Training and technical awareness focused on the health care community is only half of the picture. A program of public education must focus on the need for privacy, legal requirements for preserving personal privacy, the techniques being used to ensure personal privacy, personal processes to follow when participating in health care programs, the use of TMTH as part of the total health care system, and what to do if personal data is compromised or incorrect. This kind of public education program must continue over a period of time, and must use every available form of media to reach the general population.

Technical assistance: Specific assistance in implementing, using, and maintaining security devices and processes will be necessary to support TMTH facilities and personnel. Competent assistance in selecting and implementing devices will help preclude later problems. Support over time will be necessary to maintain functioning systems. The use of geographically located "super users" who could provide technical assistance in specific areas should be considered to add more support to local technicians.

Standards and procedures: Effective standards and procedures will vary by situation, and will evolve as providers and clients become more comfortable with TMTH. The continual review and revision of standards and procedures will maintain their currency.

Quality management: As technology and situations change over time, standards and procedures, including the minimum standards established for privacy, security and authentication, must be periodically reviewed and revised. The dynamic nature of TMTH and the security industry will offer opportunities to improve services and facilities. A strong quality management process will enhance the ability of standards and procedures to meet the needs and expectations of all stakeholders.

An important part of the overall quality management program for any TMTH operation is the ongoing self-review and monitoring of policies, procedures and equipment to ensure that all are meeting privacy and security objectives. This self-review could be fostered by publishing an assessment matrix as part of the information made available on the web page suggested above. The constant vigilance of all involved parties will not only make privacy measures effective, but will also discover opportunities for improvement.

Infrastructure: The integration of the telecommunications infrastructure, the security infrastructure, and TMTH systems will be an issue as each continues to evolve. Continuing efforts will be necessary to maintain compatible functionality.

Conclusion

HHSC and TIFB are in the process of establishing formal rules for security and authentication for TMTH. These rules will direct the implementation of reasonable and appropriate measures. HIPAA rules provide additional direction for certain activities. The key to the state rules is that any implementation be both reasonable and appropriate. This must consider many factors. Risk exposure must be weighted against cost as decision-makers adopt measures that are flexible, scalable and compatible across the various arenas in which they must be effective. These are not simple decisions. Nor are they permanent. The quality and effectiveness of security and privacy policies, procedures and techniques must be continually re-evaluated to maintain a high quality of service.

Section X: Future Trends and Recommendations

Section X: Future Trends and Recommendations

During the production of this report the Office for the Advancement of Telehealth (OAT) within the U.S. Department of Health and Human Services published their "2001 Telemedicine Report to Congress." This important document presents many of the same issues addressed in this white paper from the federal perspective and should be used and viewed as a vital resource to all who are interested in TMTH and telehealth issues (http://telehealth.hrsa.gov/pubs/report2001/main.htm). The final section of that document provides us with an insightful examination of the future of TMTH in the United States and hence in Texas. As we consider the recommendations of the TMTH State Plan Workgroup it will be important to consider the future directions of TMTH as presented by this report.

The OAT identified several issues that will need to be considered when examining the future of TMTH in Texas. Table X-1 provides an overview of technology trends and their relation to TMTH and the related policy issues.

Table X-1: Overview of Technology Trends

Technology Trends	TMTH Applications	Related Policy Issues
Internet	Most TMTH transactions may be done over the next-generation Internet in video, voice, text, still images etc.: on-line consultations, prescription purchases and administrative transactions.	▪ Retrofitting HIPAA and other privacy concerns ▪ Blurring of borders and scope of practice. ▪ Security issues
Digitation	Smart cards, digital medical libraries, compressed video and images, imbedded chips	▪ Interoperability ▪ Information ▪ inter-exchange ▪ Technical standards
Wireless Technology	Hand-held computers, mobile videophones, and satellite-based mobile hand-held devices with global access. Emergency medical applications such as two-way video consultations. Wireless monitoring in the home. Other home wireless equipment with two-way video and peripherals for blood pressure, heart rate, etc. Biosensors, data feedback loop.	▪ Electromagnetic interference ▪ Future spectrum bandwidth needs. ▪ Interoperability across equipment ▪ Interconnection problems ▪ Security issues

Two important trends that may greatly affect the telehealth industry and raise key policy issues are rapid technology changes and the aging population of America. However, predicting the future of the telehealth industry and the technical standards that will underpin "next-generation" technology is like predicting the lottery. At most, we can describe some important emerging trends in the telehealth industry over the short term and suggest some related policy issues for the future.[1]

Related Technology Policy Issues

Policy Lags Technology

Policy makers have not been able to anticipate the changes brought about by the rapid technological advances that are revolutionizing the health care industry. In just the past five years, discoveries related to DNA sequencing, the Human Genome Project, cloning and other scientific breakthroughs have raised questions about ethics, privacy and security. These types of discoveries combined with the exponential growth and use of the Internet have created a "policy lag" whereby policy is developed and implemented many months or even years after technology has changed lives, businesses and health care delivery. In the past, the development of regulatory policy, technical standards, and protocols could be created over a number of years, but not now. Internet time relates not only to businesses that must adjust to rapid industry changes, but also to industry regulators.[2]

Border Issues

With the Internet, digitization, and wireless technologies, the concept of either domestic or international borders will become blurred. As this trend accelerates, cross-state jurisdiction and enforcement issues will become harder to disentangle. Blurring borders may also expand the purview of general practitioners. For instance, if a physician assistant or nurse practitioner works with a primary care physician or specialist on an ongoing basis and slowly assumes more of the physician's basic duties, then a gradual change in practice will naturally occur over time. How will states decide to license these practitioners? Will they receive special credentials?[3]

Aging Demographics, Home Care, and Urban TMTH

A discussion of how demographic trends will affect the health industry is not within the scope of this report, but it is hard to ignore the effect the aging of the Baby Boomer generation will have on the health care and telehealth industry. An aging population with a longer life expectancy may mean a larger population of "fragile" elderly, the chronically ill, and those requiring rehabilitation.

Given this demographic trend, recent studies and workshops show that home care medical devices were the fastest growing segment of the medical device industry throughout the 1990s. A report from the Workshop on Home Care Technologies for the 21st Century suggests: "Consumer demand for home health and home health care is not new. When patients have a choice, and if they have a reasonably stable and caring home environment, they choose to go home, almost without exception. If they have a severe, chronic, difficult condition it is difficult to permit them to go home, unless the home is fitted with the appropriate technology and caregiver. We have the opportunity today to make this choice possible by developing technology that is easy to use, suitable for the patients' particular needs and allows access to trained, off-site professionals who can work with the patient on educational/problem areas of concern."[4] Given the movement toward home health care, tele-homecare will most likely play an increasingly larger and more important role in the home health care industry.

Providing tele-home care to the elderly or disabled populations, using TMTH, raises important policy questions about health care access and the reimbursement of TMTH services for both rural and urban patients. It can be argued that urban patients who are very elderly, chronically ill, poor or disabled may be as isolated and have as much difficulty getting access to needed health services as those patients, living in rural areas. Most of these urban patients cannot drive to their local clinics and many require assistance getting from point A to point B. Traveling a mile for such an urban patient may be as difficult as the two hundred-mile or more drive that a mobile rural patient must make to see a specialist.

Recommendations for Ensuring a Strong TMTH System in Texas

The SHCC proposes three broad recommendations for consideration by policy decision makers. The SHCC believes that the future success of TMTH in Texas hinges on the implementation of these broad recommendations. Until these recommendations are addressed, attempts to successfully implement the other specific recommendations presented in this report will be met with limited success. It should be noted that the broad recommendations might require statutory changes to provide the mandate, the resources and the manpower to enable the appropriately designated agency or body to effectively implement the coordinative function. The broad recommendations are as follows:

1. **Designate a single agency or body to serve as the authority and coordinator for TMTH information and projects within the state.**
   An agency or body should be designated that can serve as the authority and recognized expert on TMTH information for current and future TMTH providers, grantees and policy makers. This entity should produce a Texas unified TMTH state plan, which would serve as a point of coordination for all TMTH projects within the state.
2. **Develop and encourage interagency collaboration.** Collaboration needs to take place not only between clearly related agencies, but also between other agencies that have either direct or indirect connections to TMTH.

3. **Develop and encourage international, border, and interstate TMTH initiatives and information exchange.**
   International, border, and interstate information exchange and coordination is vital to creating and sustaining a successful system for implementing specific projects such as emergency response to a disease outbreak or a biological or chemical attack, as well as for all other recognized TMTH activities.

The SHCC also supports many of the recommendations of the expert groups and believes that their recommendations represent a core of actions that, when implemented within the framework of a clearly defined coordinative authority, should improve the delivery of TMTH services in Texas. The following section outlines recommendations related to each subject area:

Section III: Addressing the Maldistribution of Health Care Professionals

The SHCC's original interest in TMTH grew from its investigation of modern technologies to ameliorate the lack of health professionals in rural and inner-city areas of Texas. As the state with the second largest land mass and an estimated 21 million residents, Texas confronts a unique set of problems in delivering high-quality health care services to its residents. The use of modern telecommunications technology offers the potential for innovative approaches to retention strategies, particularly when coupled with clinical resources available through academic health science centers, medical schools, tertiary care centers and regional health care facilities. The third section of this report focuses on using TMTH to address the maldistribution of health professionals.

1. Adequate Continuing Medical Education for health care providers should be accessible, both to individuals and groups, through TMTH and electronic media.
2. Rural health care providers should have ready access to specialists. To facilitate access, electronic consultations and other communications systems should be further developed for rural health care providers. Mechanisms for remuneration for these services should be put into place.
3. The needs of underserved areas should be assessed to guarantee a match between the needs and the capabilities of TMTH.

Section IV: Licensing and Scope of Practice

TMTH offers potential solutions for providing health services across vast distances to populations in underserved areas. However, even though TMTH technology knows no boundaries, health professionals must be licensed and regulated at the state level. Therefore, issues relating to interstate and/or international licensure are potential barriers to the expansion of TMTH. Section four of this report focuses attention on these issues.

1. As licensing boards review changes in rules and regulations, consideration should be given to how proposed changes might impact services delivered through TMTH.
2. Those agencies that have not addressed delivering services through TMTH should review possible avenues of service delivery and identify legislative, rule and/or policy changes that would need to be in place to facilitate providing TMTH services by their licensees.
3. Regulatory agencies should review licensing issues that exclude providers licensed in other states from providing TMTH services, and consider developing provisions for TMTH licensing and/or interstate licensing if appropriate for that profession.
4. All licensing boards that require continuing professional education to maintain licensure should accept credits earned through TMTH.

Section V: Infrastructure

To be successful, TMTH network systems require the design, construction, and/or coordination of compatible, sufficient infrastructures, equipment, networks, uninterruptible connections and operator capabilities. Lack of coordination in establishing an infrastructure for TMTH has often resulted in inefficient and ineffective use of the limited resources that are available. This has resulted in duplication of effort and the installation of "islands" of noncommunicating proprietary systems. The fifth section of this report addresses these issues.

1. The future entity assigned the responsibility for coordinating TMTH services should identify, coordinate and synthesize existing networks available for TMTH initiatives to promote the use or expansion of TMTH activities.
2. The Standards Subcommittee of the Health and Human Services Commission's Telemedicine Advisory Committee should build upon Section V of this report in developing and implementing standards and specifications for TMTH technology, application, certification and training.
3. The PUC, ILECs and grant providers need to do an outreach notifying telemedicine grant recipients of the eligibility for reduced rates available through HB2128 (1995) and SB560 (1999) legislation in order to reduce the impact of high inter-Local Access Transport Areas (inter-LATA) long distance rates that limit the development and sustainability of rural TMTH links.

Section VI: Training and Technical Assistance

During the November 9, 2000 meeting, the TMTH workgroup members listed the lack of training and technical assistance to TMTH providers as major obstacles to the fully effective use of TMTH. Utilizing all of the state-of-the-art equipment, such as network connections with unlimited bandwidth, will not be effective if users are not provided adequate training and technical assistance. Training initiatives should address problems caused by the lack of familiarity with, or acceptance of, advanced technologies applied to health care that are shared by many patients and health care providers. Section VI of this report examines these and other issues.

1. An interactive TMTH training web site should be developed and maintained.
2. Resource sharing across organizations throughout the state should be encouraged through technical assistance as well as group and on-line training.
3. Training and technical assistance workgroup expertise should be utilized as a peer review in order to assess the accuracy and validity of content changes and updates before posting.
4. Recipients of state funds should be required to allocate resources for training and participation in the coordinated training efforts.
5. Vertical and horizontal integration technology use should be promoted into basic educational curricula.

Section VII: Reimbursement

Private insurance third-party payers, including managed care plans, have been reluctant to pay for TMTH services. Due to concerns relating to the lack of controls and processes to prevent billing fraud and abuse for TMTH services, federally funded programs such as Medicare and Medicaid have historically provided limited coverage. However, without adequate reimbursement, the long-term survival of TMTH is in question. Thus, understanding the barriers to third-party reimbursement and how to overcome them must be a priority. Section VII of this report concentrates on a discussion of these issues.

1. The Texas Department of Insurance should continue to monitor commercial third-party payers and request that they report areas of TMTH services covered, rates of reimbursement for those services, claims payment data and utilization data for TMTH services reimbursed, acknowledging that limitations in the data may exist, to facilitate the evaluation of the effectiveness of SB 789 (77th Texas Legislature).
2. The Health and Human Services Commission (HHSC), through the recommendations of the Telemedicine Advisory Committee, should proceed with the implementation of the TMTH reimbursement policy for Medicaid and the Children's Health Insurance Program (CHIP).
3. The state Medicare intermediary for Texas should be required to expedite state response to changes in TMTH reimbursement as outlined in the Centers for Medicare and Medicaid Services (CMMS) reimbursement memoranda regarding TMTH.
4. Entities responsible for approving grants or contracts for TMTH projects should guarantee that all projects that receive funding include a plan for sustainability of the project beyond the period of the grant or contract and should also include a cost/outcome evaluation component for the proposed project.

5. The state should consider continued development of pilot programs to explore the reimbursement for, and broadening of, TMTH applications to include areas such as home health, case management, long-term care and other health services for which TMTH might increase access to and quality of health care.
6. State agencies and commissions with TMTH interests and responsibilities should continue to partner with counterpart agencies and commissions in other states with the goal of improving TMTH payment polices and services covered.

VIII: Project Planning and Accountability

Although many individuals believe strongly in the potential of TMTH for providing cost-effective services, not much "hard data" is available to support that belief. Decision-makers need to know the value added by TMTH. Lack of solid evaluative information is a significant barrier to the deployment of TMTH. A framework needs to be developed for TMTH project evaluations that encourage the sharing of project information. It is believed that this may eventually facilitate cooperative evaluation efforts with private-sector TMTH projects. Section VIII of this report focuses on a discussion of this issue.

1. A project design, implementation, and evaluation framework needs to be developed for future TMTH projects that place a greater emphasis on accountability for the use of existing infrastructure and other resources.

IX: Privacy and Security

Issues surrounding privacy and security of medical information are a major concern and potentially significant barrier to the implementation of a successful TMTH system. In many respects, TMTH does not alter existing issues relating to the privacy and confidentiality of medical records. However, the addition of this new technology offers new challenges in maintaining secure records. Section IX focuses on the need for establishing standards to maintain privacy and security of information transmitted through TMTH systems. All recommendations presented below, unless otherwise indicated, would become the responsibility of the agency or body designated to coordinate TMTH services in Texas.

1. The agency should provide training to prepare decision-makers to classify data and to select the appropriate protection policies, procedures and techniques for the data.
2. The agency should develop and maintain a web page to be utilized for web-based training on technical issues, processes and procedures, legal requirements and personal rights.
3. A program of public education should be developed and delivered by the agency that focuses on providing information relating to legal requirements and the systems and processes that exist throughout the TMTH service delivery process that serve to ensure the privacy of the patient and the medical record.

4. Geographically located "super users" could be designated by the agency or body and used to provide technical assistance in specific areas and to support local technicians.
5. The agency or body should guarantee that standards and procedures are continually reviewed and revised to remain current.
6. A strong quality management process developed and implemented by the agency or body will enhance the ability of standards and procedures to meet stakeholder needs and expectations.
7. An ongoing self-review and monitoring process should be developed and implemented as an integral part of the overall quality management program to ensure that policies, procedures and equipment are actually meeting privacy and security objectives.
8. The integration of the telecommunications infrastructure, the security infrastructure and TMTH systems will require ongoing attention by the designated agency or body as each continues to evolve.

New Challenges – New Opportunities

Texas faces unique challenges in delivering health care services to its citizens due to the state's geography, demographics, and economy. Through the production of this report and the development of substantive recommendations to strengthen the TMTH system within the state, the SHCC believes that an important first step has been taken toward improving the health of all Texans. Additionally, it is believed that the report will provide a sound basis for state policy makers to use in formulating future decisions and a starting point for the production of a Texas unified TMTH state plan. Members of the SHCC encourage policy makers to take quick action to capture and build on the momentum and energy created by the combined efforts of the workgroup members.

Endnotes

[1] 2001 Report to Congress on Telemedicine, Office for the Advancement of Telehealth, U.S. Department of Health and Human Services. http://telehealth.hrsa.gov/pubs/report2001/trends.htm#related.

[2] Ibid.

[3] Ibid.

[4] "Personal Status Monitoring in the Home," Report Topic B, Workshop on Home Care Technologies for the 21st Century, Catholic University, April 1999.

Appendix I-A:
Telemedicine Legislation, 77th Legislature: Summary of Presentation by Nora Cox Taylor , HHSC Medicaid Office, to the TMTH Workgroup, July 27, 2001

Telemedicine Legislation
77th Texas Legislature:
Presentation by Nora Cox Taylor

- SB 789 – Omnibus Telehealth/Telecom
- HB 2700 – Border Telehealth Project
- HB 1536 – Technology Pilots and Policies (Children w/ Special Health Care Needs, Border Telehealth Project, Long-Term Care)

SB 789 – Omnibus Telehealth/Telecommunications

- Medicaid
  - No geographic limitations (rural/urban)
  - No technology limitations (S-F, video +)
  - No site restrictions (all licensed facilities)
  - No practitioner restrictions (all health professionals)
    - Establish pilots for non-physician health professionals
  - Any currently covered Medicaid service; based on identified clinical evidence

SB 789 – Omnibus Telehealth/Telecommunications

- Adopt technology standards (HHSC & TIFB)
- Facilities must establish
  - Quality of care protocols
  - Patient confidentiality guidelines
  - Coordinate with existing providers in area
  - With patient permission, notify local provider

SB 789 – Omnibus Telehealth/Telecommunications

- Practitioners must be:
  - Licensed or certified physicians and health professionals
  - Operating under scope of practice or delegation by physician
- TSBME & HHSC may adopt rules to:
  - Ensure appropriateness and quality of care
  - Prevent fraud and abuse
  - Establish supervisory requirements
  - Define face-to-face requirements

SB 789 – Omnibus Telehealth/Telecommunications

- Covered services (also in CHIP)
  - Same rate as comparable face-to-face services
  - Different services by multiple providers in single session
    - If cost-effective when considering health care costs, lodging, transportation and other direct costs
    - Example: special needs children

SB 789 – Omnibus Telehealth/Telecommunications

- Covered services
  - Telemedicine medical service – physicians or acting under delegation of physician
  - Telehealth service – services provided by other health professionals

Traditional Definitions

- Telemedicine- clinical or medical services
- Telehealth- distance education, CME
- E-Health- EBT, healthcare transactions in real time

SB 789 – Omnibus Telehealth/Telecommunications

- Telecommunications Infrastructure Fund Board
  - Eligibility includes for-profits that provide
    - Significant charity care
    - Medicaid sponsored care
    - Care to children in the state child health plan
  - TIF is also required to fund an automated system to integrate client services and eligibility requirements for health and human services across agencies

SB 789 – Omnibus Telehealth/Telecommunications

- Mandated Pilots
  - Home telemonitoring
    - Patients with chronic conditions to receive education, counseling, prevention services
    - Must be done in an urban, border, rural and medically underserved area
  - Jail diversion
    - Local MHMR centers and jail facilities
  - Teledentistry
    - Will be done in a public school district

HB 2700 – Border Telehealth Project

- Telemedicine medical services and telehealth services
- Pilot must be done within 150 miles of the Texas-Mexico border

HB 2700 – Border Telehealth Project

- HHSC must:
  - Solicit and obtain support from local officials and the medical community
  - Focus on enhancing health outcomes and increasing access to services, including health screenings, prenatal care, medical or surgical follow-up visits, consultation with specialists regarding chronic disorders, triage and pre-transfer arrangements, and transmission of diagnostic images and data

HB 2700 – Border Telehealth Project

- HHSC must:
  - Establish quantifiable outcome measures for each service,
  - Consider condition-specific applications, including those applicable to pregnancy, diabetes, heart disease, and cancer, and
  - Demonstrate that telemedicine services do not interfere with the provision of traditional medical services in those areas

SB 1536 – Technology Pilots and Policies

- Pilots in two areas:
  - Rehabilitation services, services for the aging and disabled, or long-term care services including community care services and support
  - Border pilots (same as HB 2700)
    - Policies for children with special health care needs
  - Medicaid, CHIP and TDH GR funded program
  - Cost-effective policies
  - Team-based reimbursement

Statewide Initiatives

- Coordination – HHSC Advisory Committee in SB 789
  - Coordinate state telemedicine efforts
  - Assist the commission in
- Evaluating policies for telemedicine medical services
- Monitoring the types of programs receiving reimbursement
- Coordinating the activities of state agencies

Statewide Initiatives

- HHSC Advisory Committee- HB 2700 and SB 1536:
  - Same basic charge as SB 789
  - HHSC, Department of Health, Center for Rural Health Initiatives, Telecommunications Infrastructure Fund, Department of Insurance, State Board of Medical Examiners, Board of Nurse Examiners, and the State Board of Pharmacy

Statewide Initiatives

- HHSC Advisory Committee- HB 2700 and SB 1536:
  - Representatives of health science centers, experts on telemedicine, and representatives of consumers using telemedicine services

Appendix II-A
Survey Instruments Distributed in June 2001 and August 2001

Appendix II-A(1)
Survey Instrument Distributed in June 2001 to TIFB Grantees and Projects Identified in the 1997 TTSP Survey

TELEMEDICINE/ TELEHEALTH PROJECTS IN TEXAS

INSTRUCTIONS: Please fill out the survey below for each project in your over all telemedicine/telehealth program. The categories given in the brackets are not exhaustive and have been used for illustrative purposes only. Indicate your choice by putting an "X" at all the options that apply. The survey is in a Microsoft Word format, so that responses may be just typed in at the appropriate places and returned electronically or printed out and faxed. We appreciate the time and effort that you will spend in filling out the survey and request that it may be returned by June 28, 2001. We may contact you for any follow up questions after the surveys are completed. Please feel free to contact us for any clarification.

PROJECT INFORMATION

Name of Project: ____________________

Institution: _________________________

Project Location: (street city state zip) ________________

Project Director: _________________________________

Contact Name & Numbers: ________________________

Fax Numbers: ____________________________________

Email: ____

Web-site URL: ____________________________________

Starting Date of the Project: ________________________

Other participating locations:

Name: _________________ Location: _____________________

Name: _________________ Location: _____________________

Name: _________________ Location: _____________________

Name: _________________ Location: _____________________

FUNDING

Funding Source & percentage (if more than one) for the year 2000-2001:

__ State Grant __ State contract __ Federal government

__ private/ non-profit __ private/commercial __ Others: ______________

Revenues:

__ Fee for service __ Contract __ Medicaid/Medicare __ Private Insurance

Cost recovery:

__ professional services __ network charges __ equipment charges
__ facility charges __ primary care Other: ___________

Total project cost (rough estimate): _______________________

Operating cost per month (estimate): _____________________

TECHNOLOGIES

Technology used:

__ Store & Forward __ Interactive Video room system __ Desktop
Others:________ _________________ _____________

Connectivity:

__ POTS __ ISDN __ DSL __ Fractional T1
__ Full T1 __ ATM __Internet IP Others: ________

Network type:

__ Dedicated/proprietary __ Public network __ Combination Others: ________
Utilization of network(in percentage time)**:**________________________

APPLICATIONS

Clinical applications:

__ mental health __ gastroenterology __ ob/gyn __ pediatrics
__ cardiology __ general surgery __ oncology __ family medicine
__ dermatology __ radiology __ ophthalmology __ pathology
__ emergency/triage __ neurology __ orthopedics __ public health
__ general medicine __ patient mgmt Other:_________ ______________

Settings:

__ hospital __ nursing home __research center __ trauma center
__ rural clinic __ university __ prison/correctional __ home
__ physician group __ military __ outpatient clinic
__ workplace __ school Other: _________ ____________

Presenters:

__ primary care physician __ allied health professionals __others:__________

Number of beneficiaries per month:

____ # patients ___ # consultations ___ any other measure

Educational applications:
__ Continuing ed   __ Health prof. degree prog   __ Staff training   __ Patient education
Number of students/professionals trained per year: ____________________
Administrative applications:
__ meetings   __ patient records   __ medical databases   __ financial mgmt   Other _____
Utilization for applications (%):
__ Clinical   __ Educational   __ Administrative   Other ___________

MISCELLANEOUS
When was the last project evaluation: _______________
By whom? ________________________________
(internal/external—donor, government agency, private body)
Criteria used:
__ cost saving   __ patient satisfaction   __ provider satisfaction
__ quality of care   __ program effectiveness   __ others

Other TMTH projects in your geographical area:
____
____

Any other comments:

Name of person responding:
Job title:
Contact Number:
Fax Number:
Email:

RETURN TO: Anjum Khurshid, Planner, Office of Policy & Planning,
Texas Department of Health at anjum.khurshid@tdh.state.tx.us
Fax: 512- 458 - 7344

Appendix II-A(2)
Survey Instrument Distributed to THA Member Hospitals in August 2001

TELEMEDICINE/ TELEHEALTH PROJECTS IN TEXAS

INSTRUCTIONS: Please fill out the survey below for each project in your over all telemedicine/telehealth program. The categories given in the brackets are not exhaustive and have been used for illustrative purposes only. Indicate your choice by putting an "X" at all the options that apply. The survey is in a Microsoft Word format, so that responses may be just typed in at the appropriate places and returned electronically or printed out and faxed. We appreciate the time and effort that you will spend in filling out the survey and returning it at your earliest. Please feel free to contact us for any clarification.

PROJECT INFORMATION

Name of Project: ____________________

Institution: _________________________

Project Location: (street city state zip) ________________

Project Director: __________________________________

Contact Numbers: ________________________

Fax Numbers: ____________________________________

Email: ____

Web-site URL: ____________________________________

Starting Date of the Project: ________________________

Other participating locations:

Name: _________________ Location: _____________________

Name: _________________ Location: _____________________

Name: _________________ Location: _____________________

FUNDING

Funding Source & percentage (if more than one) for the year 2000-2001:

__ State Grant __ State contract __ Federal government

__ private/ non-profit __ private/commercial __ Others: ______________

Total project cost (rough estimate): ______________________

TECHNOLOGIES

Connectivity:

__ POTS __ ISDN __ DSL __ Fractional T1

__ Full T1 __ ATM __Internet IP __ Others: _______

APPLICATIONS

Clinical applications:

__ mental health	__ gastroenterology	__ ob/gyn	__ pediatrics
__ cardiology	__ general surgery	__ oncology	__ family medicine
__ dermatology	__ radiology	__ ophthalmology	__ pathology
__ emergency/triage	__ neurology	__ orthopedics	__ public health
__ general medicine	__ patient mgmt	Other:________	_____________

Settings:

__ hospital	__ nursing home	__research center	__ trauma center
__ rural clinic	__ university	__ prison/correctional	__ home
__ physician group	__ military	__ outpatient clinic	
__ workplace	__ school	Other: ________	___________

Presenters:

__ primary care physician __ allied health professionals __others:_________

Educational applications:

__ Continuing ed __ Health prof. degree prog __ Staff training __ Patient education

Number of beneficiaries per month:

____ # patients ___ # consultations ____ # students ___ any other measure

Administrative applications:

__ meetings __ patient records __ medical databases __ financial mgmt Other _____

Name of person responding:

Job title: Fax Number:__________________

Email: Contact Number:_______________

RETURN TO: Anjum Khurshid, Planner, Office of Policy & Planning,
Texas Department of Health at
anjum.khurshid@tdh.state.tx.us
Fax: 512- 458 – 7344

Appendix II-B: List of Telecommunications Infrastructure Fund Board Public Health Grantees

Appendix II-B: List of Telecommunications Infrastructure Fund Board Public Health Grantees

1. Anderson/Cherokee Community Enrichment Services (Access)
2. Anderson/Cherokee Community Enrichment Services (Access)/Health Access Link
3. Andrews Center
4. Austin Travis County Mental Health Mental Retardation Center
5. Baylor College Of Dentistry/ Progresso ISD Telehealth Initiative
6. Baylor College Of Medicine
7. Bell County Public Health District
8. Brazos County Health Department
9. Brazos Valley Community Action Agency Family Health Clinic
10. Burke Center
11. Citizens Medical Center/ Golden Crescent Health Education Video Network
12. Cogdell Memorial Hospital
13. Cook Children's Medical Center/CCMC And UNTHSCFW Health Sciences Library
14. Cross Timbers Health Clinics, Inc./ Access 2
15. Cross Timbers Health Clinics, Inc./ Connectnet
16. El Campo Memorial Hospital/El Campo Memorial Hospital & Memorial Hermann Healthcare System
17. Ft. Duncan Medical Center/ Mednet Of South Texas
18. Gonzales Healthcare Systems
19. Gulf Bend Mental Health And Mental Retardation Center
20. Hardeman County Memorial Hospital
21. Harris County Hospital District
22. Hemphill County Hospital/Coalition Of Health Services Internet Collaborative
23. Hendrick Medical Center / West Texas Telemedicine Consortium CD
24. Hendrick Medical Center / West Texas Telemedicine Consortium IC
25. Hermann Children's Hospital/ Hermann Children's Hospital And UT Houston Health Science Center
26. Hill Country Memorial Hospital/ University Of Texas Health Science Center San Antonio
27. Hood County Hospital District
28. Hunt County Mental Health And Mental Retardation Center
29. Lockney General Hospital District Representing W. J. Mangold Memorial Hospital
30. Lubbock Regional Mental Health Mental Retardation Center Representing West Texas Telecommunications Collaborative
31. M.D. Anderson Cancer Center
32. Marshall Regional Medical Center
33. Memorial Health System Of East Texas
34. Memorial Health System Of East Texas
35. Memorial Hermann Hospital
36. Mental Health Mental Retardation Authority Of Brazos Valley
37. Mental Health Mental Retardation Of Tarrant County
38. Mercy Regional Medical Center/ Mercy Web-TV Telecommunications Collaborative
39. Nacogdoches Memorial Hospital
40. Northeast Texas Mental Health Mental Retardation Center
41. Northwest Assistance Ministries

42. Nueces County Mental Health Mental Retardation Community Center
43. Ochiltree General Hospital/ Coalition Of Health Services Clinical Telemedicine Collaborative
44. Parkland Health & Hospital System/ Parkland Health & Hospital System Jail Demonstration Project
45. Parkland Health And Hospital System/Parkland Health & Hospital System & UT Southwestern Medical Center
46. Planned Parenthood Of Amarillo And The Texas Panhandle
47. Sabine Valley Center/Sabine Valley Center Health Care Network
48. Scott & White Memorial Hospital/ Scott & White Memorial Hospital Telemedicine Network
49. Scott & White Memorial Hospital/Scott & White Memorial Hospital Internet Collaborative
50. Shannon Medical Center/Shannon Regional Health Network
51. Smith County Public Health District
52. Texas A&M University Health Science Center/ Brazos Valley Telehealth Partnership
53. Texas A&M University Health Science Center/ South Texas Telehealth Partnership
54. Texas A&M University System Health Science Center
55. Texas A&M University System Health Science Center Representing Texas Telehealth Collaborative
56. Texas Assoc. Of Community Health Centers-Baylor Collaborative
57. Texas Association Of Community Health Centers
58. Texas Children's Hospital
59. Texas Panhandle Mental Health Authority
60. Texas Tech University Health Science Center
61. Texas Tech University Health Science Center/ Hudspeth County Clinical Telemedicine Demonstration Project
62. Tri-County Mental Health Mental Retardation Services
63. Trinity Mother Frances Health System
64. Tropical Texas Center For Mental Health And Mental Retardation
65. UBI Caritas Primary Care Clinic
66. University Of Houston/ Rural And Urban Telemedicine Testbed
67. University Of North Texas Health Science Center
68. University Of North Texas Student Health Center
69. University Of Texas - Houston Health Science Center/ UTHHSC And Hidalgo County Health Department
70. University Of Texas Health Center At Tyler
71. University Of Texas Health Center At Tyler Representing The East Texas Interactive Healthcare Network
72. University Of Texas Health Center At Tyler/ East Texas Asthma & Allergy Network
73. University Of Texas Health Science Center At Houston
74. University Of Texas Health Science Center At Houston
75. University Of Texas Health Science Center At Houston Representing Texas Hospital Telecommunications Alliance (Torch)
76. University Of Texas Health Science Center At San Antonio
77. University Of Texas Health Science Center At San Antonio/UTHSCSA Internet Collaborative
78. University Of Texas Health Science Center-Houston (Representing Texas Hospital Telecommunications Alliance-Torch)
79. University Of Texas M.D. Anderson Cancer Center
80. University Of Texas Medical Branch - Galveston/ Telemedicine In Geriatric Care
81. University Of Texas Medical Branch - Galveston/ Timely Identification And Management Of Life And Sight-Threatening Diseases
82. University Of Texas Medical Branch At Galveston

83. University Of Texas Medical Branch At Galveston Representing UTMB Community Telehealth Outreach Project
84. University Of Texas Southwestern Medical Center At Dallas
85. University Physicians Group Representing UPG Telehealth Collaborative
86. Ward Memorial Hospital
87. Wichita Falls-Wichita County Public Health District/Wichita Falls Community Healthnet Collaborative

Appendix II-C: Projects Identified in the 1997 Texas Telemedicine Strategic Planning Project Survey and THA Members Contacted

Appendix II-C: Projects Identified in the 1997 Texas Telemedicine Strategic Planning Project Survey and THA Members Contacted

American Telemedicine Association	Parkland Health And Hospital System/Parkland Health & Hospital System & UT-Southwestern Medical Center
Anderson/Cherokee Community Enrichment Services (Access)	Planned Parenthood Of Amarillo And The Texas Panhandle
Anderson/Cherokee Community Enrichment Services (Access)/Health Access Link	Sabine Valley Center/Sabine Valley Center Health Care Network
Andrews Center	Scott & White Clinic Hospital
Association Of Telemedicine Service Providers	Scott & White Memorial Hospital/ Scott & White Memorial Hospital Telemedicine Network
Austin State Hospital	Seton Healthcare Network
Austin Travis County Mental Health Mental Retardation Center	Shannon Medical Center/Shannon Regional Health Network
Baylor College Of Dentistry/ Progresso ISD Telehealth Initiative	Smith County Public Health District
Baylor College Of Medicine	South Texas Research Center
Brazos County Health Department	Southwest Research Institute
Brazos Valley Community Action Agency Family Health Clinic	Spohn Health Systems
Burke Center	Stephen F. Austin State University
Cedar Crest Hospital	Texas A&M Institute For Biomed Science And Technology
Children's Justice Act Grant Texas Telemedicine	Texas A&M University Health Science Center/ Brazos Valley Telehealth Partnership
Citizens Medical Center/ Golden Crescent Health Education Video Network	Texas A&M University Health Science Center/ South Texas Telehealth Partnership
Cogdell Memorial Hospital	Texas A&M University System Health Science Center
College Station Medical Center	Texas A&M University System Health Science Center Representing Texas Telehealth Collaborative
Cook Children's Medical Center/CCMC And UNTHSCFW Health Sciences Library	Texas Assoc. Of Community Health Centers-Baylor Collaborative
Covenant Children's Hospital	Texas Association Of Community Health Centers
Cross Timbers Health Clinics, Inc./ Access 2	Texas Center For Infectious Disease
Cross Timbers Health Clinics, Inc./ Connectnet	Texas Children's Hospital
Denton Community Hospital	Texas Hospital Association
East Texas Medical Center Specialty Hospital	Texas Panhandle Mental Health Authority

El Campo Memorial Hospital/El Campo Memorial Hospital & Memorial Hermann Healthcare System	Texas Pediatric Society
Ft. Duncan Medical Center/ Mednet Of South Texas	Texas Public Health Training Center
Gonzales Healthcare Systems	Texas Tech Correctional Telemedicine Project
Gulf Bend Mental Health And Mental Retardation Center	Texas Tech El Paso Primary And Specialty Care Telemedicine Project
Hardeman County Memorial Hospital	Texas Tech Family Medicine/ Carillon Retirement Village Telemedicine Project
Harris County Hospital District	Texas Tech University Health Science Center
Hart Independent School District Telemedicine Project	Texas Tech University Health Science Center/ Hudspeth County Clinical Telemedicine Demonstration Project
Health Care Computer Inc	Texas Telecommunications Infrastructure Gateway TTIG (Bohman Clinic)
Healthsouth Beaumont	The Physicians Centre
Healthsouth City View Rehabilitation Hospital	Tricare Southwest
Healthsouth Integrated Medical Plaza Of Pecan Valley	Tri-County Mental Health Mental Retardation Services
Healthsouth Rehabilitation Center Of Arlington	Trinity Mother Frances Health System
Healthsouth Rehabilitation Center Of Fort Worth	Tropical Texas Center For Mental Health And Mental Retardation
Hendrick Medical Center / West Texas Telemedicine Consortium CD	Tyler Junior College
Hendrick Medical Center / West Texas Telemedicine Consortium IC	UBI Caritas Primary Care Clinic
Hermann Children's Hospital/ Hermann Children's Hospital And UT Houston Health Science Center	University Of Houston/ Rural And Urban Telemedicine Testbed
Hill Country Memorial Hospital/ University Of Texas Health Science Center San Antonio	University Of North Texas Health Science Center
Hood County Hospital District	University Of North Texas Student Health Center
Huguley Health Systems	University Of Texas - Houston Health Science Center/ UTHHSC And Hidalgo County Health Department
Hunt County Mental Health And Mental Retardation Center	University Of Texas Health Center At Tyler
Johns Community Hospital/Central Texas Telehealth Network	University Of Texas Health Center At Tyler Representing The East Texas Interactive Healthcare Network
Kindred Hospital Houston Northwest	University Of Texas Health Center At Tyler/ East Texas Asthma & Allergy Network
La Hacienda Treatment Center	University Of Texas Health Science Center At Houston
Las Colinas Medical Center	University Of Texas Health Science Center At Houston

Las Palmas Medical Center	University Of Texas Health Science Center At Houston Representing Texas Hospital Telecommunications Alliance
Lockney General Hospital District Representing W. J. Mangold Memorial Hospital	University Of Texas Health Science Center At Houston Representing TRHTA/TALHO Collaborative
Lubbock Regional Mental Health Mental Retardation Center Representing West Texas Telecommunications Collaborative	University Of Texas Health Science Center At San Antonio
M.D. Anderson Cancer Center	University Of Texas Health Science Center At San Antonio/UTHSCSA Internet Collaborative
Marshall Regional Medical Center	University Of Texas Health Science Center-Houston (Representing Texas Hospital Telecommunications Alliance-Torch)
Memorial Health System Of East Texas	University Of Texas M.D. Anderson Cancer Center
Memorial Hermann Hospital	University Of Texas Medical Branch - Galveston/ Telemedicine In Geriatric Care
Mental Health Mental Retardation Authority Of Brazos Valley	University Of Texas Medical Branch - Galveston/ Timely Identification And Management Of Life And Sight-Threatening Diseases
Mental Health Mental Retardation Of Tarrant County	University Of Texas Medical Branch At Galveston
Mercy Regional Medical Center/ Mercy Web-TV Telecommunications Collaborative	University Of Texas Southwestern Medical Center At Dallas
Nacogdoches Memorial Hospital	University Physicians Group Representing Upg Telehealth Collaborative
North Texas Health Science Center	Vector Research
North Texas State Hospital	Victoria Warm Springs Rehabilitation Hospital
Northeast Texas Mental Health Mental Retardation Center	Virtual College Of Texas
Northwest Assistance Ministries	Ward Memorial Hospital
Nueces County Mental Health Mental Retardation Community Center	Wichita Falls-Wichita County Public Health District/Wichita Falls Community Healthnet Collaborative
Ochiltree General Hospital/ Coalition Of Health Services Clinical Telemedicine Collaborative	
Texas Hospital Association Members Contacted for the Survey	
CHRISTUS Santa Rosa Medical Center/CHRISTUS Santa Rosa Rehab Hospital	IHS Hospital of Amarillo
CHRISTUS St. Michael Health System	IHS Hospital of Lubbock
CHRISTUS St. Michael Rehabilitation Hospital	IntraCare Medical Center Hospital
Cypress Fairbanks Medical Center	IntraCare North Hospital
Fisher Co. Hospital	Jackson County Hospital District

Hill Country Memorial Hospital	Johns Community Hospital
John Peter Smith Hospital	Kerrville State Hospital
Lifecare Hospital of Dallas	Kimble Hospital
Limestone Medical Center	King's Daughters Hospital
Linden Municipal Hospital	Knox County Hospital District
Northwest Regional Hospital	Laird Hospital
Terrell State Hospital	Lake Granbury Med. Ctr.
University Health System	Lake Whitney Medical Center
Wilson N. Jones Medical Center	Lamb Healthcare Center
Seton Highland Lakes	Las Colinas Medical Center
Baptist St. Anthony's Health System	Las Palmas Behavioral Center
Clay County Memorial Hospital	Las Palmas Medical Center
Covenant Children's Hospital	Laurel Ridge
Covenant Medical Center	Lavaca Medical Center
Desert Springs Medical Center	Liberty-Dayton Hospital
Dolly Vinsant Memorial Hospital	LifeCare Hospitals of South Texas
East Texas Medical Center - Carthage	Longview Regional Medical Center
Electra Memorial Hospital	Lyndon B. Johnson General Hospital
Faith Community Hospital	Lynn County Hospital District
Harris County Hospital District	Madison St. Joseph Health Center
HEALTHSOUTH Rehabilitation Hospital of Midland/Odessa	Mainland Medical Center
Highlands Regional Rehabilitation Hospital	Margaret Jonsson Charlton Methodist Hospital
Houston Northwest Medical Center	Marshall Regional Medical Center
Kell West Regional Hospital	Mary Shields Hospital
La Hacienda Treatment Center	Matagorda County Hospital District
LifeCare Hospital of Fort Worth	McAllen Heart Hospital
LifeCare Hospitals of San Antonio	McAllen Medical Center
Millwood Health, LLC	McCamey Hospital
Navarro Regional Hospital	McCuistion Regional Medical Center
North Dallas Rehabilitation Hospital	McKenna Health System
North Texas State Hospital	Medical Center Hospital
Rio Grande Regional Hospital	Medical Center of Lewisville
Rio Grande State Center	Medical Center of Plano
Scenic Mountain Medical Center	Medina Community Hospital

Select Specialty Hospital - San Antonio, INC.	Memorial Health System of East Texas
Sierra Providence Health Network	Memorial Hermann Baptist Orange Hospital
Triumph Hospital North Houston	Memorial Hermann Fort Bend Hospital
Victoria Warm Springs Rehabilitation Hospital	Memorial Hermann Memorial City Hospital
West Oaks	Memorial Hermann Southeast
Hendrick Medical Center	Memorial Hermann Southwest Hospital
Alice Regional Hospital	Memorial Hermann The Woodlands Hospital
All Saints Episcopal Hospital/Cityview	Memorial Hospital
Anson General Hosp.	Memorial Hospital
Arlington Memorial Hospital	Memorial Hospital
Atlanta Memorial Hospital	Memorial Hospital/Seminole Hospital District
Austin State Hospital	Memorial Specialty Hospital
Ballinger Memorial Hospital District	Mesquite Community Hospital
Baptist Medical Center	Methodist Ambulatory Surgery Hospital-Northwest
Baptist Memorials Center (San Angelo)	Methodist Health Center - Sugar Land
Baylor Institute for Rehabilitation at Gaston Episcopal Hospital	Methodist Medical Center
Baylor Medical Center - Ellis County	Methodist Specialty and Transplant Hospital
Baylor Medical Center at Grapevine	Mid-Jefferson Hospital
Baylor Medical Center at Irving	Midland Memorial Hospital
Baylor University Medical Center	Mission Hospital
Baylor/Richardson Medical Center	Mitchell County Hospital
Bayou City Medical Center	Muenster Memorial Hospital
Bayshore Medical Center	Muleshoe Area Medical Center
Beacon Health, Ltd. - Woodlands	Nacogdoches Medical Center
Bellaire Medical Center	Nix Healthcare System
Bellville General Hospital	Nocona Gen. Hosp.
Big Springs State Hospital	North Austin Medical Center
Bowie Memorial Hospital	North Bay Hospital
Brazosport Memorial Hospital	North Central Medical Center
Brownfield Regional Medical Center	North Hills Hospital
Brownsville Medical Center	North Runnels Hospital
Brownwood Regional Medical Center	Northeast Medical Center Hospital
Burleson St. Joseph Health Center of Caldwell, TX	Northeast Methodist Hospital

Campbell Health System	Northwest Texas Hospital
CCS/Meadow Pines, Inc.	Northwest Texas Surgery Center
Cedar Crest Hospital	Ochiltree General Hospital
Central Texas Hospital	Odessa Regional Hospital
Children's Medical Center of Dallas	Osteopathic Medical Center of Texas
Childress Regional Med. Center	Otto Kaiser Memorial Hospital
Christus Jasper Memorial Hospital	Our Children's House at Baylor
Christus Spohn Hospital Beeville	Padre Behavioral Hospital
Christus Spohn Hospital Kleberg	Palestine Regional Medical Center -East & West Campus
Christus St. Catherine Health and Wellness Center	Palo Pinto General Hospital
Christus St. Elizabeth Hospital	Pampa Regional Medical Center
Christus St. John Hospital	Park Place Medical Center
Christus St. Joseph Hospital	Park Plaza Hospital
Christus St. Joseph's Health System	Parmer County Community Hospital
Christus St. Mary Hospital	Plaza Specialty Hospital
Citizens Medical Center	Polly Ryon Hospital
Clear Lake Regional Medical Center	Presbyterian Hospital of Dallas
Cleveland Regional Medical Center	Presbyterian Hospital of Greenville
Coleman County Medical Center	Presbyterian Hospital of Kaufman
College Station Medical Center	Presbyterian Hospital of Plano
Collingworth General Hospital	Providence Health Center
Colorado-Fayette Medical Center	Rankin County Hospital District
Columbia Kingwood Medical Center	Reagan Memorial Hospital
Comanche Community Hospital	Red River Hospital
Conroe Regional Medical Center	Reeves County Hospital
Cook Children's Medical Center	Renaissance Woman's Center of Austin
Coon Memorial Hospital	RHD Memorial Medical Center
Cornerstone Regional Hospital	riceadmin@trhta.net
Corpus Christi Warm Springs Rehabilitation Hospital	Richards Memorial Hospital
Coryell Memorial Hospital	Rio Vista Physical Rehab. Hospital
Covenant Hospital Levelland	River Crest Hospital
Covenant Hospital Plainview	Riverside General Hospital
Cozby-Germany Hospital	Rolling Plains Hospital

Crosbyton Clinic Hospital	Round Rock Medical Center
Cuero Community Hospital	San Antonio Warm Springs Rehabilitation Hospital
Culberson Hospital	SCCI Hospital Amarillo
D.M. Cogdell Memorial Hospital	Schleicher County Medical Center
Dallas Southwest Medical Center	Seymour Hospital
Del Sol Medical Center	Shamrock General Hospital
Denton Community Hospital	Shannon West Texas Memorial Hospital
DeTar Hospital	Shriners hospitals for Children - Houston
Devereux Texas Treatment Network	Shriners Burns Hospital - Galveston
Doctors Hospital	South Austin Hospital
Doctor's Hospital	South Texas Hospital
Doctors Hospital of Laredo	South Texas Regional Medical Center
Doctor's Hospital Tidwell	Southeast Baptist Hospital
Dubuis Hospital Beaumont	Southwest General Hospital
Dubuis Hospital for Continuing Care - Houston	Southwest Mental Health Center
Dubuis Hospital for Continuing Care at Beaumont	Spring Branch Medical Center
East Houston Regional Medical Center	St. David's Hospital
East Texas Medical Center	St. Joseph Regional Health Center
East Texas Medical Center - Clarksville	St. Luke's Baptist Hospital
East Texas Medical Center - Fairfield	St. Luke's Episcopal Hospital
East Texas Medical Center Athens	Stamford Memorial Hospital
East Texas Medical Center- Jacksonville	Starr County Memorial Hospital
East Texas Medical Center MT. Vernon	Stonewall Memorial Hospital
East Texas Medical Center Specialty Hospital	Summit Hospital of Central Texas
East Tx Medical Center Quitman	Sunrise Canyon
Eastland Memorial Hospital	Sweeny Community Hospital
Edinburg Regional Medical Center	Swisher Memorial Hospital
El Campo Memorial Hospital	Texas Center for Infectious Disease
El Paso Psychiatric Center	Texas Children's Hospital
Ennis Regional Medical Center	Texas Orthopedic Hospital
Fayette Memorial	Texas Scottish Rite Hospital
Fort Duncan Medical Center	Texoma Medical Center
Frio Regional Hospital	The Cedars Hospital
Gainesville Memorial Hospital	The Compass Hospital of San Antonio

Garland Community Hospital	The Corpus Christi Medical Center - Bay Area
Georgetown Hospital	The Devereux Foundation
Glen Oaks Hospital	The Medical Center of Mesquite
Glen Rose	The Physicians Centre
Good Shepherd Medical Center	The Specialty Hospital of Austin
Goodall-Witcher Healthcare Foundation	The Specialty Hospital of Houston
Graham Regional Medical Center	The Woman's Hospital of Texas
Green Oaks Hospital	Throckmorton Co Memorial Hospital
Guadalupe Valley Hospital	Timberlawn Mental Health System
Hamilton Hospital	TIRR LifeBridge
Hamlin Memorial Hospital	TMC Restorative Care Hospital
Hardeman County Memorial Hosp.	Tomball Regional hospital
Harris Continued Care Hospital	TOPS Surgical Specialty Hospital
Harris Continued Care Hospital	Trinity Community Medical Center of Brenham
Harris Methodist Fort Worth	Trinity Medical Center
Harris Methodist Northwest	Tyler County Hospital
Harris Methodist Southwest	United Regional Health Care System
Harris Methodist Springwood	University Medical Center
Harris Methodist Erath County	University of Texas Health Center - Tyler
Healthsouth Beaumont	University of Texas Medical Branch Hospital
Healthsouth Cedar Lake Rehabilitation Hospital	University of Texas, M.D. Anderson Cancer Center
Healthsouth City View Rehabilitation Hospital	Uvalde Memorial Hospital
Healthsouth Hospital for Specialized Surgery	Valley Regional Medical Center
Healthsouth Houston Rehabilitation Institute	Vencor Hospital - Dallas East
Healthsouth Integrated Medical Plaza of Pecan Valley	Vencor Hospital - Houston Northwest
Healthsouth Plano Rehabilitation Hospital	Vencor Hospital Arlington Texas
Healthsouth Rehab. Hosp. of Austin	Vencor Hospital –Bay area- Houston
Healthsouth Rehabilitation Hospital	Vencor Hospital -San Antonio
Healthsouth Rehabilitation Hospital of Arlington	Vista Medical Center Hospital
Healthsouth Rehabilitation Hospital of Forth Worth	W.J. Mangold Memorial Hospital
Healthsouth Rehabilitation Hospital of North Houston	Wadley Regional Medical Center
Healthsouth Rehabilitation Hospital of Texarkana	Walls Regional Hospital
HealthSouth Rehabilitation Hospital of Tyler	Warm Springs Rehabilitation Foundation

Healthsouth Rehabilitation Hospital of Wichita Falls	West Houston Medical Center
Heart Hospital of Austin	Westwood Medical Center
Heart of Texas Memorial Hospital	Wichita Valley Rehabilitation Hospital
Hemphill County Hospital	Wilbarger General Hospital
Henderson Memorial Hospital	Wilson Memorial Hospital
Hereford Regional Medical Center	Woodland Heights Medical Center
Highland Medical Center	Yoakum Community Hospital
Hill Regional Hospital	Yoakum County Hospital
Hillcrest Baptist Medical Center	Brazos Valley Mental Retardation Authority of Brazos Valley
Healthsouth Rehab. Institute of San Antonio	Andrews Center
Huguley Health System	Spohn Health Systems
Huntsville Memorial Hospital	Brazos County Health Department
IHS Hospital at Corpus Christi	Lockney General Hospital District rep. W.J. Mangold Memorial Hospital
IHS Hospital at El Paso	University of North Texas Student Health Center
IHS Hospital at Plano	Cross Timbers Health Clinics, Inc./Connectnet
IHS Hospital at San Antonio	

Appendix II-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Tuberculosis Education

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
TDH/Texas Center for Infectious Disease	San Antonio	Seaworth, Barbara Dr.	barbara.seaworth@tdh.state.tx.us		1994	

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
	X																

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S&F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X															

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
patient mgmt				hospital	outpatient		X			<10		

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
				30-40	X								

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments
Teleconferencing unit is used by TCID in San Antonio. TB Ed Ctr does not pay to use equipment or connection charges. Connection is made with South Texas facility at Tyler or Austin; occasionally with Reynosa or Matamores, Mexico

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Dementia Pilot Project

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
University of N. Texas Health Sc Ctr	Fort Worth, TX 76107	Fairchild, Tom Dr.	tfairchi@hsc.unt.edu		Apr-01	James L. West Alzheimer's Center, Fort Worth

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
X								X								$5,000	

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
		X		X			X	X		X		X				25%

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
Dementia/ Alzheimer's acute & treatment				nursing home			X		Dementia/ alz Specialist	8		

Educational applications				Number of students/professionals trained per year	Administrative applications				Utilization for applications				
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
	X	X		10			X			75%	25%		

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
Currently	Project Staff		X	X	X	X	

other comments
Dr. Jan Lanphear

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Tropical Texas MHMR Telemedicine Project

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Tropical Tx Ctr for MHMR	Edinburgh, TX 8540	Salinas, Osbaldo	osalinas@ttcmhmr.org	www.ttcmhmr.org	Jul-01	1) Brownsville Outpatient (2) Harlingen Children's Unit (3) Brownsville Children's unit (4) Harlingen Psychosocial (5) Edinburgh Outpatient (6) McAllen Psychosocial Phase III (7) Harlingen Outpatient (8) Weslaco Outpatient

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
100%	100%					X	X	X	X						Time management	$346,000	$3,300

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X	X						X		X		X				100

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
mental health	patient mgmt			workplace		outpatient	X		psychiatrist	634		

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X		X	X	anticipated training 200	X	X	X	X	HR	X	X	X	

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
Currently underway							

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Texas Children's Hospital Center for Telehealth

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Texas Children's Hospital	Huston TX 77030	Jefferson, Larry Dr.	lsjeffer@texasxchildrens hospital.org	www.texaschildrenshospital.org	Apr-01	Sugar Land Health Center, Sugar Land (2) Clear Lake Health Center, Houston (3) TCH West Houston Health Center, Houston (4) TCH Northwest Houston Health Center, Spring (5) Texas Children's Cancer and Hematology Center and Cancer Genetics Center, McAllen (6) King Faisal Specialty Hospital and Research Center, Riyadh, Saudi Arabia (7) Hospital Infantil "Dr. Gustia Casteneda Placiaos" Zacapa, Guatemala

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
25					75 (Tx Childrens Hosp)											$1,200,000	$100,000 (4 T1 lines @$350)

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
X	X			X	X		X	X		X		X	X	X	Dial up	1-2 weekly

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month	
							primary care physician	allied health professionals	others	# patients	any other measure
ental health	public health	diabetes	learning support	hospital	regional health center	university	X	X	hospital administrators	7 to 10	8-10 staff training, 7-10 parents received educational support for diabetic children, 105 participants in Annual International Colloquium in April 2001, 3000 physicians attended an International Pediatric Post Graduate Symposium in Mexico, Central and South America, and 248 participants received telemedicine services between April 2000 and Jan 2001.

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X		X	X	19 professionals in 2000, 27 professionals trained in 2001	X					X		X	X

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
5%	50%	25%		Currently	Internal		X

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: MHMRTC Telemedicine Project

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
MHMR of Tarrant County	Fort Worth TX 76102	Guin, Tony	tonyg@mhmrtc.org	ww.mhmrtc.org	Apr-01	MH Clinic, County Jail

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
95					Local		X	X		X				X	Separate access support	$60,000 first year, $20,000 subsequent years	

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X				X										point to point ISDN	5 hrs per site per week

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month	
							primary care physician	allied health professionals	others	# patients	# consultations
mental health				workplace	outpatient clinic	prison/correctional		X	psychiatrist	15	20

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
										100			

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
		X	X	X			

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: UBI Caritas Clinic & Health Center Telehealth Project

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
UBI Caritas Clinic & Health Center	Beaumont, TX 77705	Moore, Clark	clarkmoore@ubicaritas.org		Jun-00	Baylor School of Medicine

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
X				X												$80,000	$200

Technology

Technology used			Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
X		X			X								X			2%

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month	
							primary care physician	allied health professionals	others	# patients	any other measure
dermatology	pediatrics	family medicine	public health	outpatient clinic					AFNP	101	

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
			X			X				2%	10%		

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
May-01	TIFB				X	X	

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Wichita Falls Healthnet Collaborative

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Wichita Falls - Wichita County Public Health district & North Central Texas Medical Foundation/ Family Practice Residency Program	Wichita Falls, TX 76301	Clements, Barbara	bjclements@cwftx.net	www.health.cwftx.net	Mar-99	FP Residency, WF

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
TIFB																	

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
		X														

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month	
							primary care physician	allied health professionals	others	# patients	any other measure
patient mgmt	ob/gyn	pediatrics	public health	public health							13000 county pop

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X	X	X	X	24 family practice residents; 20 BSN; 20 LVN; 10 Phlebotomoy; 4 MSN		X	X	X		50	25	10	15

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
Oct-00	Internal Employee survey and Administrative review			X		X	

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project:

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Gulf Bend MHMR Center	Victoria, TX 77901	Kelly, Bill	bkelly@gulfbend.org	www.gulfbend.org	Apr-00	1) Port Lavaca Clinic, Port Lavaca (2) Cuero Clinic, Cuero (3) Citizen's Medical Center, Victoria

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
90%			10%			X		X		X						$138,440	$1,250

Technology

Technology used			Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X							X		X		X				Not available

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month	
							primary care physician	allied health professionals	others	# patients	any other measure
mental health				rural clinic	outpatient clinic		X			just started	

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X		X	X		X	X				80%	10%	10%	

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments

Connect to four of the six surrounding counties. Just getting underway

Name of Project: East Texas Asthma and Allergy Network

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
University of Texas Health Center at Tyler	Tyler, TX 75708	Roper, Kevin	kevin.roper@uthct.edu		Spring 2000	1) Titus Regional Medical Center, Mt. Pleasant (2) Marshall Regional Medical Center, Marshall, (3) Good Shepherd Regional Medical Center, Longview

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
X						X				X				X		$590,000	< $1,000

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
		X	mobile cart system and H.323				X					X				

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month	
							primary care physician	allied health professionals	others	# patients	any other measure
patient mgmt	pediatrics	family medicine	general medicine	hospital			X				

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
			X							X			

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
Spring 2000	Internal TIFB Desk Audit					X	X

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

other comments

Name of Project: East Texas Interactive Healthcare Network (ETIHN)

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
University of Texas Health Center at Tyler	Tyler, TX 75709	Roper, Kevin	kevin.roper@uthct.edu		Fall 1999	1) Titus Regional Medical Center, Mt. Pleasant (2) Marshall Regional Medical Center, Marshall, (3) Good Shepherd Regional Medical Center, Longview 4) Christus St. Josephs, Paris (5) McCuistion Regional Medical Center, Paris (6) Memorial Medical Center, Lufkin (7) Laird memorial hospital, Kilgore (8) Christus St. Michaels, Texarkana (9) Hopkins County Hospital, Sulphur Springs

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
X											X					$646,000	$4,000

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X						X					X				

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month	
							primary care physician	allied health professionals	others	# patients	any other measure
				hospital			X	X	CME/CNE instructors		150-200 total audience

Educational applications		Administrative applications	Utilization for applications

Continuing ed	Health prof. degree prog	Staff training	Patient education	Number of students/professionals trained per year	meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X	X		X								X		

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
Spring 2001	TIF Onsite review					X	X

other comments

Name of Project: School based Telehealth Clinics

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Baylor College of Dentistry	Dallas, Progreso, Lyford	Folke, Lars	lfolke@tambcd.edu			

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
X		X														$500,000	$4,000

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
X	X				X					X			X			10%

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month	
							primary care physician	allied health professionals	others	# patients	any other measure
				school						3500	

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other

			X	2							X		

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
2000	PI	X	X	X	X	X	

other comments

Name of Project: Coalition Video Collaborative

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Coalition Health Services	Amarillo, TX 79107	Henson, Schan	shenson@cohs.net	www.cohs.net	Nov-99	1) ChildressRegional Medical Center, Childress (2) BSA, Amarillo (3) Hall County Hospital, Memphis (4) Hemphill County Hospital, Canadian (5) Ochiltree County Hospital

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
X						X		X	X		X					$800,000	$1,000

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X							X	X			X				

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
				hospital								

Educational applications		Administrative applications	Utilization for applications

Continuing ed	Health prof. degree prog	Staff training	Patient education	Number of students/professionals trained per year	meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X		X			X			X					

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments
Little doctor support on either end.

Name of Project: Ward Memorial Hospital

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Ward Memorial Hospital	Gary Monahans, TX 79756	Mathis, Richard	rmathis@wardmemorial.org			

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health	others	# patients	#	any other

								professionals			consultations	measure
radiology				hospital								

Educational applications				Number of students/professionals trained per year	Administrative applications				Utilization for applications				
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments
only used for radiology to the radiologist when not in the hospital [Glenda Locker]

Name of Project: Diabetes/CHF Telemedicine Program

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Mercy Health Center	Laredo, TX 78041	Rodriguez, Christine RN	crodriguez@lare.smhs.com	www.mercylaredo.com	May-99	

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
X					UTHSCSA											$450,000	$19,000

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
X				X			X					X				30%

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
cardiology	general medicine	diabetes		hospital	home					275		

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
			X							90%	10%		

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
Dec-00	External Academic Center (UTHSCSA)	X	X	X	X	X	patients quality of life

other comments

Name of Project: Telemedicine Jail Demonstration Grant

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Parkland Health & Hospital System	Dallas, TX 75235	Mandle, Steve	rmorrow@parknet.pmh.org			Dallas County Jail

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
X																$70,000 excl salaries	$1000 excl salaries

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

							T1									
	X (Polycom 512k IP videoconferencing systems)				X			X			Analog	X				

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
orthopedics	HIV/AIDS			prison correctional			X	X	specialty physicians	50+	50+	

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
		X	X							80%	20%		

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
May-00	internal	X		X			

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Hill Country Education Project

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Hill Country Memorial Hospital	Fredericksburg, TX 78624	Spraggins, Doris	dspraggins@c	hillcountrymemorial.com	Fall 1997	

Funding

Funding Source & percentage						Revenues				Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance		
		X								$50,000	$4,166.67 (Lease charges for 2 T1 lines and Internet IP connections are being funded by Austin Community College (connection to ACC) and TIF funds (to UTHSC, San Antonio)

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X	X						X		X		X				100% for education

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure

Educational applications				Number of students/professionals trained per year	Administrative applications				Utilization for applications				
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X	X	X	X	600							100%		

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
Oct99- Sep 01	Alamo Area Health Education Center					X	X

other comments
Mason Rural Health Clinic, Marble Falls Specialty Clinic, Ramsey Clinic, Community Health Clinic Primary purpose is education(80%) All sites will utilize equipment for administrative applications.

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Model Regional Telehealth Assistance Center

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Stephen F. Austin State University, Division of Nursing	Nacogdoches, TX 75962	Walker, Glenda Dr.	gwalker@sfasu.edu			UTMB, Galveston (2) Lamar University, Beaumont (3) 5 public schools: 2 Nacogdoches County, 2 Jefferson County, 1 Galveston County

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
		X														$230,000	$15,000 over 18 months

Technology

Technology used			Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X							X				X				

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
mental health	dermatology	ophthalmology	pediatrics	rural clinic	university	workplace		X				

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X		X	X		X								

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Graduate Nursing Degree Program - UTMB

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Stephen F. Austin State University, Division of Nursing	Nacogdoches, TX 75964	Speck, Nancy Dr.	nspeck@sfasu.edu			UTMB, Galveston

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
					UTMB School of Nursing	tuition and fees to UTMB											

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X							X				X				

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
graduate degrees in Nursing: FNP & Acute Care				university				X				

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
	X			8-10 grad students enrolled per month							20%		

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
	UTMB						

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: UTMB-Lamar-SFA Linkages for Special Needs Children Project

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Stephen F. Austin State University, Division of Nursing	Nacogdoches, TX 75965	Speck, Nancy Dr.	nspeck@sfasu.edu			UTMB, Galveston (2) Burke Center, Lufkin (3) Women's Shelter of East Tx, Nacogdoches (4) Woden ISD, Woden (5) Martinsville ISD, Martinsville

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
					in kind					X						$7,200	$200

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X							X					20%			

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
pediatrics				university			X	X		6	6	

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X		X	X	40 Nursing students	X					70%	15%	15%	

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
Feb-01	Internal (Shannon Clifton)		X	X			X

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Technology Opportunities Program (TOP)

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Stephen F. Austin State University, Division of Nursing	Nacogdoches, TX 75966	Speck, Nancy Dr.	nspeck@sfasu.edu			UTMB, Galveston (2) Lamar University, Beaumont

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating per mo
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
Stephen F. Austin State University, Division of Nursing	Nacogdoches, TX 75966	Speck, Nancy Dr.	nspeck@sfasu.edu			UTMB, Galveston (2) Lamar University, Beaumont	Stephen F. Austin State University, Division of Nursing	Nacogdoches, TX 75966	Speck, Nancy Dr.	nspeck@sfasu.edu			UTMB, Galveston (2) Lamar University, Beaumont	Stephen F. Austin State University, Division of Nursing	Nacogdoches, TX 75966	Speck, Nancy Dr.	nspeck@sfa

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X							X				X				20%

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
mental health				rural clinic	university		X	X		10 to 15	20-30	

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
	X	X	X	40 nurses, 9 social workers, 4 psychology majors	X	X	X			70%	15%	15%	

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Access 2

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Cross Timbers Community Health center	De Leon, TX 76444	Porter, Sueann	sporter.ctchc@tachc.org		May-99	Centro San Vicente, El Paso (2) South Plains Rural Health, Levelland (3) Texas Tech Univ Hlth Sc Ctr, Lubbock

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
X						X		X	X	X				X		$350,000	$2,500

Technology

Technology used			Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X							X				X				

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
pediatrics	general medicine	family medicine		university	Federally qualified Hlth Center		X				10	

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
		X		45	X					75%	10%	15%	

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
Jun-00	Internal						X

other comments
Project now beginning to have consultations. Videoconferencing began in March 2000 for admin/educ purposes

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Texas Panhandle Telemedicine Network for Mental Health Services

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
TPMHMR	Amarillo, TX 79116	Talley, Mellisa	mellisa.talley@tpmhmr.org	tpmhmr.org	Aug-00	Borger Outpatient Clinic, Borger (2) Pampa Outpatient Clinic,Pampa (3) Clarendon Outpatient Clinic, Claredon (4) Perryton Outpatient Clinic, Perryton (5) Children's Services, Amarillo

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
X										X							

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X							X		X		X				8 hours per week

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
mental health				rural clinic			X	X (nurses)				

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
										X			

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
Apr-01	Project Director	X	X	X		X	

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Big Bend Education and Specialty Clinics

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
TTUHSC-Lubbock	Lubbock, TX	Patterson, Patti Dr.	Jon.Phillips@ttuhsc.edu	www.ttuhsc.edu/telemedicine	Spring 1989	Big Bend Regional Hospital, Alpine (2) Big Bend Rural Health Clinic Presidio (3) Big Bend Rural health Clinic, Terlingua

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
					TTUHSC operating funds			$78 (1 medicare reimbursement)		X						$500,000 (1989)	$1,100

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X							X				X				10% in a 40 hour week

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
dermatology	pediatrics	family medicine	internal medicine	hospital	university	rural clinic	X	X		2	2	

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
										100			

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
1990	TTUHSC/ Big Bend Regional		X	X	X		

other comments

Name of Project: El Paso Burn Specialty Clinic

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
TTUHSC-Lubbock & El Paso	Lubbock, TX	Griswold, Dr.	Jon.Phillips@ttuhsc.edu	www.ttuhsc.edu/telemedicine	Jun-01	TTUHSC HSC, El Paso

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
X					TTUHSC operating Funds/TIFB					X						$100,000	$650

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X							X				X (Closed)				0.0125 based on a 40 hour week

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
burn wound treatment				HSC clinic			X	X (nurses)		6	6	

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
El Paso SOM Dept of Surgery residents										75%	25%		

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
TBD	TTUHSC Dept of Surgery	X	X	X	X	X	

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Family Medicine/ Carillon Retirement Village Telemedicine Project

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
TTUHSC	Lubbock, TX	Homan, Richard Dr.	Jon.Phillips@ttuhsc.edu	www.ttuhsc.edu/telemedicine	Fall 2000	Carillon Retirement Village, Lubbock

Funding

Funding Source & percentage					Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	Others	Fee for service	Contract	Medicaid/ Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
				TUHSC Operating Funds/ Family and Community Medicine					X						$75,000	$400

Technology

Technology used				Connectivity								Network type		Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Others	
	X	X						X	X			X	Digital H.323 protocol	weekly 2-hour clinic bet TTUHSC and Carillon Retirement Village. Takes up 0.0025% of HSC network and incorporates 0.05% of T-1 time based on 40 hour week

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
primary care				HSC clinic	nursing home			X (nurses)		4	4	

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
		X								85%	15%		

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
Jul-01	Internal (TTUHSC-Carillon Retirement Village joint committee)	X	X	X	X	X	

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: TTUHSC Correctional Telemedicine Project

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
TTUHSC	Lubbock, TX	Gonzalez, William Dr.	Jon.Phillips@ttuhsc.edu	www.ttuhsc.edu/telemedicine	Fall 1994	Allred Unit, Wichita Falls (2) Clements Unit, Amarillo (3) Dalhart Unit, Dalhart (4) Daniel Unit, Snyder (5) Formby Unit, Plainview (6) Jordan Unit, Pampa (7) Lynaugh Unit, Ft. Sockton (8) Montford Unit, Lubbock (9) Middleton Unit, Abilene (10) Neal Unit, Amarillo (11) Toach Unit, Childress (12) Robertson Unit, Abilene (13) Sanchez Unit, El Paso (14) Smith Unit, Lamesa (15) Wallace Unit, ColoradoCity

Funding

Funding Source & percentage				Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/commercial	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
	X (Contract with State of Texas)				X			X						$1,250,000	$12,500

Technology

Technology used				Connectivity							Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X							X				X				60% based on a 40hr week

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
orthopedics	infectious disease	ENT	neurology	physician group	prison/correctional		X	X (nurses & PAs)		176	176	

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
										100%			

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
1995 - 96	Correctional Health Care - TTUHSC	X	X	X	X		time mgmt

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: El Paso Primary and Specialty Care Telemedicine Project

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
TTUHSC-El Paso	El Paso TX 79924	Noriega, Oscar MD	Jon.Phillips@ttuhsc.edu	www.ttuhsc.edu/telemedicine	Mar-01	TDH Clinic, Ft. Hancock (2) DH Clinic, Sierra Blanca (3) TTUHSC RAC, El Paso

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
X					HSC operating funds					X						$275,000	$1,800

Technology

Technology used			Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X							X				X				0.025% of network on a 40hr week basis

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
ob/gyn	orthopedics	primary care		university	rural clinic		X	X (nurses & PAs)		2	2	

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
										75%	25%		

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
Jul-01	TTUHSC-El Paso/ Texas Tech Telemedicine	X	X	X			

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Hart Independent School District Telemedicine Project

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
TTUHSC-Lubbock	Hart, TX 79043	Patterson, Patti Dr.	Jon.Phillips@ttuhsc.edu	www.ttuhsc.edu/telemedicine	Spring 1998	Hart ISD, Hart

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
					TTUHSC operating funds	Professional fee paid by school clinic				X						$125,000	$400

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
		X						X				X			Digital H.323 protocol	0.025% on a 40hr week basis for a weekly one hour clinic

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
mental health	pediatrics	dermatology		HSC clinic	School base clinic			X (nurses)		5	5	

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
										95%	5%		

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
Jul-01	Internal -TTUHSC-Hart ISD joint committee		X	X			time mgmt

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Scott & White Telehealth Program

Institution	**Project Location**	**Project Director**	Email	URL	**Starting Date**	**Participating locations**
Scott & White Memorial Hospital	Temple, TX 7508	Hobbs, Gregory D.	emmgdh@swmail.sw.org		Jun-01	Richards Memorial Hospital, Rockdale (2) Goodall-Witcher Hospital, Clifton (3) Falls County Hospital, Marlin (4) Johns Community Hospital, Taylor (5) Coryell Memorial Hospital, Gatesville

Funding

Funding Source & percentage						**Revenues**				**Cost recovery**						**Total project cost**	**Operating cost per month**
State Grant	**State contract**	**Federal government**	**private/ non-profit**	**private/commercial**	**Others**	**Fee for service**	**Contract**	**Medicaid/Medicare**	**Private Insurance**	**professional services**	**network charges**	**equipment charges**	**facility charges**	**primary care**	**Other**		
X			X			X		X	X	X							

Technology

Technology used			**Connectivity**								**Network type**				**Utilization of network(% time)**
S & F	**Interactive Video**	**Desktop**	**Others**	**POTS**	**ISDN**	**DSL**	**Fract'l T1**	**Full T1**	**ATM**	**Internet IP**	**Others**	**Dedicated/proprietary**	**Public network**	**Combination**	**Others**
	X	X						X				X				

Applications

Clinical applications				**Settings**			**Presenters**			**Number of beneficiaries per month**		
							primary care physician	**allied health professionals**	**others**	**# patients**	**# consultations**	**any other measure**
mental health	cardiology	emergency/triage	gastroentorology	hopital	university			X		50		

Educational applications				**Number of students/professionals trained per year**	**Administrative applications**				**Utilization for applications**				
Continuing ed	**Health prof. degree prog**	**Staff training**	**Patient education**		**meetings**	**patient records**	**medical databases**	**financial mgmt**	**Other**	**Clinical**	**Educational**	**Administrative**	**Other**
X		X	X							90%	10%		

Evaluation

Last project evaluation	**By whom**	**Criteria used**					
		cost saving	**patient satisfaction**	**provider satisfaction**	**quality of care**	**program effectiveness**	**others**
Jun-01	Internal	X	X	X			X

other comments
Contact: Linda Wolf RN

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Medical Mobile Clinic Telemedicine Project

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Univ of Texas Health Science Center at Houston	Hidalgo County (border colonias)	Becan McBride, Kathleen	Kathleen.Becan-McBride@uth.tmc.edu	www.uth.tmc.edu/coe/comouted.htm	Sep-00	4 Elementary schools in colonias (2)Hidalgo Country Health Dept

Funding

Funding Source & percentage					Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
X (till Aug-01)				State funds from Univ from Sep-01												$1,500 (for T1 lines only)

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X							X								

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
pediatrics	general medicine	patient mgmt		Mobile clinic				X (nurse)		15 to 20		

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
				5 Med Students, 30 Senior level nursing students						100% (will change to educational 40% in future)			

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
May-01	State Conservation Office eGrant Evaluation					X	

other comments

Margaret McNeese is also Project Director

Name of Project: Family Focused AIDS Clinical Treatment and Services (FFACTS) Telemedicine System

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
University of Texas Health Science Center at San Antonio	San Antonio, TX 78229	Provost, Mike	mprovost@university-health-sys.com		Jun-99	Bexar County Jail, San Antonio

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
					Bexar County											$14,640	$110

Technology

Technology used			Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X							X				X				

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
AIDS				prison/correctional				X		20		

Educational applications				Number of students/professionals trained per year	Administrative applications				Utilization for applications				
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

other comments
James D. Legler, MD at legler@uthscsa.edu

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Memorial Hermann Hospital

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Memorial Hermann Hospital	Houston, TX 77030	Allen, Steve MD	steve_allen@mhhs.org		Aug-01	

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		

Technology

Technology used			Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others
	X							X				X			

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
emergency	neurology			hospital	rural clinic		X					

Educational applications				Number of students/professionals trained per year	Administrative applications				Utilization for applications				
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X		X											

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments
Project is still in planning stages--delayed pending repair of storm damage at Hermann

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Telehealth Services

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Univ of Texas M.D. Anderson Cancer Center	Houston, TX 77030	Jones, Lawrence	lcjones@mail.mdanderson.org		Jun-95	M.D. Anderson, Orlando (2) M.D. Anderson-Espana, Madrid, Spain (3) MDA Bellaire Radiation Clinic, Bellaire

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
					Institutional												

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X	X			X		X	X				X				

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
oncology				hospital					oncologist			

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X		X			X			X		9%	76%	10%	

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: TIF Grant

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Hunt County MHMR	Greenville, TX 75401	Harper, David	dharper@hcmhmr.com	www.hcmhmr.com	Jul-00	Wesley Enterprises, Greenville (2) ACT Team, Greenville (3) ICF, Greenville

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
X						X		X	X							$133,000	

Technology

Technology used			Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
		X	WAN			X	X			X				X		

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
mental health				outpatient clinic				X		1359		

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
		X				X	X	X		X		X	

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
Apr-01	TIFB					X	

other comments

Name of Project: South Texas Telehealth Partnership (STPP)

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
School of Rural Public Health, Texas A&M System Hlth Sc Ctr	Bryan, TX 77802	Quiram, Barbara Dr.	bjquiram@tamu.edu		May-99	13 locations (1) Sebastian (2) McAllen (3) Corpus (4) Pharr (5) Harlingen (6) Weslaco (7) Brownsville (8) College Station (9) Dallas

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
X																	

Technology

Technology used			Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others
	X							X							

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
public health	dentistry			rural clinic	university	community resource center						

Educational applications				Number of students/professionals trained per year	Administrative applications				Utilization for applications				
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X	X	X	X		X			X					

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
May-01							

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Health Access & Alert Network

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
School of Rural Public Health, Texas A&M System Hlth Sc Ctr	Bryan, TX 77802	Quiram, Barbara Dr.	bjquiram@tamu.edu		May-99	13 locations (1) Sebastian (2) McAllen (3) Corpus (4) Pharr (5) Harlingen (6) Weslaco (7) Brownsville (8) College Station (9) Dallas

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
X																$15,000,000	

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X	X	Email servers	X		X	X	X	X	X	Wireless			X		

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
public health				hospital	nursing home	rural clinic						

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
							X		email & web-hosting, voice over IP			0%	

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
Jul-01	Internal					X	

other comments
Network started with basic connectivity and is gradually moving to applications in next 2-6 months.

Name of Project: ANICO Project

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
UTMB Galveston	Galveston, TX 77555	Viegas, Steven MD	sviegas@utmb.edu			American National Insurance Company, Galveston

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
		5%		95%	Public 5%				X	X							

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
		X			X							X				20hrs per month

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
family medicine	cardiology	orthopedics	allergy/asthma	hospital	workplace				X			

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
			X										X

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
70%	20%	10%					

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Cruise Ship Project

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
UTMB Galveston	Galveston, TX 77555	Boultinghouse, Oscar MD	oboultin@utmb.edu			Cruise ships at Galvestone and at sea

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
		5%		95%	Public 5%				X	X							

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
X		X									Satellite	X				5hrs per month

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
cardiology	dermatology	radiology	emergency/triage	hospital	workplace	ships	X	X (nurses)				

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
			X							100%			

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments

Name of Project: East Texas Mental Telehealth Program

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
UTMB	Galveston, TX 77557				Oct-00	Stephen F. Austin State University, Nacogdoches (2) Women's Shelter of East Texas, Nacogdoches, Lufkin (3) Burke Center, Lufkin (4) Regional Maternal and Child Health Center, Nacogdoches (5) Martinsville ISD, Martinsville (6) Woden ISD, Woden

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
10%		50%			40%Public												

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S&F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X	X			X			X				X				75hrs/month

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
mental health	emergency	patient mgmt		university	School base clinic	outpatient			mental health practitioners			

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X	X	X	X		X	X				30%	30%	20%	

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: TDJC Managed Care Contract?

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
UTMB Galveston						

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
X							X			X							

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
		X						X				X				

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
									X			

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
					X	X	X	X		85%	10%	5%	

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Telehealth Resource Center

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
UTMB Galveston	Galveston, TX 77555	Harshorn, Jeanette, PhD, RN	jhartsho@utm.edu		Sep-00	Stephen F. Austin State University, Nacogdoches (2) Lamar University, Beaumont (3) Woden ISD, Woden, Nacogdoches (5) Martinsville ISD, Martinsville (6) Beaumont ISD, Beaumont (7) Port Arthur ISD, Port Arthur (8) Galveston ISD, Galveston

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
		90%			10%Public												

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X				X			X				X				1%

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
				university	school				faculty & Staff			

Educational applications				Number of students/professionals trained per year	Administrative applications				Utilization for applications				
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
					X							100%	

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments
Pat Jakobi 409-747-1042 pajakobi@utmb.edu

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Telemedicine Linkages for Special Needs Children

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
UTMB Galveston	Galveston, TX 77555	Robinson, Sally MD	ssrobins@utmb.edu	www.utmbccrc.org	1996(Beaumont) 1997 (Nacogdoches)	Stephen F. Austin State University, Nacogdoches (2) Lamar University, Beaumont (3) Woden ISD, Woden (4) Martinsville ISD, Martinsville (5) Beaumont ISD, Beaumont (6) Port Arthur ISD, Port Arthur (7) Galveston ISD, Galveston

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
70%		5%			25%Public			X		X						$800,000	$15,000

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X				X			X				X				35hrs/month

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
mental health	patient mgmt	pediatrics		hospital	university	school		X (nurses)		10	10	

Educational applications				Number of students/professionals trained per year	Administrative applications				Utilization for applications				
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X			X		X	X				70%	20%	10%	

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
Mar-01	Internal (Shannon Clifton)	X	X	X	X	X	

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Rural Hospital Initiative

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
UTMB Galveston	Galveston, TX 77555	Hartshorn, Jeanette, PhD, RN	jhartsho@utmb.edu		May-99	Jackson County Hospital, Edna (2) Colorado-Fayette Hospital, Weimar (3) Schulenburg Clinic, Schulenburg (4) Flatonia Clinic, Flatonia (5) Parkview Manor Nursing Home, Weimar

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
30%	50				20% Public			X		X							

Technology

Technology used				Connectivity							Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X	X			X			X		X		X				

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
mental health	family med	diabetes	geriatric	hospital	university	nursing home	X					

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X			X							30%	50%	20%	

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
Nov-00	Interim (TIFB)						

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Regional Maternal and Child Health Program and Community Based Clinics Project

Institution	Project Location	Project Director	Email	Starting Date	Participating locations
UTMB Galveston	Galveston, TX 77555	Nelson-Becker, Carolyn Dr.	cnelsonb@utmb.edu	Jun-00	(1) Alabama Coushatta, Polk County (2) Angleton Reg Maternal & Child Health Clinic (RMCH), Angleton (3) Beaumont RMCH, Beaumont (4) Conroe RMCH, Conroe (5) Dickinson RMCH, Dickinson (6) Huntsville RMCH, Huntsville (7) Katy RMCH, Katy (8) Livingston RMCH, Livingston (9) McAllen RMCH, McAllen (10) Nacogdoches RMCH, Nacogdoches (11) New Caney RMCH, New Caney (12) Orange RMCH, Orange (13) Pasadena RMCH, Pasadena (14) Pearland RMCH (15) Port Arthur RMCH, Port Arthur (16) Prairie View RMCH, Prairie View (17) Stafford RMCH, Stafford (18) Texas City Geriatrics, Teas City (19) Texas City RMCH, Texas City (20) Victoria RMCH, Victoria (21) West Columbia POC (Primary Outreach Clinic) (22) Wharton RMCH, Wharton (23) Woodville RMCH, Woodville

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
60%					40% Public	X	X	X		X							

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
X	X	X			X			X				X				

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
ob/gyn	pediatrics	patient mgmt	pathology	rural clinic	Family Med Residency Clinic	Regional Maternal & Child Health Clinics		X (nurse midwives and nurse practitioners)				

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X	X	X	X		X	X	X	X		50%	30%	20%	

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Egypt Project?

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
UTMB Galveston	Galveston, TX 77555	Au, William Dr.				

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
				X			X			X							

Technology

Technology used			Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
X										X	Satellite					

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
										95%		5%	

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Collaboration in Telemedicine: Telepathology and Teleradiology

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
UTMB Galveston	Galveston, TX 77555	Au, William Dr.	william.au@utmb.edu		May-01	Jake Angelo, Levin Hall (2) McCullough (3) University Hospital Clinic

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
				100%			X			X							

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
X										X	Satellite					

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
radiology	pathology	public health		hospital	university				pathologists & radiologists			

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
		X					X			95%		5%	

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Digital Medical Service (TDCJ Managed Care)

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
UTMB Galveston	Galveston, TX 77555	Boultinghouse, Oscar MD	oboultin@utmb.edu			Beto I Unit, Tennessee Colon (2) McConnell Unit, Beeville (3) Dominguez Unit, San Antonio (4) Telford Unit, New Boston (5) Ramsey III Unit, Rosharon (5) Skyview Unit, Rusk (6) Hughes Unit, Gatesville (7) Jester IV Unit, Sugarland (8) Boyd Unit, Teague (9) Lopez Unit, Edinburg (10) Stiles Unit, Beaumont (11) Estelle Unit, Huntsville (12) Federal Penitentiary, Beaumont

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
	100%						X			X							

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X	X						X				X				100%

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
mental health	cardiology	dermatology	emergency	hospital	prison		X	X				

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
					X	X	X	X		95%	5%		

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Benefits of Using Tele-Ultrasonography in Underserved Areas

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
John Peter Smith Hospital	Fort Worth, TX 76106	Anderson, Ralph	rander02@jpshealthnetwork.org	www.jpshealthnet.org	Nov-00	John DeLaCruz, Diamond Hill

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
			X														

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure

Educational applications				Number of students/professionals trained per year	Administrative applications				Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments

Name of Project: Internet Connectivity

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Smith County Public Health	Tyler, TX 75702	Sciarrini, D.E.	nsciarrini@healthdistrict.net	www.healthdistrict.net	year 1999	SCPHD Treatment Clinic, Tyler (2) SCPHD Main Building, Tyler (3) SCPHD HQ and HelProm, Tyler (4) SCPHD St. Paul Children's Clinic, Tyler

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
X					TIF grant and operational budget	X	X	X	X						none	$45,000	$2,000

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
			Web Page		X	X		X		X				X		100% for web-based activities

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
public health				rural clinic	outpatient clinic	workplace			admin and helpromo make entries on web page			

Educational applications				Number of students/professionals trained per year	Administrative applications				Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Clinical	Educational	Administrative	Other
							X			10%	10%	80% client encounter

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments
TALHO and HAN projects that have received $2million from TIF will provide telemed off site . Need to be part of Health alert Network. Connect 30 communities and 140 partners through the web.

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Brazos Valley Telehealth Partnership

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Texas A&M Health Science Center	College Station, TX 77843	Manning, Timothy R.	tmanning@tamu.edu		Jan-98	Burleson St. Joseph Clinic, Caldwell (2) Hearne St. Joseph Clinic, Hearne (3) Family Practice Research Program of Brazos Valley, Bryan (4) St. Joseph Hospital, Bryan (5) Texas A&M HSC, College Station

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
60%		40%						X	X	X				X		$1,200,000	$5,000

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
X	X	X						X				X				

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
mental health	ob/gyn	family med	residency training	hospital	rural clinic	university	X			40		

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
					X	X				90%		10%	

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
Jul-01	Internal					X	

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Children's Justice Act Grant Texas Telemedicine

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Several	San Antonio	Kellogg, Nancy & Carole Hurley	kelloggn@uthscsa.dcci.com		year 1997	San Antonio (2) Fort Worth (3) Lubbock (4) Waco (5) Burnet (6) Corpus Christi (7) Galveston (8) Beaumont (9) Kerrville (10) Bryan (11) Wichita Falls (12) Odessa (13) Sequin (14) Denton

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
X							X										

Technology

Technology used			Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
X				X								X				5%

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
child sexual abuse				hospital	outpatient clinic	home	X	X (nurses & PA)		10	10	

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
year 1999	Grantee (government)			X	X	X	

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Texas Public Health Training Center

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
University of Texas School of Public Health + University NorTex School of Public Health + Texas A&M School of Rural Public Health	Houston, TX 77030	Loe, Hardy MD	sranders@sph.uth.tms.edu	www.txphtrainingcenter.org	Sep-00	UT School of PH, Houston (2) University NorTex Pub Health (3) Texas A&M School Rural Pub Health

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
		60% in kind			40% own	X	X									$385,000 fed grant per year	$30,000

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X		Internet/ Web													

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
				health departments					public health professionals and academics			

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X		X							public health practice		75%	25%	

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments
It is one of the 14 new public health training centers nationally. It is a HRSA funded initiative. Funding is intended for 5 years.

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Texas Telecommunications Infrastructure Gateway TTIG

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Bohman Cinic	Cuero, TX 77954	Dugi, Dan MD	ddugi@yahoo.com		Mar-01	Cuero Medical Clinic, Cuero (2) Hunt Elementary, Cuero

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
X				X												$26,822	$766

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
X		X		X				X				X				

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
dermatology	emergency	general med	pediatrics	rural clinic	nursing home	physician group	X	X		25	15	

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
			X							100%			

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others
Mar-01	Internal	X	X	X	X	X	

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Region 4

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Texas Department of Mental Health and Mental Retardation	Austin, TX					North Texas State Hospital, Wichita Falls and Vernon (2) Terrel State Hospital

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		

Technology

Technology used			Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
	X							X			Native LAN					15% TSH 25% NTSH

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
mental health				hospital					X			

Educational applications				Number of students/professionals trained per year	Administrative applications				Utilization for applications				
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
				10-TSH	X (NTSH)								

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Kerrville State Hospital

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Kerrville State Hospital		Kaiser, Barb				

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		

Technology

Technology used			Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others
							X								

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
mental health				hospital								

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X		X											

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Behavioral Health Integrated Providers Systems BHIPS

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
		Wilson, Doug				

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		

Technology

Technology used			Connectivity							Network type				Utilization of network(% time)
S&F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
										X	X (ISP)			X		

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
mental health	chemical dependency			hospital	rural clinic	outpatient clinic			chemical dependency, abuse counselors, business office staff	900		

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
		X		50 (expect 100 in next 18 months)		X	X	X					

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	Others

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Cypress Fairbanks Medical Center

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Cypress Fairbanks Medical Center	Houston, TX 77065	Atwood, Carol	carol.atwood@tenethealth.com			

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
radiology				hospital					radiologist			

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: RUS Project

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Christus Santa Rosa Children's Hospital	San Antonio, TX 78207	Parry, William	william_parry@srhc.iwhs.org		year 1999	Rural Health Clinic, Benevides (2) RHC, Gonzales (3) RHC Cotulla

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
X																	

Technology

Technology used			Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
										X						

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
cardiology	gastroenterology	dermatology	emergency									

Educational applications				Number of students/professionals trained per year	Administrative applications				Utilization for applications				
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X		X	X										

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Herman Memorial Hospital

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Memorial Hermann Hospital	Houston, TX 77006	Allen, Steve	Steve_allen@mhhs.org		Nov-01	

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
			X													$100,000 per year	

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
								X								

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
emergency	neurology	pediatrics		hospital			X					

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Demonstration Grant - Mason Clinic

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Hill Country Memorial Community Services		Gold, Diane	dgold@hillcountrymemorial.com		year 1999	

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
X																$57,000	

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
								X								

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
				rural clinic						250		6 staff

Educational applications				Number of students/professionals trained per year	Administrative applications				Utilization for applications				
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X		X	X		X		X	X					

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Web Page

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Wilson N. Jones Medical Center	Sherman, TX	Richardson, Kitty	krichardson@wnj.org	www.wnj.org	year 1999	

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
			X														

Technology

Technology used			Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
										X						

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
general medicine												

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
			X										

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Limestone Medical Center

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Limestone Medical Center						Texas Tech Healthnet, Lubbock (2) Alliance, Texas Rural Hospital Telecommunication Alliance

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
X																	

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
								X		X						

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
				hospital								

Educational applications				Number of students/professionals trained per year	Administrative applications				Utilization for applications				
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X		X	X										

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Vidnet Videoconference

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Terrel State Hospital	Terrel, TX 75160	Griffith, Marie	marie.griffith@mhmr.state.tx.us	www.mhmr.state.tx.us	year 1994	55 locations in Vidnet

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
	X																

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physican	allied health professionals	others	# patients	# consultations	any other measure
mental health	patient mgmt			hospital	workplace		X	X				

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X		X	X		X								

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Distance Learning Network

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Terrel State Hospital	Terrel, TX 75161	Griffith, Marie	marie.griffith@mhmr.state.tx.us	www.mhmr.state.tx.us	year 2000	

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
	X																

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
										X	satellite					

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
mental health	psychology			hospital	workplace		X	X	X			

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X	X	X	X		X								

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Alliance for Higher Education

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Terrel State Hospital	Terrel, TX 75162	Griffith, Marie	marie.griffith@mhmr.state.tx.us	www.mhmr.state.tx.us	year 1996	Alliance for Higher Education's 30 members

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
	X																

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
										X	satellite					

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
Higher education				hospital			X	X	X			

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X	X	X	X		X	X	X	X	X				

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Christus St. Michael

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Christus St. Michael	Texarkana, TX	Jacobs, Robert	rcjacobs@christushealth.org			

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
				X													

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
					X	X		X								

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
patient demographics				rural clinic	physician group	outpatient clinic	X	X				

Educational applications				Number of students/professionals trained per year	Administrative applications				Utilization for applications				
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
		X				X							

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments

Name of Project: Northwest Regional Hospital

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Northwest Regional Hospital		Wilson, David MD				Bay Area Hospital (2) Doctors Hospital

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
				X													

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
					X											

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
emergency	radiology			hospital	physician group		X			750		

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments
Encarración Gamboa

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: TRHTA

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Linden Municipal Hospital	Linden, TX 75563	Arnold, Richard	r.arnold@trhta.net		Oct-99	

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
X																$50,000	

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
								X								LAN Hospital Networking

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
LAN Hospital Networking				hospital					X			

Educational applications				Number of students/professionals trained per year	Administrative applications				Utilization for applications				
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X													

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	Others

other comments
going to start Texas Tech CHRI MedNet Education Project

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Christus St. Michael Rehabilitation Hospital

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Christus St. Michael Rehabilitation Hospital		Jacobs, Robert	rcjacobs@christushealth.org			

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
				hospital								

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments
going to start Texas Tech CHRI MedNet Education Project

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Telemedicine/Internet connectivity

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
Fisher Co. hospital	Rotan, TX 79546	Helms, Ella Raye				Clearfork Health Center, Rotan (2) Roby Rural Health Clinic, Roby (3) Kent Co Rural Health Clinic, Jayton (4) Fisher Co. Home Health, Rotan

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		
					TIF funds											$394,000	

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
							X	X								

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
				hospital	rural clinic	trauma center	X					

Educational applications				Number of students/professionals trained per year	Administrative applications				Utilization for applications				
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other
X													

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	others

other comments

Appendix 2-D: Telemedicine/ Telehealth Projects In Texas, Summary of Survey Responses

Name of Project: Telehealth

Institution	Project Location	Project Director	Email	URL	Starting Date	Participating locations
University Health System	San Antonio, TX 78229	Phillips, William	waphillips@university-health-sys.com		Apr-00	7 clinics

Funding

Funding Source & percentage						Revenues				Cost recovery						Total project cost	Operating cost per month
State Grant	State contract	Federal government	private/ non-profit	private/commercial	Others	Fee for service	Contract	Medicaid/Medicare	Private Insurance	professional services	network charges	equipment charges	facility charges	primary care	Other		

Technology

Technology used				Connectivity								Network type				Utilization of network(% time)
S & F	Interactive Video	Desktop	Others	POTS	ISDN	DSL	Fract'l T1	Full T1	ATM	Internet IP	Others	Dedicated/proprietary	Public network	Combination	Others	
X			X													290,000

Applications

Clinical applications				Settings			Presenters			Number of beneficiaries per month		
							primary care physician	allied health professionals	others	# patients	# consultations	any other measure
								X	X			

Educational applications				Number of students/professionals trained per year	Administrative applications					Utilization for applications			
Continuing ed	Health prof. degree prog	Staff training	Patient education		meetings	patient records	medical databases	financial mgmt	Other	Clinical	Educational	Administrative	Other

Evaluation

Last project evaluation	By whom	Criteria used					
		cost saving	patient satisfaction	provider satisfaction	quality of care	program effectiveness	Others

other comments

Appendix II-E:
Explanation of Telecommunications Infrastructure Fund Board Public Health Grant Types (PH1-PH5)

Appendix II-E: Explanation of Telecommunications Infrastructure Fund Board Public Health Grant Types (PH1-PH5)

Competitive - Clinical Telemedicine - Demonstration Project Grants (PH1)

Proposals involving multiple sites were considered and encouraged but **funding for an individual site must not exceed $150,000 over the two-year grant period**. Grant funds were used for equipment integral to the delivery of healthcare via telecommunications technology, including telecommunications equipment, medical peripherals, cameras, computers, computer peripherals, operating systems, software applications and communication charges.

Non-Competitive - Telemedicine Internet - Connectivity Grants (PH2)

Non-competitive grants for telehealth/telemedicine connectivity via Internet that enables health care facilities to enhance current or establish new access to health information systems. This RFP seeks proposals for Internet connectivity, and **not** for clinical demonstrations

Applicants may select from the following items to design a basic package:

1. The first year of recurring telecommunications costs if the health care facility has no Internet point of presence or less than a T-1 connection
2. Installation fees
3. Servers with at minimum a three-year on-site maintenance agreement
4. Printers, cameras, scanners and other equipment if appropriate and justified
5. CSU/DSU
6. Internet Router
7. Hub or Switch
8. Appropriate training
9. Other allowable expenses determined by TIFB.

Non-Competitive Grant for Not-for-Profit Hospitals and Clinics (PH3)

Non-competitive grant for **Non-Profit Hospitals and Healthcare Clinics** that have **not** received previous TIFB funding, in order to increase **connectivity to the Internet**; provide **public access to medical information**; and/or provide **telemedicine services** for direct patient care.

TIFB applicants may select from a configuration list in order to do one or more of the following:

1. Establish a local area network of at least 100 Mbps that is connected to the Internet. **Applicants not having a local area network of 100 Mbps or greater connected to the Internet must meet the minimum criteria prior to expending funds in other allowable areas.** One of the

purposes of this program is to allow Non-Profit Healthcare Clinics to participate in statewide public health initiatives including the state's Health Alert Network.

2. Provide "inside-the-walls connectivity" for **public access** for medical information of value to the public as well as healthcare professionals by establishing a LAN or LANs in the clinic facilities, together with public access terminals or kiosks.
3. Install telemedicine telecommunications equipment in order to provide clinical services for direct patient care.

Non-Competitive Grant for Health Science Centers (PH4)

Non-competitive grants for Texas Academic **Health Science Centers,** in order to increase **connectivity to the Internet**; provide **public access to medical information**; support distance education and/or provide **telemedicine services** for direct patient care.

TIF applicants may select from a configuration list in order to do one or more of the following:

1. Establish a local area network of at least 100 Mbps that is connected to the Internet. **Applicants not having a local area network of 100 Mbps or greater connected to the Internet must meet the minimum criteria prior to expending funds in other allowable areas.** HSC's may further upgrade existing networks to support streaming audio and video to the desktop, advanced medical imaging, and support for H.323 and T.120 videoconferencing standards. They may also include in their project, connectivity that would facilitate participation in statewide public health initiatives.
2. Provide "inside-the-walls connectivity" for **public access** for medical information to the public as well as health care professionals by establishing a LAN or LANs in their facilities, together with public access terminals or kiosks.
3. Purchase new and/or upgrade existing equipment for classrooms /conference rooms /clinic facilities to support synchronous, interactive videoconferencing including multi-media support capabilities. (See the allowable equipment list in this RFP.)
4. Establish or upgrade telemedicine equipment for conference rooms or clinics in order to provide clinical services for patient care. This can include special telemedicine peripheral devices. (See the allowable equipment list).

Non-Competitive Grant for Local Health Departments (PH5)

The Telecommunications Infrastructure Fund Board (TIF) announces the vailability of grant funding for Local Health Departments (LHD) to increase Internet connectivity, provide access to medical information, to provide direct care services to patients and for participation in the state Health Alert Network. No eligible entity may have previously received non-competitive TIF Board funding.

TIF applicants may select from a configuration list in order to do one or more of the following:

1. Establish a local area network (LAN) of at least 100 Mbps that is connected to the Internet. One of the purposes of this program is to allow Local Health Departments to participate in statewide public health initiatives including the state's Health Alert Network.

Provide "inside-the-walls connectivity" for **public access** for medical information of value to the public as well as healthcare professionals by establishing a LAN or LANs in the clinic facilities, together with public access terminals or kiosks.

Appendix IV-A:
Licensing and Scope of Practice Survey and Responses

Appendix IV-A: Licensing and Scope of Practice Survey and Responses

Licensing and scope of practice present two very important issues that need to be addressed prior to establishing a statewide Telehealth/Telemedicine network. Because licensing and scope of practice are not a prerogative of the Federal government, each state has their own statutes and rules concerning these issues. Telehealth/Telemedicine networks work across state lines to deliver health care and health information to the public. These networks may also be used to observe students in the health professions working with their patients/clients. It is therefore extremely important that this issue be resolved in order to implement fully a Telehealth/Telemedicine network in Texas.

Current Status

In order to more fully understand the current status of licensing in this state, a survey was developed and sent to the Executive Director of all Boards belonging to the Health Professions Council. The Boards responding included:

- Texas Board of Chiropractic Examiners
- Texas State Board of Dental Examiners
- Texas State Board of Medical Examiners
- Board of Nurse Examiners for the State of Texas
- Texas Optometry Board
- Texas State Board of Pharmacy
- Executive Council of Physical Therapy and Occupational Therapy Examiners
- Texas State Board of Podiatric Medical Examiners
- Texas State Board of Examiners of Psychologists
- Texas State Board of Veterinary Medical Examiners
- Texas Board of Vocational Nurse Examiners
- Texas Funeral Service Commission
- Texas Department of Health, Professional Licensing & Certification Division
- Texas Board of Licensure for Professional Medical Physicists
- Sanitarian Registration Program
- Texas State Board of Examiners of Perfusionists
- State Committee of Examiners on the Fitting and Dispensing of Hearing Instruments
- Texas State Board of Examiners of Marriage and Family Therapists

- Massage Therapy Program
- Texas Midwifery Board
- Medical Radiologic Technologist Certification Program
- Respiratory Care Practitioners Advisory Committee
- Code Enforcement Officers' Registration Program
- Texas State Board of Examiners of Professional Counselors
- Contact Lens Permit Program
- Opticians Registry Program
- State Board of Examiners for Speech-Language Pathology
- Texas State Board of Examiners of Dieticians
- Advisory Board of Athletic Trainers
- Texas State Board of Social Worker Examiners
- Texas Board of Orthotics and Prosthetics
- Providers of Health Related Services
- Council on Sex Offender Treatment

The survey questions and answers provided follow.

Issue 1
Does your board/boards have a multi-state compact?

All boards answered, "No," except for the Board of Nurse Examiners (BNE) for the State of Texas and the Texas Board of Vocational Nurse Examiners.

If so, please describe the compact. Who is included?

See attached surveys from the Board of Nurse Examiners for the State of Texas and the Texas Board of Vocational Nurse Examiners.

If your board does not have a multi-state compact, are there any discussions or planning toward a multi-state licensure compact? What are the benefits and downsides of having a multi-state licensure compact?

All boards answered, "No," except for the Board of Nurse Examiners for the State of Texas and the Texas Board of Vocational Nurse Examiners. No Boards have plans for multi-state compacts at this time.

Benefits listed included:

Board of Vocational Nurse Examiners: Ease of temporary employment/relocation for licensees.

Texas Midwifery Board: Ease of temporary employment/relocation for licensees.
Code enforcement Officers: Ease of temporary employment/relocation for licensees

Problems listed included:

- Board of Medical Examiners: A lack of a consistent national standard for licensure and loss of revenue.
- Board of Podiatric Medical Examiners: Their position is that, at present, the practice of podiatric medicine around the country is too varied and the scope, itself, is too varied to allow for any multi-state compact or agreement.
- Funeral Service Commission: There are no conceivable reciprocity benefits. States have widely differing educational and licensing requirements. Sanitarian Registration Program: Downside would be a possible loss of revenue to the Department, additional regulatory expense related to interfacing with out-of-state licensing board(s) in the event of a complaint.
- Massage Therapy Program: Enforcing practice requirements for individual states would be difficult.
- Texas Midwifery Board: Possible loss of revenue to the board. Additional regulatory expense related to interfacing with out-of-state licensing board(s) in the event of a complaint.
- Code Enforcement Officers: Possible loss of revenue to the board. Additional regulatory expense related to interfacing with out-of-state licensing board(s) in the event of a complaint.
- Texas State Board of Social Worker Examiners: The primary downside is the lack of knowledge of who is practicing in your state with or without your license.

Other comments:

Texas State Board of Examiners of Perfusionists: There is a national examination. All are held to the same standards. The National examination and certification is by the American Board of Cardiovascular Perfusion – ABCP. The National Exam has made it easier for mobility of licensees.

Texas State Board of Marriage and Family Therapists: There is a national examination. All are held to the same standards. There will be a meeting of the Association of MFT Regulatory boards in October 2001 in Nashville, TN – I am sure they will discuss the benefits of national licensure. The National Exam has made it easier for mobility of licensees.

Issue 2:

Does your board/boards offer a Telemedicine license? If your board does not offer a Telemedicine license, are there any discussions or planning toward offering a Telemedicine/ Telehealth license? What are the benefits and problems of having a Telemedicine/Telehealth license?

All boards answered no except the Texas State Board of Medical Examiners and the Texas State Board of Pharmacy. No boards have plans for Telemedicine licenses at this time.

The Texas State Board of Medical Examiners has a Telemedicine license.

The Texas State Board of Pharmacy states, "no for Pharmacists. Out-of-state pharmacies that dispense drugs to Texas Residents are required to be licensed as Class E (Non-Resident) Pharmacies.

The Texas State Board of Podiatric Medical Examiners states that their board is looking into this issue, but their Assistant Attorney General presently maintains that they do not have statutory authority to do this.

They would need to have statutory language to allow for this.

The Texas State Board of Examiners of Marriage and Family Therapists says that they "do not license or regulate teletherapy, but TAC 801, 801.44 (I) requires their therapists who do interactive therapy via telephone of internet to provide the client with his/her license number and how to contact the board by telephone or mail, and they must adhere to all provisions of 22 TAC 801.

Texas State Board of Examiners of Professional Counselors states that Licensed Professional Counselors may engage in telepractice as described in 22 TAC 681.32(g) under the authority of the license they already possess.

State Board of Examiners of Speech Language Pathology: No. The item will be discussed at the next scheduled meeting in November.

Issue 3:

What statutes, board rules, or board policies do you have that involve reciprocity?
Responses indicated as noted.

Board of Chiropractic Examiners: None that involve telemedicine.

BNE: See attached survey.

Optometry: The statutes contain provisions for "licensure without exam," a form of endorsement, but it is not based on reciprocity.

Pharmacy: Occupations Code, Subchapter J, Chapter 558, and Subchapter C TAC, Title 22, Part 15, 283.8.

Psychology: The Psychology Board has reciprocity agreements with 6-10 states.

Board of Vocational Nurse Examiners: LPN/LVNs are allowed to endorse into the state of Texas if the following conditions are met:

1. An unencumbered license.
2. The required curricular content and hours.
3. Current practice (within 5 years).

FSC: Texas Occupations Code Chapter 651.259 and 651.264; Texas Administrative Code, Title 22, Part 10, Chapter 203.15, under proposal to repeal, covered sufficiently by statute.

Texas Board of Licensure for Professional Medical Perfusionists: A person with a license issued by another state is qualified for a license.

Sanitarian Registration Program: The statute authorizes the Board of Health to enter into agreements for reciprocity with other states having a registered Sanitarian's Act. The rules authorize that a licensee or registrant from a state having equivalent or higher requirements may upon proper application be granted a registration.

Perfusionists: Individuals who are not Texas residents and authorized to perform perfusion in another state are exempt from licensure but must notify the TSBEP of any intent to practice in Texas and upon approval may not exceed 10 days in any one year.

State Committee of Examiners on the Fitting and Dispensing of Hearing Instruments: Occupations Code, Chapter 402, Subchapter 402.209 Licensing by Reciprocity.

Texas State Board of Examiners of Marriage and Family Therapists: Occupations Code, Chapter 502 Subchapter 502.259 and 22 TAC 801 Subchapter 801.203 speaks to licensure by endorsement.

Massage Therapy Program: The Massage Therapy Act, Occupations Code, Chapter 455 and the rules promulgated under the Act, TAC, Chapter 141.

Texas Midwifery Board: Statute authorizes the board to adopt rules for reciprocity for initial documentation. Current rules permit only the national direct entry midwifery credential, the North American Registry of Midwifes' "Certified Professional Midwife" (CPM).

Medical Radiologic Technologist Certification Program: A person with a license issued by another state is qualified for a license.

Respiratory Care Practitioners Advisory Committee: §123.7(d)(3) The department shall issue a regular certificate to practice respiratory care to an applicant who is in good standing and holds a valid license or other form of registration to practice respiratory care in another state, territory, or country, whose requirements for licensure or certification were at the time of approval substantially equal to the requirements set forth in the Act and this chapter.

Code Enforcement Officers' Registration Program: The statute authorizes that a licensee or registrant from another state having equivalent or higher requirements may be granted a registration. The rules restate the law.

Texas State Board of Examiners of Professional Counselors: Occupations Code Chapter 503.310

State Board of Examiners for Speech-Language Pathology: Chapter 401, Texas Occupations Code, does not address reciprocity. We do issue a provisional license to out-of-state occupants. Qualifications: If applicant holds a valid license in another state with requirements equivalent to those in Texas, a provisional license may be issued for 180 days.

Dieticians: A person who holds a license in another state is eligible for a temporary license.

Texas State Board of Social Worker Examiners: The board has the right of granting a provisional license under Occupations Code 505.358, however, has never done so. The board does grant Temporary licensure base on Occupation Code, 505.357. The board will only endorse the examination score of an applicant from another state. All other requirements are required to become licensed. Under 22 TAC 781 (§781.301) the board will accept supervision towards advanced licensure if received in another state, if done with in the rules of that state.

Texas Board of Orthotics and Prosthetics: A person who holds a license in another state is eligible for a temporary license.

Council on Sex Offender Treatment: The Texas Administrative Code, § 810.3 (1) The Council may waive any prerequisite to registration for an applicant after receiving the applicant's credentials and determining that the applicant holds a valid registration from another state that has registration requirements substantially equivalent to those of this state.

Issue 4:

What statutes, board rules or board policies address practitioners providing services through Telemedicine/Telehealth? Are there any impediments or restrictions from practicing via Telemedicine/Telehealth?

None except as noted.

Board of Medical Examiners: Telemedicine Law: Occupations Code 151.056 and 153.004; Board rule 174.1-174.15

Board of Nurse Examiners: See attachment.

None at present. Board committee is looking into this with the reservations of our Assistant Attorney General re not sufficient authority to do so.

Psychology: No statutory impediments, other than the licensing scheme itself (the Board does not have the authority to create a separate license like the Medical Board for purveyors of telehealth). The Board has a single policy on telehealth that it developed in 1998-1999. It simply calls teletherapy "the practice of psychology" and points its practitioners to several Rules of Conduct that may apply in teletherapy engagements.

Texas State Board of Examiners of Marriage and Family Therapists: 22 TAC 801, subchapter 801.44 (l).

Texas Midwifery Board: Yes, the rules require prenatal, infant, and postpartum assessments, which must be performed in person.

Texas State Board of Examiners of Professional Counselors: See 22 TAC 681.32(g), described above. Telepractice is not addressed in the statute. See also HB 100 (Maxey), 77th Leg. LPCs involved in telepractice must comply with all requirements of Occupations Code, Chapter 503 and 22 TAC Chapter 681.

Texas State Board of Social Worker Examiners: Under 22 TAC 781 (§781.312 (f)) requires that any licensee providing services on the Internet to place contact information, either through a link to the board's web page or telephone and address information in the body of the web page or the signature of the e-mail.

Issue 5:

What education requirements do your licensees have related to Telemedicine?

None, except as noted.

Does your board recognize continuing education that is received via telecommunications technology?

Board of Chiropractic Examiners: Not yet, but we are exploring this matter and it will probably be adopted soon

Board of Medical Examiners: Yes, if accredited.

Board of Nurse Examiners: Yes.

Optometry: Yes.

Pharmacy: Yes, if an approved provider offers a course.

Board of Podiatric Medical Examiners: Yes, under very limited and strict oversight. Primarily, our board requires that CME's be obtained in a live interactive setting.

Psychology: Yes.

BVNE: Yes, if by an approved provider.

FSC: Yes.

Texas Board of Licensure for Professional Medical Physicists: None

Sanitarian Registration Program: Yes.

Texas State Board of Examiners of Perfusionists: Yes- CE is documented to ABCP and in Category III – Individual Education – 15 hours over a three-year period is allowed through the use of audiovisual devices or electronic forums.

State Committee of Examiners on the Fitting and Dispensing of Hearing Instruments: Not at this time.

Texas State Board of Examiners of Marriage and Family Therapists: Yes – 22 TAC 801 Subchapter 801.264 (5) – no more then 6 hours per year (15 CE hours required annually for renewal of license).

Massage Therapy Program: Some may be recognized, but only if the event/program/activity is interactive. We consider it important that there be an individual instructor or presenter to provide feedback on massage therapy techniques and strokes. We do not recognize programs that are available on the Internet that are strictly self or independent study.
Texas Midwifery Board: Yes.
Medical Radiologic Technologist Certification Program: None.
Respiratory Care Practitioners Advisory Committee: Up to four credit hours during each renewal period of self directed Internet based or computer-based studies.
Code Enforcement Officers' Registration Program: Unknown; continuing education will be required for renewal starting in September 2002, and rules are not final.
Texas State Board of Examiners of Professional Counselors: Yes.
Contact Lens Permit Program: No continuing education is required.
Opticians Registry Program: N/A.
State Board of Examiners for Speech-Language Pathology: Only if appropriate verification can be obtained from a Board approved sponsor.
Texas State Board of Examiners of Dieticians: Yes, up to three hours per year is allowed.
Advisory Board of Athletic Trainers: No.
Texas State Board of Social Worker Examiners: Yes.
Texas Board of Orthotics and Prosthetics: Yes. Up to 25% of the required hours may be through this method.
Providers of Health Related Services: N/A
Council on Sex Offender Treatment: The Council recognizes continuing education credits that are instructor based activates such as conferences, symposia, seminars and workshops. Telecommunications conferences, symposia, seminars and workshops that are live may be counted as continuing education credits.

Issue 6:
How does your board verify and monitor the credentials of out of state health professionals that you recognize?

This question was not applicable to respondents except as noted. Some of the respondents answered the question regarding their recognition of applicants for licensure. I have included only responses related to recognition of practitioners living/located in other states but practicing in Texas.

BME: The BME issues a Telemedicine license.
BNE: See attachment.
Pharmacy: For reciprocity, TSBP requires the applicant to be licensed in another state and for that state's licensure requirements at the time of licensing of that individual to be the same as the licensing

requirements in Texas. In addition, the license is verified and checked through the National Association of Boards of Pharmacy.
State Board of Examiners for Speech-Language Pathology: Applicant for provisional license must submit an original letter from the state in which he or she holds a license verifying licensee is in good standing. The applicant is also required to have a sponsor in Texas unless this would create a hardship.

Issue 7:
How does your board detect (or plan to detect in the future) unlicensed online providers?

All of the boards responded that they relied on complaints. Generally, the boards do not have mechanisms or resources to track Internet activity to detect unlicensed practitioners serving Texans. Other comments are listed below.

TSBCE: We do not recognize online providers.
BME: Our investigations are complaints driven. Unlicensed practice is not in our jurisdiction. Complaints about unlicensed practice would be referred to criminal justice authorities.
Pharmacy: Currently, we act on complaints. In addition, the National Association of Boards of Pharmacy and other Boards of Pharmacy forward information to us.
TSBPME: A board committee is looking at this issue. Do not presently have the resources to follow this. We would have to rely on specific complaints being received on a specific practitioner.
Texas State Board of Examiners of Professional Counselors: Beyond monitoring incoming complaints, this issue has not been considered by the board. The board has established a committee, Professional and Regulatory Trends that will examine this kind of issue. Detecting unlicensed online providers involves determining whether the online provider is subject to or exempt from Occupations Code, Chapter 53, and whether they are providing professional counseling services (as that term is defined in law) to citizens in the state of Texas. Unlicensed practice carries a criminal penalty as well as sanctions the board may impose, and the role of criminal authorities should also be examined
The current status of licensure and scope of practice is described in the Telemedicine/Telehealth Law Occupational Code that specifically states that physicians must deliver the service. It is important that all licensed/credentialed health professionals be included as “presenters”. This would involve a change of the current law to include other health professionals.

There are a variety of Telehealth/Telemedicine programs in Texas. In order to have a coordinated effort, a survey of programs seems to be important. This survey would need to specify who is providing the program and what they are doing in terms of their specific scope of practice.

Continuing Education

The various professional boards would need to determine whether continuing education could be granted for Telehealth/Telemedicine programs. Additionally, it would seem important for professional boards to determine whether persons delivering Telehealth/Telemedicine would need continuing education to do this.

Future Expectations

The practice acts of the various health professionals must be looked at in terms of interstate, multistate, and/or international licensure. This would necessitate the health professionals' organizations and/or boards cooperating in the effort. Some health professionals have national licensure or certification but not licensure in Texas. How these groups might be addressed adds another dimension to the discussion.

It is believed that standards of care (as determined by professional organizations and licensure boards) should be maintained. Periodic evaluation of Telehealth/Telemedicine programs must be an integral part of the process. Additionally there would need to be a process for expanding and/or adding new programs to the network.

Barriers to Success/Strategies to Overcome Barriers

The two biggest problems appear to be a lack of control over practice and a loss of revenue if multistate licenses are implemented.

A lack of interstate, multistate, and/or international licensure is a barrier that may be overcome by looking at the model currently being tested in Texas by the Board of Nurse Examiners.

Turf issues might be solved by the involvement of all stakeholders early in the process. This would include varying health professionals, representatives from insurance plans (to address reimbursement issues), educational representatives, licensure board representation, representatives from state government, and others including public members. It would be important that the public accept Telehealth/Telemedicine for it to be effective. Involvement of media may help to inform the public.

Technology itself presents a barrier to success. The technology may be intimidating to presenters or patients/clients. Additionally, technology is expensive and becomes obsolete quickly.

A final issue may be that if Telehealth/Telemedicine are used extensively, there may be a disincentive to continue to get more health professionals into underserved areas of the state.

Appendix V-A:
Telemedicine Infrastructure Basics

Appendix V-A: Telemedicine Infrastructure Basics

Glossary

American National Standards Institute (ANSI): Numerous committees and working groups that establish acceptance of electronic data standards.

Application Service Provider (ASP): An organization that provides access to applications residing at the provider's location and charges for use, but the client user enters data and controls processing and outputting.

Asynchronous Transfer Mode (ATM): A telecommunications method for transferring data in the form of images, sound and text simultaneously at high speeds.

Authentication: A confirmation of a computer users identity, which often involves passwords, keys, certificates, smart cards, or biometric measurements.

Bandwidth: A measurement of how much data can be transmitted and at what speed over a network. Usually measured in bits per second (bps). Often called the size of the pipe.

Bit: The smallest piece of computerized information and corresponds to a circuit being on (1) or off (0).

Bits-per-second (bps): describes how many bits can travel across a carrier such as a network channel in one second. (Notice that bits per second uses the small b as (bps) in contrast to Bytes per second, which uses the large Bps.)

Browser: A software program that interprets documents written in an Internet standard language such as HTML. The two main browsers that make viewing documents possible on the Internet are currently the Microsoft's Internet Explorer and Netscape's Communicator.

Byte: Short for binary digit eight and equals eight bits.

Central Processing Unit (CPU): The hardware inside a computer that processes the commands and data.

Certificate of Authority (CA): An independent licensing agency that vouches for a person's identity by storing the person's public and private encryption keys and then issuing a digital certificate of authenticity.

Client/server: A method of computing where central processing is done at a remote server and the input and output is viewed at the client machine.

CODEC: An acronym for Coder/Decoder. This device digitizes and compresses audio and video information before transmission. The codec is also used to transform digital data received from the remote site into analog audio and video for display.

Compression: The process for reducing the amount of data comprising audio and video signals. This process is essential in providing cost-effective video conferencing, telemedicine and visual collaboration.

Desktop conferencing: A desktop computer workstation configured to provide video conferencing. These systems are excellent for large integrated networks as they provide multiple points of access. Desktop conferencing is limited to 2-3 participants per workstation.

Extranet: Similar to an intranet but allows access from outside to those who have a valid password or other identification.

File Server: A computer on a network that stores and shares common files that multiple users on the network can access.

File Transfer Protocol (FTP): A standard application for transferring files between computers on the Internet.

Firewall: A gateway that restricts data communication traffic to and from one of the connected networks (the one said to be "inside" the firewall), and thus protects that network's system resources against threats from another network (one that is said to be "outside" the firewall).

Frame Rate: The number of images (or frames) displayed in one second of video. Frame rate is directly related to motion and motion artifact. Standard video provides 30 frames per second (fps). Many video conferencing systems offer less than 30 fps. The H.320 standard supports frame rates of 7.5, 10, 15, and 30.

Gigabyte (GB): An amount of memory storage equal to 1,000 megabytes (MB).

Group Conferencing: Video conferencing systems specifically designed for conference rooms or auditoriums. These systems may have enhanced features for multiple video sources and multiple microphones. These systems easily support moderate to large groups.

GUI (Graphical User Interface): The part of a computer application seen on the screen and interacted with by the user.

HTML: A hypertext markup language that is the most common and basic scripting language on the World Wide Web (www). It is interpreted by a browser application on the users computer.

http (Hypertext Transfer Protocol): A standard protocol on the www indicating the language being transferred such as HTML. It is also used in the addressing standard on the web.

ISDN (Integrated Services Digital Network): A digital telecommunications route that can consistently carry video, audio and text. The basic speed is 128 Kbps although multiple lines can be combined to handle more bandwidth.

Internet Service Provider (ISP): A company or agency that provides network connection to the Internet and the www.

Intranet: A member-only network that functions on the same protocols and with the same tools as the Internet

Local Area Network (LAN): A network of computers and other peripherals in close proximity. Facilitates the fast transfer of data to file servers, radiographic hardware or shared printing devices.

Multipoint Control Unit (MCU): A device that works as an audio bridge and video switch for linking multiple sites together for a videoconference. The MCU allows all sites to hear each other and simultaneously switches the video views between the participating sites. MCUs support varying numbers of simultaneous calls.

Network: A general term for computer system connected together by a cable, or some form of wireless technology and shared by all users.

Node: A connection point on a network. Each node has its own address.

Operating System: The foundational program in a computer that provides the basic rules for performing all basic functions such as input and output of data.

Pixel: The smallest unit of an image display. Normally determines the resolution quality of an image as an x-ray is displayed at 2k x 2k pixels resolution.

Plain Old Telephone Service (POTS): The standard telephone service available in most regions. This is suitable for audio conferencing, store and forward communication, Internet, and low bandwidth video conferencing.

Point-to-Point Conferencing: A videoconference between two sites. This type of connection does not require the use of a video bridge (MCU) and works much like a phone call. One participant places a video call that is answered by the other user.

Proxy Server: A computer process –often used as, or as part of, a firewall – that relays a protocol between client and server computer systems, by appearing to the client to be the server and appearing to the server to be the client.

TCP/IP (Transmission Control Protocol/Internet Protocol): The protocol standard for transferring packets of data on the Internet and many other networks.

Terabyte (TB): One trillion bytes or 1,000 gigabytes (GB)

Thin Client: A minimally equipped personal computer designed to be connected to a server or to the Internet for interring data or operation within an ASP model where the majority of processing and storage is done at the far end of the connection.

URL (Uniform Resource Locator): The unique address on the World Wide Web to locate every page.

VPN (Virtual Private Network): A type of extranet that requires password access but uses "tunneling" software to restrict access.

WAN (Wide Area Network): A network that links computers over a large distance, often using the Internet as part of the network.

World Wide Web (www): An international group of databases within the Internet that use hypertext standards to access pages or files using a browser program and a standard URL address.

XML (extensible Markup Language): A new version of the SGML tag language being used on the www. XML allows ease of conversion between standards and other customizable tag features that is making it an important advancement in health document coding.

Store and Forward

Store and forward/still image capture may include images, scanned documents, free text, soap notes and vital signs that are stored in a patient electronic record. Some examples of most frequently used still image capture/store and forward include dermatology, wound care, ophthalmology, cytology, pathology and radiology.

This form of technology captures the essence of an event with still images, audio clips, and full motion video clips. These elements coupled with additional supporting data elements can be used as visual records for asynchronous telemedicine/telehealth data communications. These communications can combine high-resolution images, audio, and video that are of medical diagnostic quality along with text and other supporting data. The visual components work through a frame grabber or image digitizing board, which captures the image as an electronic file. Because single images contain no motion, the amount of time and bandwidth required to transmit an image is not as important as it is when sending full motion video and audio. Still image capture and store and forward consultations can be sent via electronic mail (e-mail), direct file transfer via the Internet or through a dial-up connection via modem, or as an integrated feature during a videoconference. When used in concert with video conferencing, it provides a comprehensive visual collaboration application. Some of the medical applications that most frequently use still image capture and store and forward technology include dermatology, ophthalmology, pathology, radiology, sonography, and disease state management.

Real Time: Video Conferencing

Video conferencing is the use of two-way interactive video and audio communications as a means of connecting people at different sites. Video conferencing is the base level hardware used in real time telemedicine applications. Most video conferencing systems use compressed video. When video is compressed it is generally converted from analog to digital information. In addition, some of the original spatial and temporal information is coded in ways to reduce the amount of data that must be transmitted. Compression allows for two-way video to be transmitted over standard telephone lines. This significantly reduces the cost for conferencing between sites.

Peripheral Devices

Many videoconferences use some sort of peripheral device. Peripheral devices are those pieces of equipment or hardware that allow for the imaging of events or the collection of data. In the field of health care, these devices are divided into two categories: medical peripherals and non-medical peripherals. Medical peripherals or equipment used in conjunction with telemedicine practices must meet 510K Federal Certification. In addition, medical printers used for diagnosis must meet 510K Federal Certification. Examples of medical peripherals include spirometers, x-ray, digital x-ray scanners, ultrasound devices, patient examination cameras, ophthalmoscope, otoscopes, dermascopes, fundus scopes, diagnostic printers, and stethoscopes. Non-medical peripherals, including all other equipment used in conjunction with telemedicine applications must support the performance of the implementation.

Medical Peripherals

Medical peripherals perform one of three functions: imaging, auscultation and data collection. They either collect medical images such as those captured by an otoscope (for the ears), ophthalmoscope (for the eyes), dermascope (for the skin) or any other kind of medical imaging device. Other devices may amplify bodily sounds. The most common device is a stethoscope. In concert with video conferencing, engineers have developed an electronic stethoscope that enables a remote specialist to listen to heart, lung, and bowel sounds while conducting a telemedicine examination. The third type of medical peripheral collects biometric data. Common devices are thermometers, blood pressure cuffs, EKGs, and pulse oximeters. These devices provide a continuous flow of data that can be used in monitoring the health status of a patient at any point during an examination or medical procedure. Each type of peripheral can be interfaced with a telemedicine system to provide medically useful images, sounds, and data.

Non-Medical Peripherals

Many devices and instruments are used in conjunction with video conferencing to assist in communication of information and ideas. Although these devices are very useful, they are not made especially for health care. Many institutions use inexpensive, commercially available video cameras as an essential part of their telemedicine network. Unless a camera is to be used under special medical conditions, such as performing an endoscopic procedure, regular cameras are usually very acceptable choices. Another non-medical peripheral is the video tape recorder. A video can be made of a specific patient or procedure that would not be available at the time a consultation is scheduled. It can also be used to make a record of the consult and the patient at the time of the first visit.

Often it is essential to share printed information during a telemedicine consultation or educational program. A video presentation stand, document camera similar in design to an overhead projector, can be used to collect an image of a document or other object and send it across the video connection. During formal presentations many educators will use slide presentations projected from their personal computer. A simple device called a scan converter will allow the computer to transmit the presentation directly through the video conferencing system.

Network Protocols

In order for networks to operate across various hardware systems they all need to use standard communication protocols. A network communication protocol is a specification or algorithm for how the data is to be exchanged. The two most common WAN protocols are TCP/IP and ATM. TCP/IP stands for Transmission Control Protocol/Internet Protocol. It is the standard used across the Internet. The TCP/IP protocol groups' messages and files that are to be sent across the network into packets of data, and these packets are then addressed and sent out across the network by the most available route at the time of transmission. If there is a problem in getting the packets to their destination via the primary route, another route can be selected. When the packets all arrive at the destination they are re-assembled into the original file or message format.

Asynchronous Transfer Mode, or ATM, is a protocol that creates a fixed path between the source and the destination. In addition, the packets used in ATM are fixed in size, resulting in a consistent arrival speed. Sound and video require this consistent speed to avoid the jerkiness and poor performance often associated with the TCP/IP network protocol. New methods of adding what is called Quality of Service (QOS) to Internet systems have allowed similar consistency for sound and video files to TCP/IP networks as achieved with the ATM protocol.

Bandwidth

Bandwidth is a measure of how much information can be transmitted simultaneously through a communication channel or across the network. It is measured in bits-per-second (bps). Because bandwidth is a limited resource and facilities are charged by providers based upon the size and type of connection, a first step is to understand what amount of bandwidth exists for your applications. Your facility may be purchasing a specific amount that provides adequate connection functionality for e-mail and text file transfers, but not enough for storing and retrieving images across the network or for an interactive telemedicine video connection.

Bandwidth remains one of the greatest barriers to the wide deployment of telecommunications technologies. For example, most homes with Internet access use a 56 Kbps modem (one thousand bits per second). While this speed is acceptable for e-mail communication, transferring small text files, and leisurely browsing the Internet for information, it will not be adequate or reliable enough to deliver services that will require large data transfers. The next common connection is ISDN (Integrated Services Digital Network). ISDN also uses a telephone line and a digital modem. ISDN connections range from 128 Kbps up to over 1.54 Mbps (million bits per second) using multiple ISDN lines joined together. Common speeds for data transfer range from 128 Kbps to 1.54 Mbps and are adequate for the high quality transfer of information. However, dial-up access is still a barrier to deployment since new technologies will require constant contact with the information source in order to provide 24-hour monitoring and reporting of needed data.

DSL (Digital Subscriber Line) and Cable are always-on broadband connections coming from telephone companies and video/television cable providers that provide connection speeds higher than ISDN (typically 700 Kbps to 1.1Mbps). These connections are often private residence options for connecting into the Internet and for telecommuting of health employees and physicians needing to connect from home.

Most commercial, institutional, and large WAN's are connected using what is called a T1 (1.54 Mbps) connection. The T1 line is the workhorse of the telecommunications industry and allows for efficient business application communication, graphic intensive programs and modest telemedicine applications. It is important to point out that in most TCP/IP network protocols the bandwidth is shared by all users and therefore the actual bandwidth speed at any one time may be considerably below the theoretical maximum rate for the system as a whole. In addition, various rules may be operating on some of the network hardware that controls how bandwidth is allocated to various applications. For instance video and sound files demand considerably more than text material.

Video Conferencing Standards

There are many technical standards that have been developed for video conferencing. They can be defined in three broad categories:

Video – These standards specify methods of video compression and communication.

- H.320 – The standard for video communication over ISDN.
- H.261 – The compression component of H.320.
- H.323 – The standard for compressed video over Local Area Networks using Internet protocols.
- H.324 - The standard specifies a common method for simultaneously sharing video, voice and data over a single analog telephone line.

Audio – These standards specify methods of compression and communication for the sound contained in a videoconference.

- G.711 – Provides telephone quality audio (narrow band, 3.4 kHz).
- G.722 – Provides stereo quality audio (wide band, 7kHz).
- G.728 – Provides audio for low bandwidth calls (16 kbps).

Data – This standard allows for collaboration and sharing of data files during a videoconference.

- T-120 – Data sharing (file exchanges, white boards and annotation, and still image transmission)

Frame Rate and Bandwidth

A video image has a rate of motion known as the frame rate. Standard video, like that seen on television, has a frame rate of 30 frames per second. This rate is sufficient that the human eye does not perceive any gaps or pauses in the information. When video compression occurs, the frame rate may be decreased due to restrictions on the amount of information that can be transmitted between two sites. This restriction, or limitation, is known as available bandwidth. Depending on the bandwidth available, frame rates may be 7.5, 10, 15 or 30 frames per second. All of these frame rates are supported by the H.320 standard. The difference is in appearance. Lower frame rates will appear jumpy or jittery. This is known as motion artifact. Selecting a higher bandwidth can reduce motion artifact, but bandwidth is directly related to cost. The more bandwidth you use, the more you pay.

Standard bandwidths used for video conferencing and telemedicine range between 56 Kbps and 1.544 Mbps. The compression technology is continually getting better. Many users find that the minimum bandwidth required to transmit quality images has decreased over the past five years.

Video Quality

The quality of compressed video varies depending on the specific standard and bandwidth being used. The technologies are improving so quickly that it is not possible to mandate a specific bandwidth as providing acceptable quality for any given task. In addition to the continuous improvement, there is a subjective component. Face to face discussions and educational programs can often operate effectively at lower bandwidths than medical consultations. Medical quality video is the level of quality that provides enough information for specialists to comfortably make medical decisions. This rate is highly subjective to the individual specialists and to some extent the specialty itself.

The best approach to determining medical quality video is to test different levels of service with each of the medical disciplines that will be offering telemedicine consultation services.

Appendix V-B:
Senate 789
Draft Minimum Standards

Appendix V-B: SB 789: Draft Minimum Standards for the Provision of Telemedicine Medical Services

I. **Introduction**

This document outlines the minimum standards for an operating system used in the provision of telemedicine medical services by a health care facility participating in the state Medicaid program, including standards for electronic transmission, software, and hardware. These standards will not become effective in terms of regulating Medicaid providers until such time as reimbursement for telemedicine medical services, as defined by SB 789, becomes available.

II. **Definition**

From Section 57.042 of the Utilities Code: "Telemedicine" (A) means medical services delivered by telecommunications technologies to rural or underserved public not-for-profit health care facilities or primary health care facilities in collaboration with an academic health center and an associated teaching hospital or tertiary center or with another public not-for-profit health care facility; and (B) includes consultative services, diagnostic services, interactive video consultation, teleradiology, telepathology, and distance education for working health care professionals.

III. **Purpose**

The minimum standards are intended to ensure as much as it is possible the continuous and long-term use of telemedicine equipment in a changing medical and technological environment. The key issues are to develop interoperability, compatibility, scalability, accessibility, and reliability with future systems. The standards also address minimum-security standards that ensure the integrity, privacy, and/or safekeeping of data in normal use of telemedicine technology. Where there is question, refer to the Department of Information Resources http://www.dir.state.tx.us/IRAPC/practices/index.html. In all instances, telemedicine practices must comply with state and federal laws.

IV. **Scope**

The scope of the standards will include equipment, assets, practices, and technologies used in telemedicine medical services by a health care facility participating in the state Medicaid program, including standards for electronic transmission, software, and hardware.

V. **Technical Standards**

The following describes the minimum technical standards for a telemedicine application or system. Whenever possible, implementations shall adhere to industry-standard technologies and/or practices. All components shall be Y2K compatible.

1. Workstations

A. **Operating System**: Shall be a current off-the-shelf operating system. Must be capable of being upgraded as new versions become available.

B. **Software**: Must be properly licensed with suitable maintenance contract signed.

C. **Warranty**: Three-year warranty shall protect equipment. The manufacturer or vendor must be able to support the system architecture throughout the warranty period with repair parts.

D. **Processor**: Shall use central processors from Intel, Motorola, AMD, IBM, or other manufacturers of compatible equipment. Processing speeds and other processor-related specifications shall be sufficient to accommodate the operating system and the application for a trouble-free telemedical practice.

E. **Memory**: Shall be of sufficient quantity to run the operating system and application; boards shall have physical and logical room to grow to accommodate incremental upgrades.

F. **Network adapter**: Shall be of appropriate speed and characteristic to address compatibility, latency, and quality of service issues.

G. **Storage**: Shall have sufficient storage space remaining after the operating system, drivers, and applications are installed, in order to allow room for actual usage. Access speeds shall be sufficient to accommodate compatibility, latency, and quality of service issues.

2. Servers

A. **Server**: May be single or multi-processor capable; shall have a three-year warranty; shall be compatible with operating system and application.

B. **Uninterruptible power supply**: Shall provide sufficient online time for session data to be saved and the server to be powered down properly.

C. **Back up**: Shall allow for daily copies of data, historical archiving, and efficient restoration of data.

3. Network and Transmission

A. **Speed**: All transmissions will be of sufficient speed for the application of intended.

B. **Transmission and media**: Transmission medium and systems shall be of any kind that provides sufficient range, speed, security, and error-correction to maintain performance, data integrity and privacy. Switches, hubs, routers, and access points shall be placed in a secure location. Where applicable, installations must conform to building standards and all applicable state and local codes, and must be installed and terminated by a trained and certified technician.

C. **Protocols**: Transmission protocols shall be compatible with TCP/IP, H.324, and/or H.323.

4. Video Conferencing System

A. **General**: Video conferencing shall permit appropriate resolution, quality of service, and latency for the purpose intended. Fully integrated set top or room systems shall have sufficient throughput for medical communication and/or diagnostics. For multipoint conferencing, 384 Kbps is an acceptable minimum. For specific standards based on bandwidth capacity, see Appendix.

B. **Connectivity**: LAN, WAN, plain analog telephone service, remote access service, and/or Internet capable.

C. **Protocol**: The videoconferencing system shall communicate using H.323 and/or H.324 protocols. Must provide interactive two-way video with two-way audio and two-way data. All videoconferencing equipment proposed must support ITU-T (International Telecommunications Union – Telecommunications) recommendations. Any system connecting to an H.323 network is required to provide its own H.323 compliant data output and/or conversion ability. For legacy systems, this could be accomplished by the addition of a protocol converter, gateway, or other device.

D. **Gateway and protocol converter:** Shall be of sufficient speed, robustness, compatibility, and accuracy to provide protocol processing services necessary for the telemedicine implementation.

E. **Frame rate**: The videoconferencing system must have a transmitted picture frame rate suitable for the intended application and be capable of 30 frames per second at 384K. All applicable equipment shall be UL approved. All applicable equipment shall be FCC Class A approved.

F. **Installation**: Installation technicians will have manufacturers' training and conduct the installation in accordance with manufacturers' practices and guidelines. The installation will comply with all applicable statutory and local safety requirements.

G. **Testing**: System acceptance testing shall be done within 30 days of installation (subject to network availability). At a minimum these tests will include:

1. Video performance with minimal fades, dropouts, cyclical dropouts, or noise
2. Correct operation of the video terminal equipment

3. Correct operation of PC equipment
4. Capable of 30 from per second at 384 Kbps

H. **Warranty**: Warranty shall be in effect for three years from the date of acceptance for all hardware and software with next business day shipment for hardware replacement. At a minimum, all equipment shall be warranted against defects or failure of design, materials, and workmanship. Defective equipment shall be repaired or replaced at no cost to the telemedicine facility. The warranty shall cover any costs to bring the equipment to full function such as labor, shipping, or handling charges. The vendor will note any days, times, and holidays when their personnel will not be available to take or process warranty calls. The telemedicine facility shall be provided with a toll free telephone number, and an email address to use to report non-functioning equipment that is subject to warranty coverage. Equipment warranty repair will be done on a remove and replace basis, where the equipment will be restored to full functionality within a minimum time. Defective equipment that must be replaced shall be replaced with new or like-new equipment.

I. **Technical Support**: Technical support shall begin on acceptance through the period of the extended three-year warranty. Technical support shall be available on all equipment hardware and software, and will be available by either toll-free telephone number, online, or both. The vendor shall note any hours, days, or holidays when technical support calls will not be taken.

5. **Additional Equipment / Software / Services**

A. **Printers**: Printers shall be of sufficient resolution and speed; shall accommodate the required paper sizes and types.

B. **Scanners, Digital Cameras, Video Camcorder, Video Capture Card and other image capturing devices:** Shall be capable of treating digital images at a sufficient size, resolution, compression, data integrity, speed, media, media handling, and/or color to meet the application requirements.

C. **Software**: Software shall provide sufficient compatibility, capability, performance, security, management, and/or communication services necessary to apply or support the telemedicine implementation. Shall be upgradeable and fully licensed to the operating entity.

D. **Still image capture/Store and forward** and **Streaming video equipment**: The digital content of both transmission methods shall be of sufficient size, resolution, clarity, color, and quality of service for both audio and video to perform a medical evaluation, assessment, or medical consultation. Still image capture / store and forward refers to the ability to capture or record images, scanned documents, clinical notes, which are then transmitted at a later time; video streaming usually refers to real time video transmission or examination session.

E. **Other equipment:** All other equipment, components, and/or services not listed specifically but used in conjunction with telemedicine implementations shall support the performance of the implementation.

F. **Medical Devices:** Medical equipment used in conjunction with telemedicine must meet 510K federal certification. In addition, medical printers used for diagnosis must meet 510K federal certification. Examples of medical equipment include spirometers, x-ray, digital X-ray scanners, ultrasound machines, exam cameras, ophthalmascope, fundus scope, diagnostic printers, and stethoscope.

6. **Exceptions**:

Implementations that fall below or outside of the aforementioned technical standards must nevertheless be able to demonstrate the long-term effectiveness and sustainability of the specific telemedicine implementation. Such implementations shall still comply with the Technical Practices Requirements described below, and state and federal law.

VI. **Technical Practices Standards**

Technical implementations shall support security, privacy, integrity, authentication, and business continuity practices as applied to telemedicine activities:

A. **Authentication and authorization of users:** All access to data and transmission thereof must require unique user identification and verification ensured by the system. Technology shall support the authentication of users and provide logs to prove such authentication.

B. **Authentication of the origin of information:** Data shall be verifiable as to its origin. Technologies and business practices shall work together to ensure that genuine, authenticated data is transmitted through the network and is identifiable as such to the users.

C. **The prevention of unauthorized access to the system or information:** Equipment shall be sufficiently physically safeguarded to prevent unauthorized access. This includes keyboard, monitor, input devices including any monitoring and diagnostic instruments, data storage components, cable rooms, and servers. Management shall use appropriate technologies and business practices to ensure controlled access.

D. **System security, including the integrity of information that is collected, program integrity, and system integrity:** Telemedicine equipment and applications shall have adequate logical and physical security mechanisms activated to ensure that collection of data does not compromise the privacy of the data.

1. *System integrity*: Only authorized users and patients shall have access to the physical equipment. Whenever possible, users will only be given sufficient access to system features to adequately perform their functions.
2. *Program integrity*: A policy shall describe roles and responsibilities of users, owners, and management in order to protect the equipment, ensure accurate data collection, and provide for privacy and data protection. Management shall review this policy no less than biennially. This policy shall be communicated to staff and enforced by management.

E. **Maintenance of documentation about system and information usage:** Copies of equipment documentation shall be easily accessible by users to support the proper use of equipment. This includes user manuals, technical documentation, trouble history, and any notes that are gathered as a result of troubleshooting activity. Documentation shall include the use of software and hardware.

F. **Information storage, maintenance, and transmission:**

1. *Storage*: Storage of electronic medical data shall have appropriate fault tolerance and business continuity measures. These shall include one or more industry standard implementations such as redundancies and disaster recovery planning in order to reduce the likelihood of permanent loss of data.
2. *Maintenance*: Data and system integrity shall be maintained and organized by qualified personnel. Sufficient maintenance practices or technologies shall be in place to effectively reduce failure incidences and/or their durations.
3. *Transmission*: Networks shall as much as it is reasonable be protected from undesired intrusion and vandalism. All data transmissions including classified data transmissions shall be protected through adequate implementations of security technology.

VII. **Synchronization and verification of patient profile data:**

Technology shall support the synchronization of patient profile data. Business processes and technology shall provide an effective means to authenticate and organize patient information.

Motion Video System Standards

The following standards are based on Chapter 2 of the *Telehealth Technology Guidelines* (January 2001) from the Office of Advancement of Telehealth | Health Resources and Services Administration | U.S. Department of Health and Human Services. The document can be found at http://telehealth.hrsa.gov/pubs/tech/techhome.htm.

For Bandwidths 384kbps - 1.54mbps (T-1)

CODEC Specifications	
Video:	**Algorithm:** H.323
Video Resolution:	FCIF 352 by 288 color pixels
Frame Rate:	30 frames per second
Video Inputs:	• Main Camera (camera output must be matched to CODEC input) • Auxiliary Camera • VCR Input (NTSC or S-video depending upon the CODEC output)
Video Outputs:	• Main Monitor (Monitor input must be matched to video output) • Secondary Monitor capability • VCR Output (NTSC or S-video depending upon the CODEC input)
Main Camera:	• 1 Chip CCD image sensor • Auto focus and white balance • Pan/Tilt/Zoom capabilities (optional)
Full Duplex Audio:	Echo Cancellation, Automatic Gain Control, and Automatic Noise Suppression
Microphones:	360^0 Coverage or Multidirectional, Mute Button (optional)
Audio Algorithms:	G.722 and/or G.711
Audio Outputs:	VCR Audio-Out (RCA phono plug), Main Monitor L & R Audio-Out (RCA phono plug)
Audio Inputs:	VCR Audio-In (RCA phono plug), Main Monitor L & R Audio-In (RCA phono plug)
Presentations:	Presentation Software Support: (e.g., Microsoft PowerPoint)
Options:	Remote Diagnostics, Remote Management, Ethernet/Internet/Intranet Connectivity, and ability to add voice call to a videoconference.

For Bandwidths 128kbps – 384kbps

CODEC Specifications	
Video:	**Algorithm:** H.323
Video Resolution:	FCIF 352 by 288 color pixels or QCIF 176 by 144 color pixels
Frame Rate:	15 frames per second minimum
Video Inputs:	• Main Camera (camera output must be matched to CODEC input) • Auxiliary Camera • VCR Input (NTSC or S-video depending upon the CODEC output)
Video Outputs:	• Main Monitor (Monitor input must be matched to video output) • Secondary Monitor (optional) • VCR Output (NTSC or S-video depending upon the CODEC input)
Main Camera:	• 1 Chip CCD image sensor • Auto focus and white balance • Pan/Tilt/Zoom capabilities
Full Duplex Audio:	Echo Cancellation, Automatic Gain Control, and Automatic Noise Suppression
Microphones:	360^0 Coverage or Multidirectional, Mute Button (optional)
Audio Algorithms:	G.728 and G.711
Audio Outputs:	VCR Audio-Out (RCA phono plug), Main Monitor L & R Audio-Out (RCA phono plug)
Audio Inputs:	VCR Audio-In (RCA phono plug), Main Monitor L & R Audio-In (RCA phono plug)
Presentations:	Presentation Software Support: (e.g., MS PowerPoint)
Options:	Remote Diagnostics, Remote Management, Ethernet/Internet/Intranet Connectivity, and Ability to add voice call to a videoconference.

Plain Old Telephone Service (POTS)-Based Interactive Motion Video

CODEC Specifications	
Video:	**Algorithm:** H.324
Video Resolution:	FCIF 352 by 288 color pixels, QCIF 176 by 144 color pixels
Frame Rate:	15 frames per second @ QCIF, 7 frames per second FCIF
Video Inputs:	• Main Camera (camera output must be matched to CODEC input) • Auxiliary Camera
Video Outputs:	• Main Monitor (Monitor input must be matched to video output) • Secondary Monitor (optional)

Main Camera:	• 1 Chip CCD image sensor • Auto focus and white balance • Pan/Tilt/Zoom capabilities (optional; may or may not be remotely controlled from the far site)
Full Duplex Audio:	Echo Cancellation and Automatic Gain Control
Microphones:	Internal Microphone or Speakerphone
Audio Algorithms:	ITU-T Standard G723.1
Audio Outputs:	Main Monitor (RCA phono plug)
Audio Inputs:	Main Monitor Audio-In (RCA phono plug)
Presentations:	N/a
Options:	Snapshot feature to capture and transmit a still image is desirable.

Store-and-Forward Equipment Specifications

CODEC Specifications	
Store-and-forward technologies may include still images captured by a digital video camera or images that have been scanned (x-ray). It may also comprise video images that have been captured digitally or through the use of a VCR or camcorder.	
Digital Camera:	• Image Device: ¼" CCD • Lens: F1.8 – 2.9 • Exposure Control: Automatic Exposure • White Balance: Automatic • Focus: Automatic • Data Compression: Standard JPEG • Image Size: 640 by 480 VGA • Flash: 6.5 – 13 ft.
Stored Motion Video:	**Data Compression:** Industry standard

Appendix VI-A & B:
Proposed Curriculum Training and Nationwide TMTH Training Websites

Appendix VI-A: Proposed Curriculum Training

Professional:

- Overview of TMTH – History, philosophy, and future directions for TMTH.
- TMTH consultations – Provides an overview of how a TMTH consultation service is constructed and instituted.
- TMTH Clinics – Provides an overview of how an ongoing TMTH clinic is established and provider issues.
- How to facilitate a TMTH visit. The proper techniques to facilitate patient entry into the experience, assisting with information, and facilitating the physical examination.
- Patient and family education for TMTH. What are their concerns and how they are best addressed?
- Specialty Consultations; process and content.

Technical:

Basics:

- Working knowledge of telecomm, PC and data/video terminology
- Have solid skills in circuit types and testing.
- Terminal cables for different connections.
- Know different network types and basic troubleshooting.
- Evaluate system performance and diagnose system faults
- Configure communication devices and PCs and verify performance
- Ability to perform basic equipment repairs
- Create system block and cabling diagrams
- Compile required reports and create resource databases
- Perform preventive maintenance

Advanced:

- Determine customer needs.
- Make technical recommendations
- Make system recommendations and plan network utilization
- Provide system and network training and support
- Maintain up-to-date system and network documentation

- Work with vendors to keep informed on latest technology
- Perform research and development to remain on cutting edge of technology
- System integration of various technologies

Administrator:

- Overview of TMTH – History, philosophy and future directions
- Developing an infrastructure to support a TMTH program.
- Legal and ethical issues in TMTH.
- Standards, regulation issues for TMTH.
- Cost and reimbursement issues involved in a TMTH program.

Allied Health:

- Overview of TMTH – History, philosophy, and future directions for Public Health TMTH.
- TMTH Consultations – Provides an overview of how Public Health consultations are constructed and instituted.
- TMTH Public Health Clinics – Provides an overview of how an ongoing clinic is established.
- How to facilitate a TMTH visit. The proper techniques to facilitate patient entry into the Public Health experience, assisting with information, and facilitating the physical examination.
- Patient education for TMTH. What their concerns are and how they are best addressed.
- Public Health Para Professional Specialty Consultations - process and content.
- Continuing Education – Emerging trends.

Appendix VI-B: National TMTH Training Websites

- Advanced Telemedicine Training
    - The Telemedicine Center at East Carolina University offers a unique opportunity to observe and study the inner workings of a world-class TMTH program. http://www.telemed.med.ecu.edu/
- GHA Telemedicine TeleJournal
    - The Georgia Hospital Association offers monthly audio teleconferences on a variety of TMTH subjects. http://www.gha.org/ http://www.carelearning.com/
- Center for Telehealth UTMB
    - The University of Texas Medical Branch offers state-of-the art programs to educate and train individuals in the techniques of TMTH and distance learning. http://www.utmb.edu/telehealth/
- Telehealth and Telelearning Scholarship and Training Program
    - The University of Calgary is dedicated to incorporating the latest advances in applied and technical research in health, health delivery, and health education. http://www.ucalgary.ca/md/TELEHEALTH/
- Telemedicine Learning Center
    - The award-winning TMTH program at the University of California at Davis offers comprehensive hands-on TMTH training, including a three-day session or a one-day executive management session. http://telehealth.ucdavis.edu/
- Telemedicine Technologies Company
    - Advanced TMTH training opportunities that offer attendees a behind-the-scenes perspective of an operational production TMTH program and research prototyping lab, and participation in hands-on demonstrations of clinical diagnostic tools and interactive video system. http://www.telemedtech.com/training.htm
- Texas Tech Telemedicine Research and Training Center
    - Provides training to health care professionals in TMTH and its uses. http://www.ttuhsc.edu/telemedicine/institute.htm
- UTMB Teletraining Institute
    - University of Texas Medical Branch Teletraining Institute. http://www2.utmb.edu/telemedicine/UTMB%20Telemedicine%20Training.htm
- Yale University Telemedicine Training Course
    - A five-day intensive course of lectures and hands-on labs that teaches the administrative and technical components of TMTH. The course is open to physicians, technicians and health care administrators. http://info.med.yale.edu/telmed/courses.html

Section VII-A:
Medicaid Telemedicine Reimbursement by State

Appendix VII-A: Medicaid Telemedicine Reimbursement by State					
State	**Type of Service**	**Method of Service**	**Payment Method**	**Reimbursement**	**Codin**
Arkansas	Physician consultations	Interactive video Teleconferencing	Payment is on a fee-for-service basis, which is the same as the reimbursement for covered services furnished in the conventional, face-to-face manner.	Both ends (hub and spoke sites)	The state uses specific identify telemedicine services.
California	physician consultations (medical & mental health)	interactive video teleconferencing	Payment is on a fee-for-service basis, which is the same as the reimbursement for covered services furnished in the conventional, face-to-face manner.	Both ends (hub and spoke sites)	The state uses consulta codes with the modifie identify telemedicine s
Georgia	physician consultations	interactive video teleconferencing	Payment is on a fee-for-service basis, which is the same as the reimbursement for covered services furnished in the conventional, face-to-face manner.	Both ends (hub and spoke sites)	The State uses specific identify the consultatio the hub site. No specia modifier is used at the
Illinois	physician consultations	interactive video teleconferencing	Payment is on a fee-for-service basis, which is the same as the reimbursement for covered services furnished in the conventional, face-to-face manner.	Reimbursement is made at both the hub and spoke sites.	The state uses specific identify telemedicine s
Iowa	physician consultations	interactive video teleconferencing	Payment is based on the State's fee-for-service rates for covered services furnished in the conventional, face-to-face manner.	Both ends (hub and spoke sites)	Specific local codes ar add-on payment and C the modifier "TM" is u the consultations.
Kansas	home health care and mental health services already covered by the state plan. Home health is limited to certain services.	video equipment	Payment is on a fee-for-service basis for the mental health services, which is the same as the reimbursement for covered services furnished in the conventional manner. Compensation for home health care via telemedicine is made at a reduced rate.	Reimbursement is made for only the service furnished at the hub site.	Local codes have been specifically identify ho services furnished usin communication equipment. No special used for mental health

Source: Texas Medicaid Telemedicine Advisory Committee. (2000) Report to the 77th Texas Legislature. State of Texas. Appendix D.

Appendix VII-A: Medicaid Telemedicine Reimbursement by State					
State	**Type of Service**	**Method of Service**	**Payment Method**	**Reimbursement**	**Codin**
Louisiana	physician consultations; Physician Assistants are allowed to perform the service using telemedicine if they are authorized by a primary physician, which is the only one that is authorized to bill.	interactive video teleconferencing	Payment is on a fee-for-service basis, which is the same as the reimbursement for covered services furnished in the conventional, face to face manner.	Both ends (hub and spoke sites)	The State uses consul codes.
Minnesota	physician consultations	two-way interactive video or store and forward technology	Payment is on a fee-for-service basis, which is the same as the reimbursement for covered services furnished in the conventional, face to face manner.	Both ends (hub and spoke sites)	The state uses consul codes with a "GT" m identify interactive te services and a "WT" consultations done vi forward technology.
Montana	any medical or psychiatric service already covered by the state plan when furnished using interactive video teleconferencing.	Interactive video teleconferencing.	Payment is on a fee-for-service basis, which is the same as the reimbursement for covered services furnished in the conventional, face-to-face manner. Reimbursement is made at both ends (hub and spoke sites) for the telemedicine service.	Both ends (hub and spoke sites)	No special codes hav developed. Providers use codes f CPT
Nebraska	In general, services are covered so long as a comparable service is not available to a client within a 30-mile radius of his or her home. Services specifically excluded include medical equipment and supplies; orthotics and prosthetics; personal care aide services; pharmacy services; medical transportation services; and mental health and substance abuse services and home and community-based waiver services provided by persons who do not meet practitioner standards for coverage.	interactive video teleconferencing	Payment is on a fee-for-service basis, which is the same as reimbursement for covered services furnished in the conventional, face-to-face manner. Payment for transmission costs are set at the lower of the billed charge or the state's maximum allowable amount.	Both ends (hub and spoke sites)	Billing and coding re vary depending on w service and which cla

Appendix VII-A: Medicaid Telemedicine Reimbursement by State

State	Type of Service	Method of Service	Payment Method	Reimbursement	Codin
North Carolina	Initial, follow -up or confirming consultations in hospitals and outpatient facilities when furnished using . The patient must be present during the teleconsultation.	real-time interactive video teleconferencing	Payment is on a fee-for-service basis. The consulting practitioner at the hub site receives 75 percent of the fee schedule amount for the consultation code. The referring practitioner at the spoke site receives 25 percent of the applicable fee.	Both ends (hub and spoke sites)	Teleconsultations are modifiers to identify the teleconsult visit is consulting practitione uses a GT modifier an practitioner at the spo YS modifier.
North Dakota	Specialty physician consultations; patient must be present	interactive video teleconferencing	Payment is on a fee-for-service basis, which is the same as the reimbursement for covered services furnished in the conventional, face-to-face manner.	Both ends (hub and spoke sites)	Current CPT codes fo services are used with modifier to specifical covered services, whi furnished, by using au communication equip
Oklahoma	physician consultations	interactive video teleconferencing	Payment is on a fee-for-service basis, which is the same as the reimbursement for covered services furnished in the conventional, face to face manner.	Both ends (hub and spoke sites)	The State uses consul codes.
South Dakota	physician consultations	(interactive & non-interactive) video equipment	Payment is on a fee-for-service basis, which is the same as the reimbursement for covered services furnished in the conventional, face-to-face manner.	Both ends (hub and spoke sites)	The state uses consul codes with a "TM" m identify telemedicine
Texas	physician consultations (teleconsultations). Other health care providers, such as, nurse practitioners, and Doctors of Osteopathy are allowed to bill.	interactive video teleconferencing	Payment is on a fee-for-service basis, which is the same as the reimbursement for covered services furnished in the conventional, face to face manner.	Both ends (hub and spoke sites)	The State uses consul codes with the modif identify telemedicine

Appendix VII-A: Medicaid Telemedicine Reimbursement by State					
State	**Type of Service**	**Method of Service**	**Payment Method**	**Reimbursement**	**Codin**
Utah	Mental health consultations provided by psychiatrists, psychologists, social workers, psychiatric registered nurses and certified marriage or family therapists; diabetes self management training provided by qualified registered nurses or dieticians and; services provided to children with special health care needs by physician specialists, dieticians and pediatricians when those children reside in rural areas.	interactive video teleconferencing	Payment is on a fee-for-service basis, which is the same as the reimbursement for covered services furnished in the conventional, face-to-face manner. Payment is made for transmission fees.	Reimbursement is made at both the hub and spoke sites for diabetes self management training services and services provided to children with special health care needs. Reimbursement is made only to the consulting professional for mental health services.	The state uses CPT c and TR modifiers to i telehealth services.
Virginia	As a pilot project, medical and mental health services already covered by the state plan	interactive video teleconferencing	Payment is on a fee-for-service basis, which is the same as the reimbursement for covered services furnished in the conventional, face-to-face manner.	Both ends (hub and spoke sites) for only medical services.	The state uses specifi identify telemedicine
West Virginia	Physician consultations; patient must be present in real time	interactive telecommunications systems.	Payment is on a fee-for-service basis, which is the same as the reimbursement for covered services furnished in the conventional, face-to-face manner.	Both ends (hub and spoke sites)	The state uses consul codes with the modif identify telemedicine

Appendix X-A:
Responses to Public Comments

Ref #	Source	Section-Page	¶ #	Comment	SHCC Action
1	Coalition for Nurses in Advance Practice	General		...be sure that "TMTH" is used throughout the paper consistently.	The word telemedicine has removed throughout the do replaced by TMTH except following circumstances: Explaining the difference b telemedicine and telehealth telemedicine was part of th institution, group or public when discussing SB 789 w telemedicine has a special m
2	TDHS	General		TMTH and how it fits into state and national health care strategy is an important issue, and that's the issue that this white paper should address. The question it seems to address is "how do we help TMTH to grow?" The question that it should be addressing is, "How can we best use TMTH to meet the State's public health goals?"	When a state strategic plan is written this will be an ap subject, but not for this spe
3	TDHS	General		No technology is free of a downside. The best approach to control the damage of the downside is to anticipate problems and plan for mitigation strategies for them. The recommendations need to address this more fully.	When a state strategic plan is written this will be an ap subject, but not for this spe
4	TDHS	General		Involve the public: "build it and they will come" is not an appropriate mindset. If broadly based public input (e.g. Town hall meetings in rural areas where TMTH is contemplated) was not sought for this white paper, than an important piece of homework was left unattended.	The TMTH work group co representative from a cross agencies, institutions, profe associations and groups rep the interests of rural comm When a state strategic plan is written, public hearings o Austin would be more appr
5	TDHS	Exec ii	3	Who were the "stakeholders" and who was in what work group?	Added sentence to Executi noting that small group me affiliations are identified at beginning of each section.

Ref #	Source	Section-Page	¶ #	Comment	SHCC Action
6	CNAP	Exec iv	1	In recommendation 2, electronic consultations are not only needed for rural doctors, but for other health care professionals as well. Change “Rural Doctors” to “Rural health care providers.	Recommendations changed requested.
7	TMA TPS TAFP	Exec iii-ix		“Should stop short of making firm recommendations.. in ways that conflict with tenets of new legislation”	Agreed. SHCC is not a pol body, and that this product to place questions on the ta policy-making deliberation does not intend this produc processes intended or plann implementation of SB 789 Requested TMA provide sp examples.
8	TMA TPS TAFP	Exec iii-ix		“We recommend… reconsider the effect of the report and its policy recommendations on the implementation of new telemedicine legislation.”	SHCC has addressed any c new telemedicine legislatio not been intended and had identified explicitly to date the workgroup members.
9	TMA TPS TAFP	Exec iii-ix		“encourage the inclusion of thorough analysis of new state laws relating to telemedicine”	Analysis of SB 789 and oth been moved to Inventory & Reimbursement Sections. of action in the 77th legislat added to the background se brief description of SB 789 impact on the report was ad executive summary.
10	TMA TPS TAFP	Exec iii-ix		“as well as disclaimers … that new legislation is anticipated to alter telemedicine policy considerably.”	This special report deals on current legislation.

Ref #	Source	Section-Page	¶ #	Comment	SHCC Action
11	TMA TPS TAFP	Exec iii-ix.		"readers would be able to discern chief policy advances of SB 789." a) "establishes the framework for regulating and reimbursing telemedicine medical services in Texas" b) definition of 'telemedicine medical services'" c) "establishes quality of care safeguards, including rulemaking authority to establish appropriate physician supervisory requirements." d) "telemedicine pilot projects…likely to be slow" … "the Legislature allocated $3.5 million… many not be certified this year."	Concur, and other relevant as well. See section VII of for review of recent legisla a) Additional wording has to section I on the impact a of SB 789 b) Noted. Workgroup furth telehealth to more fully enc relevant applications of the c) Noted. Refer to changes response to TSBME comm d) Text provided by HHSC added noting that pace of implementation will be mu by availability of funds.
12	TMA TPS TAFP	Exec iii-ix		"Policy goals of organized medicine in SB 789 were and are to protect existing medial relationships and the fragile rural health infrastructure while allowing…"	SHCC lauds the goals of or medicine in SB 789, and w extremely interested in mak our product honors the pub consensus reached by the 7 legislature, and welcomes T work with us in assuring th
13	TDHS	I-1	2	TMTH should be an adjunct to services not the primary focus for underserved population	Re-emphasized that TMTH replace primary health care but to enhance quality of ca
14	TDHS	I		Resources directed toward TMTH should not limit additional resources to direct care/ hands-on professional care.	Re-emphasized that TMTH to replace face-to-face care additional tool for health ca providers.

Ref #	Source	Section-Page	¶ #	Comment	SHCC Action
15	SHCC	I-1	3	Explain why the definition of telemedicine used in the white paper defers from that found in SB 789.	Following added to section "Definitions of Telemedici Telehealth have been subje confusion, heated debate an controversy. While SB 789 Legislature), discussed furt this section, uses specific d Telemedicine and Telehealt suitable for purposes of leg TMTH workgroup elected t broader definitions to more encompass relevant concep applications of the technolo
16	SHCC	I-5	3	The sentence "Current statute only defines telemedicine consultation as…" is confusing from a legal perspective.	Change wording of sentenc "SB 789 changes Section 5 Utilities Code to define a "t consultation" as only"
17	SHCC	II-6	3	A few paragraphs need to be added which addresses the importance of the Texas Health Science Centers in the delivery of TMTH.	Added "TMTH Activities a Health Science Centers" gi emphasis UTMB & Texas
18	THECB	II-17	1	Change last sentence from "Toward this end, THECB will shortly establish a single portal site …..and locate all available distance.." to Toward this end, THECB established a single portal site…and locate available distance.."	Wording changed as sugge
19	HHSC	II-18	2	Add disclaimer language that funding for SB 789 has not been certified.	Disclaimer language added suggested.

Ref #	Source	Section-Page	¶ #	Comment	SHCC Action
20	CNAP	III-5	3	In recommendation 1, not only should CME be accessible, but also continuing education for all health care providers should be available through TMTH. Alternative wording would be "Adequate continuing education for health care providers should be accessible, both to individuals and groups, through TMTH and electronic media.	Recommendations changed requested.
21	Coalition for Nurses in Advance Practice	III-5	4	In recommendation 2, electronic consultations are not only needed for rural doctors, but for other health care professionals as well. Change "Rural Doctors" to "Rural health care providers.	Recommendations changed requested.
22	TMA TPS TAFP	III-1	2	"Specific point on MUA/HPSA designations" Use of historical MUA and HPSA designation information… to demonstrate pervasive decline in availability of primary health care services for Texas since 1980 is misleading"… "federal government's delay in reviewing the designations"	Timeliness of the designati a factor; however these de remain the tool available fo is unequivocal and most pe that current distribution of leaves service gaps.
23	TMA TPS TAFP	III-1	2	"growth in HPSA designations over time do not necessarily indicate a decline the availability of …." "may be misleading to total the number of individual primary… many of the same counties hold designations in each category."	A disclaimer was added to discussion of the growth of of MUA/ HPSA may be du factors other than the actua the availability of care. The table was meant only t illustrative of the growing g current distribution of servi
24	TSBME	IV-6	1	Clarify that activities [of APNs] must be conducted under specific delegation of authority as set forth in scope of practice laws of the relevant agency.	Changes made in the wordi the statement.

Ref #	Source	Section-Page	¶ #	Comment	SHCC Action
25	TSBME	IV-6	4	In reference to the statement "Issues associated with reimbursement should not be used to determine or assess scope of practice" - The basic tenet of medical practice is the physician-patient relationship which can be effectively established only through face-to-face contact. Concerns about reimbursement or access cannot modify this requirement which is basic to the practice of medicine and the provision of quality health care to patients.	The referenced two paragra removed since the concern by them was made moot by
26	TSBME	IV-7	1	Clarify that [a physician, nurse, physical therapists, etc. Giving professional advice given to a patient by telephone] is being given in context of an established physician-patient relationship.	The referenced two paragra removed since the concern by them was made moot by
27	TMA TPS TAFP	IV		…several sections of the SHCC paper, such as the licensing/scope of practice and reimbursement chapters, are troublesome and potentially inflammatory because they fail to take into account the public consensus reached on many contentious issues by the 77th Legislature.	Revision to this special rep acknowledge the consensus SB 789. Additional wordin added throughout this repo analysis of the impact of SB
28	TDHS	V-1	1	Who in Texas "supports" some of the largest TMTH projects.	Wording changed to "Publ private resources in Texas of the largest….."
29	SHCC	V-3	5	Second sentence "One repeated issued was high Inter-LATA telephone rate charges." Is redundant.	Sentence deleted.

Ref #	Source	Section-Page	¶ #	Comment	SHCC Action
30	TDIR	V-4	1	In the discussion concerning inter-LATA rates it should be noted that between HB2128 (75th Session) creating the TIFB and the HB2128 incentive rates for telemedicine projects (for companies choosing to be deregulated, SWBT, GTE, etc.) and SB560 (76th Session) expanding the HB2128 incentive rates to non-electing Incumbent Local Exchange Carriers (ILEC), the rates are actually pretty good. SB560 allows rural ILECs to submit pricing for circuits at the same rate as the lowest rate offered by an electing company (SWBT at $260/month for a T1). The Texas Universal Service Fund (USF) reimburses the ILEC for the difference between actual tariffs and the incentive rates. The problem is that the project sponsors AND the rural ILECs do not know about the SB560 extension of the incentive rates to non-electing ILECs and the reimbursement by the Texas USF for the difference in cost.	The following paragraph ha added: “One problem in ameliorat impact of high inter-LATA lack outreach to providers & exchange carriers concerni It should be noted that betw 2128 (75th Session), creati & the HB 2128 incentive ra telemedicine projects for co choosing to be deregulated GTE, etc.), & SB560 (76th expanding the HB2128 inc to non-electing ILEC, the r actually pretty good. SB56 rural ILECs to submit prici circuits at the same rate as rate offered by an electing (SWBT at $260/month for USF reimburses the ILEC f difference between actual t incentive rates. The proble project sponsors & the rura not know about the SB 560 the incentive rates to non-e ILECs & the reimbursemen USF for the difference in c effort needs to be made to i providers & ILECs concern issue.”

Ref #	Source	Section-Page	¶ #	Comment	SHCC Action
31	TDHS	V-4	3	Is the statement "Texas has some of the largest telemedicine networks in the world" hyperbole or accurate?	Wording changed to "Some largest telemedicine netwo in Texas."
32	TDHS	V-5	3	Add the Health & Human Services Communications Network to the list of government agencies' network telecommunications networks.	HHSCN added to the list o
33	TDHS	V-8	3	Specify what agencies will be involved in the Telecommunications Planning and Oversight Council.	The list of agencies/institut involved in TPOC added.
34	TDHS	V-15	2	Add the Health & Human Services Communications Network to the list of government agencies' network telecommunications networks.	HHSCN added to the list o
35	HHSC	Appdx VB-33	1	Add language that "These standards will not become effective in terms of regulating Medicaid providers until such time as reimbursement for telemedicine medical services as defined in SB 789 becomes available.	Wording added as suggeste
36	THECB	VI-13	1	Change first sentence to read: "Agencies, such as the Texas Higher Education Coordinating Board, serve as catalysts to bring expert and knowledgeable practitioners from multiple-related disciplines together that can facilitate a group discussion process aimed at reaching a consensus or learning objectives as the basis of future standards for student assessment and training evaluation	Wording changed as sugge
37	TDI	VII-2	3	This paragraph indicates that most private payers do not cover certain costs associated with the delivery of TMTH services. Although this may be the case, Insurance Code Article 21.53F does not require a private payer (an insurer or HMO in the commercial market) to cover the cost of equipment, transmission, storage, etc., necessary to deliver services via TMTH. Because of this fact, we suggest that such be disclosed.	Paragraph clarified to disc insurance code currently do require coverage.

Ref #	Source	Section-Page	¶ #	Comment	SHCC Action
38	TDI	VII-6	1	Because the Insurance Code Article 21.53F does not prohibit private payers from applying other contract provisions in determining payment for TMTH, we suggest the language “would seem to allow” be changed to “do not prohibit.” Additionally, we believe improvement in payment of TMTH needs to be made by all payers (including Medicaid and Medicare) and suggest the terms “by commercial payers” be changed to “all payers.”	Wording changed as sugge
39	HHSC	VII-6 Bullet 3	2	Add disclaimer language that SB 789 has not been funded.	Parenthetical sentence adde readers to discussion of lac for SB 789 which has been the previous page.
40	TDI	VII-10	3	Within the white paper several statements are made about (a) the importance of TDI’s monitoring of reimbursement by private payers to evaluate the effectiveness of the legislation, and (b) the limited information that has been compiled. A recommendations is included that TDI monitor and require third party payers report areas of TMTH services covered, rates of reimbursement, claims payment and utilization data. We wholeheartedly agree that such should be done; in fact, TDI has been collecting data on TMTH since 1998. Although…the reliability and quality of such data…are poor in comparison with the other data TDI collects. First, there is no current billing code or other mechanism that clearly differentiates TMTH services from face-to-face consultation. While Medicaid requires its providers to use a TMTH modifier (GT) with the Current Procedural Terminology (CPT) codes, there is no current requirement that private payers and providers…use certain transaction codes. Additionally, it is doubtful that private payers can require non-contracted providers to use certain transaction codes or modifiers. Secondly, because CPT codes are copyrighted, legal questions exist as to whether private payers have any right to amend the CPT codes through the use of modifiers.	Wording of recommendatio to: “The Texas Departmen Insurance should continue commercial third party pay request that they report are services covered, rates of reimbursement for those se claims payment data, and u data, acknowledging that li the data may exist, for TMT reimbursed to facilitate the of the effectiveness of SB 7

Ref #	Source	Section-Page	¶ #	Comment	SHCC Action
41	TMA TPS TAFP	VII		…several sections of the SHCC paper, such as the licensing/scope of practice and reimbursement chapters, are troublesome and potentially inflammatory because they fail to take into account the public consensus reached on many contentious issues by the 77th Legislature.	Revisions to this special re acknowledge the consensus SB 789. Additional wordin added throughout this repo analysis of the impact of SB
42	TDIR	X-6	2	Re: Recommendation #3 concerning inter-LATA rates - Between HB2128 (75th Session) creating the TIFB and the HB2128 incentive rates for telemedicine projects (for companies choosing to be deregulated, SWBT, GTE, etc.) and SB560 (76th Session) expanding the HB2128 incentive rates to non-electing ILECs, the rates are actually pretty good. SB560 allows rural ILECs to submit pricing for circuits at the same rate as the lowest rate offered by an electing company (SWBT at $260/month for a T1). The Texas USF Fund reimburses the ILEC for the difference between actual tariffs and the incentive rates. The problem is that the project sponsors AND the rural ILECs do not know about the SB560 extension of the incentive rates to non-electing ILECs and the reimbursement by the Texas USF for the difference in cost.	Change recommendations t "The PUC, ILECs and gran need to do an outreach noti telemedicine grant recipien eligibility for reduced rates through HB2128 (1995) an (1999) legislation. Process applying for reduced rates published in an easily avail location."

Appendix X-B:
Public Comments