focus
REPORT

Telemedicine in Texas: Public Policy Concerns

The growing use of computers and the Internet is changing the delivery of health-care services, just as it is changing almost every other facet of modern life. Health-care practitioners can consult about, diagnose, and treat medical problems over great distances by using computer-based video equipment, satellites, and high-speed transmission lines. Individuals can connect over the Internet to mail-order drug companies, health-care information sites, and medical experts and chat rooms. College students and health professionals use telecommunications networks for access to classes, faculty, data, and library resources located at distant campuses. Soon, people may be able to consult with their doctors without leaving their homes, using instruments plugged into their computers to measure and transmit medical information.

These computer-based medical communications collectively are called "telemedicine." Texas has been among the leading states in establishing telemedicine programs and networks because of:

- the availability of federal and state grants;
- issues of health-care access and cost in rural areas and Texas prisons;
- the marketing of new software and hardware technologies by emerging high-tech industries;
- the formation of online businesses by traditional health-care providers and payers; and
- the research interests of medical centers.

The rapid growth of telemedicine raises issues for Texas lawmakers regarding public health and safety, financing, consumer protection, and regulation of medical practice.

But telemedicine's growth also raises critical issues for state lawmakers, including protection of public health and safety, the extent of public and private financing of infrastructure and services, health-care providers' roles and liabilities, confidentiality of consumers' medical information, and competition in the medical marketplace.

Defining telemedicine

Telemedicine is considered a medical *tool*, not a medical specialty. The term refers to the transmission of medical information between and among health-care professionals and patients, generally by means of computers, video equipment, satellites, phone lines, or high-speed transmission lines. Transmission may occur over long distances, such as between Texas Tech University Medical School and a hospital in Alpine, or over shorter distances, such as between a clinic and a specialist's office within the same urban area.

Telemedicine does not have a universally accepted definition. Some limit the definition to the interactive communications involved in diagnosing and treating patients. Other definitions encompass the long-distance education of health-care professionals and the use of electronic medical databases, email, and other software. Some telemedicine advocates argue that the use of telephones and facsimile machines also constitutes telemedicine.

Texas law defines telemedicine in several different ways. Utilities Code, sec. 57.042 defines it for purposes of allocating Telecommunications Infrastructure Fund grants. This definition includes health education as well as patient-care services but limits the scope of telemedicine to services or education delivered to certain providers under specific circumstances. According to this definition, telemedicine is provided only "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."

Government Code, sec. 531.0217 defines "telemedical consultation" in regard to Medicaid reimbursement in rural areas as "a medical consultation for purposes of patient diagnosis or treatment that requires the use of advanced telecommunications technology, including: (A) compressed digital interactive video, audio, or data transmission; (B) clinical data transmission via computer imaging for teleradiology or telepathology; and (C) other technology that facilitates access in rural counties to health care services or medical specialty expertise." However, the definition in the Utilities Code is used in Government Code, sec. 531.0216, which requires the Health and Human Services Commission to develop and implement a system to reimburse providers in both rural and underserved areas for Medicaid services performed through telemedicine.

Insurance Code, art. 21.53F prohibits certain health-benefit plans from excluding coverage for services provided through telemedicine instead of through face-to-face interactions. It defines telemedicine as "the use of interactive audio, video, or other electronic media to deliver health care" and excludes services performed using a telephone or facsimile machine. It does not limit the definition to services delivered in rural areas or under other specific circumstances.

How telemedicine works

The two basic methods of telemedical exchange are:

- a "real-time" interactive conference using cameras and audio/video equipment — for example, a patient may visit a nurse practitioner at a local clinic and through audio/video transmission may be diagnosed by an out-of-town physician — and
- a *store-and-forward* method in which information is digitized and transmitted to a consulting professional who can obtain the information later and send a report back to the referring provider, much in the same way as email is transmitted. Information transferred by this method may include sounds, such as heart sounds or voice messages; images, such as x-rays; text, such as patient charts; and video clips, such as ultrasound images.

Telemedical communications systems are set up in several ways. The most common design today for patient diagnosis and treatment and for health education is a closed network or point-to-point system, in which remote facilities are linked to a base hospital or medical facility through a dedicated high-speed transmission line or satellite link. Regular telephone lines do not provide adequate bandwidth for most telemedical communications, but they are being used with success to link rural health-care providers at a clinic in Cuero with selected patients at home and at clinics in nearby Nixon and Kenedy and with doctors in DeTar Hospital in Victoria.

The typical network is a hub-and-spoke system in which several remote facilities, such as hospitals or clinics, have unique links with a base facility, such as an academic health center. Some hub-and-spoke systems are evolving into broader networks. For example, a hospital connected to a medical center also may have telecommunications connections to one or more satellite clinics.

Specialized instruments called *peripherals*, such as electronic stethoscopes and small digital cameras, are used to measure and record a patient's health status for digitized transmission.

According to the American Telemedicine Association, about five years ago a typical telemedicine setup cost about $300,000, but technological improvements have reduced network costs considerably. Experts at the University of Texas Medical Branch (UTMB) in Galveston recently reported that basic telemedicine equipment that once cost about $60,000 now costs about $15,000-20,000. New technology also is making it easier for images to be read over a personal computer, and telemedicine is evolving into desktop applications and systems that incur lower transmission and equipment costs.

Because of the expense of needed equipment and of establishing and maintaining *connectivity* through transmission lines and satellite links, most telemedicine sites are permanent, but some can be set up temporarily to respond to emergencies. During the 1997 standoff between state law-enforcement officials and Republic of Texas adherents in the Davis Mountains of West Texas, Texas Tech University set up a telemedicine site in about 12 hours using the "Teledoc," a portable videoconferencing unit designed for real-time interactive consultations.

New technology may make the Internet the dominant communications mode for telemedicine. The Internet is attractive because it relies on standard phone lines, enabling much less expensive and more accessible communications than through a closed network, and it is an established method of communication.

A growing number of companies are investing in health-care telecommunications equipment and software to provide Internet consultations, diagnoses, medications, treatment, and patient billing. For example, LifeMasters contracts with health-maintenance organizations to allow chronically ill patients to enter their vital signs onto a Web page for review by a nurse, who can alert the patient and the patient's doctor in case of a problem. Another company, Healtheon/WebMD, has been growing into a comprehensive online health site, providing information to consumers plus billing, appointment scheduling, prescriptions refills, and other services to

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doctors and their patients. In March 2000, six major health insurers announced the development of a new Internet business aimed at facilitating patient enrollment and choice of doctors, reducing paperwork related to referrals and medical authorizations, handling physicians' complaints, and processing payment claims.

The Internet, however, poses a greater risk of fraud and unauthorized access to transmitted or stored data than does a closed point-to-point system. Most observers say that before the Internet is used widely in patient-doctor or doctor-doctor communications, software needs to be developed to guarantee confidentiality and security in information transmission and storage.

According to a recent report by the California HealthCare Foundation, *Privacy: Report on the Privacy Policies and Practices of Health Web Sites*, at least 17,000 health-care sites exist on the Internet, and more than 24.8 million adults in the United States have searched online for health-care information. By 2003, the report says, business-to-consumer health-care commerce is expected to grow to $70 billion and business-to-business health-care commerce, to $170 billion.

Current uses of telemedicine

The most common uses of telemedicine in patient care are in cardiology, dermatology, orthopedics, pediatrics, pathology, and radiology. Providers and health-benefit payers have embraced telemedical 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 telemedicine also is growing in psychiatry and mental health services, emergency-room care, and nursing home, home health, and geriatric care.

Telemedicine has gained standing in Texas and other states as a cost-effective method of delivering health care in some prison settings. According to a 1999 report by Abt Associates for the National Institute of Justice, telemedicine has been successful in delivering high-quality care while saving expenses associated with transporting potentially dangerous criminals to outside medical facilities.

Since 1993, the Texas Department of Criminal Justice (TDCJ) has contracted with UTMB and the Texas Tech University Health Sciences Center in Lubbock to provide medical-specialty diagnosis and treatment of state prison inmates through telemedicine. (Prison-facility doctors provide primary-care diagnoses and treatment in-house.) In fiscal 1999, almost 10,000 real-time telemedical consultations were performed in TDCJ facilities, mainly in psychiatry, orthopedics, infectious disease, and surgery. Telemedical specialty consultations constituted about 27 percent of all TDCJ specialty consultations, while telemedical expenses, at $1.6 million, were less than 1 percent of TDCJ's annual health-care budget. The program is expanding to include electronic links to inmates' medical records to facilitate medical diagnosis and treatment decisions.

Funding telemedicine

Federal funding has played a major role in the growth of telemedicine. In the early 1960s, the National Aeronautics and Space Administration (NASA) used electronic systems to monitor spacecraft and astronaut conditions during space missions and provided much of the funding and technology to foster the development of related communications devices, such as satellites. In the 1970s, NASA participated with other federal agencies in demonstration projects to provide general health care to remote populations through telemedical systems.

Today, telemedicine funding spans many agencies, including the federal departments of Agriculture, Commerce, Defense, and Health and Human Services and the National Science Foundation. The Department of Defense has been the largest federal investor, projecting cost savings and improved quality of care not only for responses to wartime emergencies but also in reengineering health-care delivery during peacetime. Some experts estimate that the federal government has spent about a billion dollars on this technology over the past 10 to 12 years. Most federal grants have been targeted to nonprofit providers and rural communities for the purchase of equipment, software, and related training to improve access to health care or health education.

The federal Telecommunications Act of 1996 directed the Federal Communications Commission to explore actions to improve basic telecommunications services to rural areas and required telecommunications companies to provide discounts to health-care providers in rural areas. However, the Southern Governor's Association's Task Force on Medical Technology, in its September 1999 report, *From Promise to Practice*, found federal investments too fragmented and unsupportive of states' efforts to build infrastructure. The report also found that despite the requirements of the 1996 law, no health-care entity has been able to pay a discounted rate, nor has any received retroactive reimbursement for telecommunications services already paid. The task force recommended many changes at the federal level, including merging block-grant programs, giving telemedicine the same high priority for telecommunications funding as schools and libraries enjoy, and making long-term care facilities and home health agencies eligible for discounts.

While federal funding drove the initial development of telemedicine, some see the Telecommunications Infrastructure Fund (TIF) as kick-starting the growth of telemedicine in Texas. Part of the TIF pays for equipment, wiring, videoconferencing, and related training costs for telemedical projects in nonprofit health-care facilities to provide medical care to rural or underserved areas. (See box on page 5.)

Telemedicine projects funded by TIF may include consultative and diagnostic services, interactive video consultation, teleradiology, telepathology, and distance education for health-care professionals. The TIF board specifies eligibility and other requirements for grant awards, and applicants submit conforming spending proposals. Grant recipients must submit documentation of their telemedicine expenditures to receive reimbursement.

The Legislature created the TIF in 1995 to pay for equipment, wiring, and other costs for public schools and other entities. Funds derived from annual assessments on telecommunications utilities and commercial mobile-service providers are allocated evenly to the public schools account and the qualifying-entities account. The TIF board may use up to 25 percent of the qualifying-entities account to award grants or loans for telemedicine.

Since its inception, the TIF has collected $624.2 million in revenues plus $45 million in interest. As of March 31, 2000, the fund had obligated or spent about $459.4 million. Total deposits to the fund are limited to $1.5 billion, excluding loan repayments and interest (Utilities Code, sec. 57.048(c)). The limit initially was projected to be reached in 2005, and the TIF board is scheduled to expire in September 2005 unless continued by the Legislature.

TIF Grants for Telemedicine

As of February 2000, the Telecommunications Infrastructure Fund (TIF) supported 95 telemedicine projects at an estimated total cost of $56.2 million since the grants first were awarded in January 1999. Six separate grants provide funds to all 10 state-funded health science centers and to 716 of the estimated 1,130 public, nonprofit health-care facilities in Texas.

PH1 and **PH2**, the first two grants, provide funds to facilities partnering with a health science center to enhance or establish new patient services or health-information systems through a telecommunications network or the Internet. **PH3** awards funds solely to nonprofit hospitals and clinics, individually or in collaboration, to increase Internet connectivity and to use telemedicine to provide public access to medical information and direct care to patients. **PH4** is limited to telemedicine activities at health science centers. **DI1** and **DI2**, designated as "discovery" grants, fund nine particularly innovative telemedicine projects.

PH1 and both discovery grants were competitive proposals, reviewed by an independent entity instead of TIF staff and awarded only to proposals considered to be of highest quality. The remaining grants were noncompetitive and awarded to proposals that met the board's criteria.

TIF grants range in size from less than $50,000 to millions of dollars. Some of the larger grants include:

- about $10 million in two grants for collaborations between the University of Texas Health Science Center (UTHSC) in Houston and the Texas Organization of Rural and Community Hospitals to develop a multi-use telecommunications network for rural health-care providers. So far, the project includes 192 hospitals, clinics, nursing homes, and home health-care providers.

- $6.2 million in two grants to UTHSC-San Antonio to connect 86 clinics, hospitals, health science centers, and school health centers to the Internet via the statewide Texas Higher Education T1

Network (THEnet) and to facilitate exchange of medical information. A project with the University Physicians Group will connect 55 clinics, hospitals, and mental health facilities to THEnet to bring distance education and telemedical services to South Texas.

- about $5.4 million in two grants to the Texas Association of Community Health Centers to link Texas Department of Human Services (DHS) eligibility workers who are stationed in local clinics to the DHS office information system and to establish distance-learning programs for allied health professionals, patients, and clinic personnel. So far, about 108 community and migrant health centers are participating, along with Baylor College of Medicine in Houston.

Other TIF grants provide funds for:

- a partnership of medical facilities and school districts in the Galveston-Beaumont area to address the needs of "special-needs" children with disabling, chronic, and/or complex health conditions;

- the East Texas Interactive Network, connecting seven participating medical facilities to develop a comprehensive health-care education model;

- a partnership of medical facilities, schools, and libraries to establish 14 "tele-learning" centers in Spring Branch near Houston;

- an initiative to determine whether telemedicine can help improve geriatric care in four rural hospitals in different parts of Texas and whether trained hospital personnel can use telemedicine equipment routinely and appropriately; and

- an initiative to bring oral health, vision and hearing screening, low-cost dental treatment, and health education to children in South Texas through a school-based telemedicine clinic.

The state also funds telemedicine projects and costs through the general appropriations act, usually within special-item appropriations to health-science centers and other institutions of higher education. Total statewide telemedicine-related appropriations have not been tallied, because such appropriations generally are viewed as supporting a larger health-related strategy or objective rather than as a stand-alone activity.

Issues facing the state

The future of telemedicine will depend on establishing it as a relatively inexpensive, easy, reliable, and common form of delivering health care acceptable to doctors, patients, and payers. Industry analysts expect telemedicine to grow rapidly over the next five years or so. However, telemedicine faces legal, regulatory, technical, and other barriers that experts say will require cooperative efforts by public and private participants to resolve.

State role in fostering growth. Some argue that state involvement in promoting the growth of telemedicine should be limited because telemedicine still needs to prove itself. These observers say the growth of telemedicine has been driven more by businesses creating and marketing telemedical products and by medical-center initiatives than by demand from consumers or doctors, and that the state should not spend tax dollars to support services for which the general public is not clamoring.

Those who advocate limited state involvement argue that many consumers are unfamiliar with telemedical services and that the degree to which patients will accept telemedicine in lieu of direct personal attention is uncertain. The traditional practice of medicine relies on trust and face-to-face interaction. Patients ultimately may resist using unfamiliar doctors who cannot examine them physically and confer with them in person. Many doctors, especially those outside of major medical centers, are unwilling or hesitant to adopt telemedical devices and communications to replace or support face-to-face interaction with their patients. Also, a doctor realizes little savings in time and, under current reimbursement structures, little or no increase in pay by scheduling live videoconference consultations with another doctor.

Other advocates of limited state involvement say that the hesitancy of doctors, patients, and health-benefit payers to embrace telemedicine will diminish with the growing use of computers and the Internet by businesses and the general population. They say that telemedicine will grow as a result of private marketplace competition and the development of more products and services that are affordable and easy to use.

Telemedicine advocates, in contrast, say that state investment in telemedicine, along with other public policy assistance, will pay off by meeting many Texans' health-care needs, particularly in rural and medically underserved areas, and can help to reduce health-care costs over the long run. They say that patients who have experienced telemedical consultations generally report high levels of satisfaction with the services, and office-visit videos produced by certain telemedical consultations are proving effective in helping individuals and families conform to doctor-recommended activities for self-care. Some advocates also say that just as Texas' government plays a role in building and maintaining highways, it should help build and maintain an *information* highway that supports telemedicine.

According to the Texas Department of Health, an estimated 6.2 million Texans live in medically underserved areas spanning 223 counties. Texas has an abundance of doctors, but they are concentrated in urban and suburban areas. Advocates say telemedicine can help rectify problems of distribution by expanding access to needed professionals without requiring patients to leave their communities. Telemedicine even could help entice physicians and other health-care professionals to rural and underserved areas by giving them much-needed support and access to information. Advocates say that telemedicine also can help people in urban and suburban areas, such as the elderly and disabled, who lack access to health care because of mobility and transportation problems.

By increasing providers' access to medical specialists and needed information, advocates say, telemedicine will improve patient diagnosis and treatment. They say greater access to health-care providers and health information also will improve patients' health and empower individuals to take more responsibility for their health care.

Advocates cite other benefits, including:

- providing training opportunities for health-care professionals in remote areas;
- improving the oversight of health-care decision-making and reducing a doctor's risk of liability by increasing the involvement of other providers in patient care;

- reducing costly usage patterns — for example, keeping patients out of emergency rooms by providing easier access to primary or preventive health care;
- cutting medical costs by moving information instead of people; and
- providing greater access to Texas medical services for patients in other states and countries.

Advocates say telemedicine already has proven cost-effective in saving lives, preventing unnecessary emergency visits, and providing specialized care in remote areas, and that state support for expanding telemedicine would foster increased acceptance by providers, patients, and payers.

Infrastructure costs. The cost of establishing and maintaining the necessary hardware, software, transmission lines, and connectivity prevents most health-care providers from taking part in a telemedicine network unless they receive TIF grants or federal funding. Most rural communities do not have the telecommunications infrastructure to support telemedicine, and most rural hospitals and other rural health-care providers face financial constraints.

> *Opinions differ as to whether and how much the state should pay to expand the telecommunications infrastructure for telemedicine.*

TIF grants, which generally pay for equipment and related costs, do not help health-care providers with ongoing connectivity expenses. Texas has 57 local phone-service providers, and a single telemedicine transmission that spans several counties may incur multiple usage fees, making telemedicine prohibitively expensive. Monthly costs for maintaining a single dedicated transmission line between a rural provider and a medical center can total thousands of dollars. Some telemedicine supporters want the state to implement a single-charge rate for transmissions across exchanges, so that rural areas can support a telemedicine connection more easily.

While TIF grants target rural and medically underserved areas, only nonprofit health-care providers may receive the grants, whereas the majority of front-line providers in rural areas are private practitioners. Telemedicine supporters say that TIF grants should be available to all providers in rural and underserved areas, because these areas can benefit most from telemedicine's capability to attract, train, and support health practitioners and to provide many forms of care to underserved populations.

Continual advancements in hardware and software make it expensive to maintain and update a telemedicine system. Health-care providers also incur the costs of recruiting and training clinical and technical staff to operate and maintain such a system. Continuation of the TIF after 2005 is uncertain, and third-party health-benefit payers are not covering the full costs of establishing and maintaining telemedicine networks. Telemedicine supporters say the state needs to establish a long-term funding source or combination of sources to help defray these costs for providers and communities. They say that federal funding is not adequate to meet Texas' needs and that competition for federal grants is fierce.

Others, however, raise issues of equity. Should the state ensure that telemedical services are available statewide, or should it continue to target rural communities, nonprofit providers, and prison populations? Since the state has limited funds and since urban communities are the first to receive new technological developments in transmission lines, some say that small rural communities need special assistance to avoid missing out on the advantages of telemedicine that larger urban centers can afford and have the infrastructure to exploit. Others say that TIF grants should be available for all areas of the state, especially where telemedicine could be used to treat or monitor the treatment of patients who are confined or who lack appropriate transportation to health services, such as the disabled, residents in nursing homes, the mentally ill, and the elderly.

Some say the state should implement a structure and process to coordinate telemedical services and development so as to maximize government investments and resources and to facilitate communications among different telemedicine systems. They say that the telemedicine networks now being established in Texas differ markedly from each other, preventing or limiting communications between systems or provider access across systems. Some sort of coordinating body or structure not only could help increase access to health care but also could allow providers to share experiences and thus speed the implementation of telemedicine systems. Some also say the state can maximize its investments in telemedicine by directing more TIF grant awards toward improving training.

A February 2000 report by the State Auditor's Office (SAO) criticized the TIF board for distributing about 25 percent of its fund ($382 million) without adequately identifying Texas' telecommunications needs or creating a viable infrastructure to connect Texans. The SAO also criticized the board for failing to collaborate effectively with other agencies and to develop written procedures for daily operations.

HB 1653 by Maxey, introduced during the 1999 legislative session, would have directed the appointment of a task force to develop a statewide plan to provide the TIF board with guidelines for telemedicine grants, recommend a telecommunications infrastructure, establish funding priorities, and designate a group to coordinate telemedicine initiatives, among other activities. The bill died in the House Public Health Committee.

Other proposals include increasing the state's focus on developing "telehealth" training institutes and curricula in academic health-science centers to ensure professional, competent, and maximized use of the state's investment in telemedicine resources.

The Southern Governor's Association's September 1999 report, cited previously, found that most telemedicine programs in Southern and Western states lack strategic planning and coordination. The report noted that tax dollars are wasted when separate telecommunications networks are built for health care, education, and administrative videoconferencing. The report recommended both intrastate and interstate planning and coordination activities.

Reimbursement for services. Telemedical consultations are reimbursable through private payers, the Texas Medicaid program, and the federal Medicare program. However, critics say that restrictive reimbursement criteria and payment levels are hindering telemedicine's growth and that without receiving adequate compensation, providers will not adopt or expand the use of telemedicine. They note that Texas is spending millions of dollars per year building infrastructure, but in the absence of complementary reimbursement schemes, the state is creating "telemedicine graveyards" of unused or underused equipment and infrastructure.

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In general, both public and private payers tend to view telemedicine as a new service that will increase, rather than reduce, most health-care expenditures. Medicare officials have estimated that paying for telemedicine consultations could cost the Medicare program as much as $30-40 billion per year over current spending, which totaled about $216.6 billion in fiscal 1998. Part of this increase could be due to greater use of health-care services by people who previously did not have good access to those services. For example, according to the Institute of Medicine's 1996 report, *Telemedicine: A Guide to Assessing Telecommunications in Health Care,* home monitoring could save some costs by identifying problems early, but it also could result in increased spending by identifying more "borderline" problems that generate additional office visits or home visits.

Payers also are concerned about the lack of a consistent definition of telemedicine and the lack of data comparing patient outcomes between telemedicine and traditional treatments. They say that telemedicine must develop a track record of saving costs by treating medical problems earlier and more efficiently. In particular, health-benefit insurers that pay providers on a fee-for-service basis, as opposed to a fixed capitated amount, worry that providers may use more costly telemedical technologies when less costly alternatives would suffice.

Telemedicine advocates say, however, that diagnostic and other procedures conducted via telemedicine are not *added* services but necessary ones that have to be conducted with or without telemedicine. Advocates also say that telemedicine will help reduce health-care costs in the long run by providing primary and preventive care for people who may postpone needed trips to the doctor because they face long or difficult travel. Advocates say that expanding coverage for telemedicine would reduce the costs of care by keeping patients in their homes, in hospitals close to their homes, or in nursing facilities, rather than requiring patients to be transferred to larger, more expensive hospitals when problems arise. They also say that telemedicine costs will continue to fall over time with technological improvements.

Lack of supporting data. Policymakers face a lack of claims data with which to analyze cost-effectiveness, due

to the relative newness of telemedicine and the limitations on reimbursement for it. In its 1997 report, *Telemedicine: Federal Strategy Is Needed to Guide Investments*, the U.S. General Accounting Office (GAO) found no evidence to support the $30-$40 billion increases projected by Medicare officials and said that any Medicare budget increase associated with reimbursing telemedicine consultations would be much lower. However, GAO also reported that few comprehensive studies show the cost-effectiveness of telemedicine, even though many individual telemedicine projects demonstrate cost savings.

The federal Health Care Financing Administration, which administers the Medicare and Medicaid programs, is paying for a $28 million study in New York to determine the cost-effectiveness of delivering health care through the Internet to patients with diabetes. About 750 patients will receive monitoring and treatment through the use of home-based computers and peripheral diagnostic equipment, such as blood-pressure cuffs, blood-sugar monitoring devices, and cameras to monitor skin lesions. The study also will use a similarly sized control group of patients with diabetes whose conditions will be monitored and treated through traditional face-to-face methods. Officials predict that data on patient satisfaction will be available within one year, and results indicating cost-effectivness will be known in two to three years.

Insurance issues. Insurance Code, art. 21.53F prohibits certain health-benefit plans from excluding coverage for services provided through telemedicine instead of through face-to-face interactions. Despite this law, providers say, getting adequate payment from private payers is difficult and usually requires negotiations about payment levels and billing procedures. Some say that part of the problem may be related to the scarcity of claims to private payers and the lack of nationally recognized billing codes for telemedicine services. Others suggest that the Texas Department of Insurance should provide more direction to payers and providers about filing claims and payment levels.

Telemedicine advocates note that the Insurance Code exempts some significant health-benefit plans, such as workers' compensation, small group, and disability and accident insurance payers, from the prohibition against excluding coverage for telemedical services. Advocates say

this unnecessarily restricts access to the benefits of telemedicine by patients covered under these plans.

Medicaid and other state issues. The Texas Medicaid program, which provides health-benefit coverage for low-income people, reimburses doctors and other providers for telemedical consultations performed between a medical school or an affiliated facility and an authorized remote site in a rural or underserved area. Government Code, sec. 531.0217 requires reimbursement at the same rate as for a comparable in-person consultation. Providers at both the hub site and the remote site are reimbursed for services. The remote-site provider, who must be a doctor, advanced nurse practitioner, or certified nurse midwife, must be present with the patient during the consultation. Medicaid pays only for face-to-face interactive consultations, except for consultations related to teleradiology and telepathology. It does not reimburse the cost of telemedical hardware, equipment, videotapes, or transmissions.

Telemedicine supporters say that Medicaid should expand reimbursement in many areas, including:

- allowing reimbursement to all health-care providers, not just to nonprofit providers serving patients in rural or underserved areas;
- paying for telemedical consultations in nursing homes and other facilities besides a doctor's office, hospital setting, or health clinic;
- paying for more consultations that use store-and-forward technologies;
- adding more professionals to the list of approved remote-site health professionals, such as clinical psychologists, occupational and physical therapists, registered and licensed vocational nurses, and emergency technicians;
- paying for more services, such as mental health, aged and disabled, home health, primary care, and preventive services;
- increasing payment levels in general; and
- paying for related hardware, software, transmission, and connectivity costs.

Telemedicine advocates argue that by prohibiting reimbursement of for-profit providers, Medicaid prevents telemedicine from reaching the people most in need, since

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most providers in rural areas are private practitioners. Some say that since Medicaid reimburses only care in rural or medically underserved areas, telemedicine's benefits are not reaching low-income patients in suburban or urban areas, who may have an equally difficult time obtaining health care. They say this provision also limits the use of telemedicine as a vehicle to tie together the delivery of health care in all Texas communities.

Telemedicine advocates say that expanding the list of authorized health professionals at remote sites is critical for applying the advantages of telemedicine to areas where doctors and mid-level practitioners are unavailable. They argue that adding social workers, clinical psychologists, and physical therapists to the list of approved providers under Medicaid would allow the use of telemedicine to treat mental illness and other problems among people in underserved areas. In some cases, they say, all that is needed at a remote site is a trained nurse with a video camera. They maintain that proper controls can be established so that allied health professionals are used appropriately with adequate supervision.

Also, allowing allied health and mental health professionals to be reimbursed through Medicaid could facilitate the treatment of patients struggling with multiple medical, developmental, and emotional conditions. Advocates say telemedicine can bring professionals together in one visit with the patient, allowing them to interact with each other in directing treatment and saving the patient's family from the hardship and expense in transporting the patient to many office visits with distant specialists. The Medicaid program also could experience savings from avoided transportation costs.

Some doctors, however, believe that the use of nurses and other allied professionals as the primary professionals in remote telemedicine sites could pose risks in the absence of adequate supervision and control by physicians. They say that telemedicine technologies may give allied professionals a false sense of knowledge and that they may misinterpret a patient's symptoms or mishandle imaging equipment. These doctors also want to prevent managed-care plans from reducing costs and quality of care by inappropriately using nurses and other professionals instead of doctors as primary-care contacts in a telemedical system.

In HB 1398 by Coleman/Farabee, the 1999 Legislature directed the Health and Human Services Commission to appoint an advisory committee to develop Medicaid policies for telemedicine consultations. The committee is expected to issue recommendations this fall.

Telemedicine supporters also advocate authorizing reimbursements for telemedicine through other state-funded programs, such as the Children's Health Insurance Program (CHIP) and Texas Healthy Kids. In February 2000, doctors and other experts from UTMB asked the Senate Health Services Committee for legislation to create a telemedicine pilot project to improve access for patients in county indigent-care programs. They cited telemedicine's proven success in treating Texas prison inmates as an example of telemedicine's cost-effectiveness.

Medicare issues. Reimbursement for telemedicine services through the federal Medicare program, which covers health benefits for the elderly and disabled, generally is more restrictive than through Medicaid. For example, Medicare reimburses the consulting physician at the rate of a face-to-face consultation, but the consulting physician must remit 25 percent of the payment to the remote-site provider. Because of this and other limitations, most providers view Medicare as an inadequate source of payment for telemedicine services, yet Medicare is an important payer to rural providers who care for a disproportionately large elderly population. Also, because of its size and public stature, Medicare often sets the standard for other payers to follow. Medicare, the largest public payer of health care in the United States, paid for services to more than 38.8 million aged and disabled enrollees in fiscal 1998.

Equipment and clinical standards. Some say the state should implement standards for telemedical software, hardware, and transmission. They note that equipment standards commonly are adopted through law or regulation in other areas affecting medicine or public health, such as x-ray equipment and tanning beds, and that telemedical equipment should not be exempt. State standards, they say, would protect law-abiding doctors from unnecessary lawsuits and would assist in the optimal delivery of patient care. Without such standards, providers could be the target of lawsuits based on hardware or software malfunction and the heightened expectations of patients. For example, a doctor could be charged with missing an important feature of a patient's condition because the doctor used an outdated computer peripheral.

Others advocate the development of clinical standards to indicate when the use of telemedicine would be appropriate

and to signify that a given area of telemedical practice has been reviewed by experts and found to be clinically effective. They say the creation of clinical standards would help foster the adoption of telemedicine by providers, improve reimbursement from payers, and reduce the risk of malpractice lawsuits. The state or professional organizations could establish clinical standards.

Others say the state should not intervene in this area. So far, they point out, no one in Texas has claimed malpractice by a doctor due to telemedical software or hardware problems. They say that telemedical technology is changing rapidly and that a regulatory body would find it difficult to devise standards that would provide baseline protection while anticipating state-of-the art improvements. Establishing equipment and software standards can be tricky because even experts may disagree on optimal technical specifications, and technology quickly becomes outdated. Also, different types of data have different equipment needs, and optimal standards may vary according to whether videoconferencing or store-and-forward methods are used. These observers say that prudent doctors most likely will adhere to standards developed by professional organizations like the American Telemedicine Association and the American College of Radiology to decrease their liability risks and to improve patient care.

Some say that new laws may be needed to address a growing number of malpractice lawsuits involving telemedicine.

Medical regulation and liability. Occupations Code, sec. 151.056 generally requires out-of-state doctors either to hold a full license or a telemedicine license with the Board of Medical Examiners (BME) to practice using telemedicine for patients in Texas. Exceptions include out-of-state medical specialists who provide only episodic consultations or home-health or hospice services.

Some telemedicine advocates are pushing for national licensure of doctors so that doctors can participate in interstate telemedicine without the trouble and expense of obtaining individual licenses for each state. National licensure, they say, would address problems with tracking and regulating the practice of doctors across state lines and enforcing practice standards and codes of professional conduct. National licensure and the use of licensure compacts, in which a license in one state is recognized by other states participating in a compact, are not new ideas. Last session, the Legislature enacted HB 1342 by

Maxey, which authorized the Board of Nursing Examiners and the Board of Vocational Nurses to participate in a multistate licensure compact for nurses.

Other say, however, that current law protects patient safety by requiring out-of-state doctors to meet Texas' medical practice and licensing standards, which generally are higher than those in other states. They say that the law clearly establishes that the practice of medicine takes place in Texas if the patient resides in Texas, and the law therefore provides grounds for the state to pursue out-of-state doctors who violate Texas laws or care standards and for individuals to file suit in Texas against out-of-state doctors. The BME also may file complaints with the state(s) in which an out-of-state doctor is licensed. For out-of-state doctors who practice medicine on Texas patients through telemedicine but who do not comply with Texas licensing requirements, the BME may forward a complaint to the Texas Attorney General's Office for enforcement.

Some say that new laws eventually may be needed to address a growing number of malpractice lawsuits involving telemedicine and to limit or clarify providers' responsibilities. The effectiveness of Texas laws and regulations is relatively untested because telemedicine is new. Texas has not yet had to investigate or prosecute a complaint against an out-of-state doctor who participated in a closed telemedical network or over the Internet. Some believe that the lack of face-to-face interaction between doctors and patients could foster mistaken judgments and diagnoses, especially if telemedicine increases physicians' patient consultations and workloads. Also, some doctors and lawyers see the potential for increased liability risks and confusion in pinpointing responsibility when out-of-state providers are involved who fall under different medical practice standards and liability laws.

Others counter by saying that these liability concerns are overblown. Telemedicine alone, they say, will not create any new liability issues, and future legal challenges of medical judgment and patient treatment will be similar to those that occur now in all practices of medicine. They say that the liability inherent in using telemedicine equipment is the same as in using any other medical equipment and that doctors are protected if they use the equipment correctly. Also, they say, most doctors

practice conservatively when using telemedicine and demand to see any patient in person when uncertain about a diagnosis.

The Southern Governor's Association task force's recommendations include encouraging states to cooperate in medical licensure and to develop a system that facilitates the exchange of information on investigations and adverse actions taken against doctors.

Online pharmacies. Many new companies recently have sprung up that allow consumers to obtain and buy prescription and nonprescription drugs, contact lenses, and medical equipment over the Internet. Customers may buy prescription drugs by having their doctors call in, fax or electronically transmit a prescription to an online company, or in some cases by directly contacting "online pharmacies" that ask customers to complete a questionnaire that is reviewed by a contracted physician before the requested drug is prescribed. According to the U.S. Food and Drug Administration (FDA), the number of online sites selling prescription drugs fluctuates daily but could be as high as 1,000.

Many observers say that only increased efforts by federal regulators can achieve sufficient oversight of the online sale of prescription drugs.

Supporters say that legitimate online pharmacies offer consumers a convenient, private way of buying and receiving drugs without leaving home, the ability to shop for the lowest prices, and increased access to drug information and pharmacists' advice. Individuals in remote areas or who are confined to their homes may benefit particularly from online pharmacies.

Several tiers of regulation exist to safeguard the prescribing and dispensing of pharmaceuticals. The FDA is charged with reviewing new drugs to ensure their effectiveness and safety and with designating drugs that may be obtained only through physician-ordered prescriptions. Pharmacies and pharmacists must meet licensing and practice standards established by the states in which they operate.

Online pharmacies doing business with Texas consumers must comply with State Board of Pharmacy laws and regulations. Out-of-state businesses usually fall under the licensing requirements for Class E mail-order businesses in the Occupations Code, subtitle J. In-state businesses typically are licensed as Class A pharmacies.

Doctors working with online pharmacies are subject to the state's Medical Practice Act and to BME regulations.

Issues with online prescribing. Supporters say that sites that use patient-completed questionnaires reviewed by licensed physicians as a basis of prescribing drugs over the Internet protect patients by providing competent medical oversight to ensure that no drugs are prescribed to patients whose health conditions would be compromised. Not all drug prescriptions require face-to-face consultations, they say, and to require such consultations would increase health-benefit costs, physicians' workloads, and inconvenience for patients.

However, many say that online pharmacies may increase fraud and illegal drug diversions and that it is difficult to tell whether a licensed physician is being used to review questionnaires or to provide any sort of control over drug prescriptions. These observers say that the use of questionnaires to review a customer's medical condition is not enough to protect consumers' safety. Without face-to-face consultations, they say, patients are diagnosing and treating their own problems and are missing the opportunity for informed medical advice. Also, customers could give false identities or claim to have certain medical conditions solely to obtain the medications for fraudulent or illegal use.

In December 1999, the BME issued a policy stating that the board considers the use of online or telephone questionnaires an inadequate method of establishing a "proper physician-patient relationship" for initially prescribing drugs to a patient and that the board considers such activities to constitute substandard medical care. The statement also effectively authorizes the State Board of Pharmacy to investigate and penalize online pharmacies that are prescribing drugs. However, some say the BME's policy should be placed in statute to make prescribing through Internet questionnaires illegal. This would reduce the board's burden of proof in establishing in each case that such a practice resulted in substandard care. The board already has disciplined a doctor in San Antonio for online prescribing and is investigating several others.

Both the American Medical Association and the National Association of Boards of Pharmacy (NABP)

have taken the position that writing prescriptions without a legitimate physician-patient relationship is wrong. NABP also advocates licensing online pharmacies in each state and has initiated the Verified Internet Pharmacy Practice Sites (VIPPS) program to verify the legitimacy of online sites dispensing drugs and to grant acceptable sites a seal of approval. In September 1999, the NABP issued its first VIPPS certifications to three online pharmacies, drugstore.com, Merck-Medco Rx Services, and PlanetRx.com.

Federal efforts sought. Many observers say that only increased efforts by government regulators can achieve sufficient oversight of the online sale of prescription drugs. They say that increased federal regulation is needed to ensure the quality of drugs purchased online, to monitor the Internet for illegal activities, and to enforce federal and state laws and regulations, especially concerning foreign-based pharmaceutical businesses. Consumers on the Internet are at risk of receiving drugs that are counterfeit, adulterated, contaminated, unapproved by the FDA, or marketed with fraudulent health-benefit claims when purchased through illegitimate or overseas drug businesses.

More effective federal oversight also is needed, some say, because Internet technology can make enforcement of health and safety standards difficult by obscuring business sources and crossing jurisdictional lines. For example, a Texas consumer could obtain drugs through a business that dispenses drugs from one state but uses a physician located in another state. Online pharmacies, which may use resources and personnel in many states or countries, make it difficult to identify the source of a drug product, the businesses responsible for making and shipping the drugs, and the identity and licensing of any pharmacists or physicians working with the online businesses. Enforcement is complicated even more by the fact that some online businesses easily could move out of the United States, thereby avoiding direct U.S. intervention and regulation.

In December 1999, the Clinton administration proposed authorizing the FDA to regulate Internet sites that sell drugs, enacting civil penalties of $500,000 per violation for the sale of drugs to individuals without a valid prescription, and other enforcement and public education efforts. The FDA already has taken other actions to curtail illegal drug trade over the Internet, including expanding its monitoring of Internet sites, coordinating enforcement efforts with other federal, state,

and international agencies, and issuing electronic letters to foreign-based sites warning the operators that they may be engaged in illegal activities. In January 2000, officials from the U.S. Customs Office and the government of Thailand raided an operation suspected of running several Internet sites selling prescription drugs to U.S. residents.

Opponents of increased federal regulation say that it would stifle the growth of Internet commerce. They say that public education and enforcement of existing laws should be enough to curb illegal sites.

Confidentiality and system security. The merging of hospitals into multifacility systems and networks, the growth of managed-care organizations, and the proliferation of comprehensive online health businesses are creating huge electronic databases holding medical records and other personal information about consumers and providers. These records may be valuable to marketers, employers, insurers, the court system, and drug companies.

Many worry that electronic communications and storage could jeopardize the confidentiality of sensitive patient information, especially if the Internet becomes the dominant vehicle for telemedicine. Personal information could be disclosed more easily to unauthorized persons, either inadvertently or on purpose, or could be obtained by people attempting to do harm. Medical-record databases and other health-care information systems could become the targets of Internet "hackers" and, even in a closed-system network, of people attempting to commit fraud and other crimes by tampering with medical records, inventories of drugs and other supplies, and billing information. These observers believe that if telemedical communications were sabotaged, as happened to the Internet businesses Yahoo, eBay, Amazon.com and Buy.com in February 2000, patients' lives could be harmed.

The California HealthCare Foundation study, cited previously, reported that some health sites on the Internet surreptitiously have been sharing consumers' personal information with businesses that sell health-care products and services. A site may obtain such information from the consumer through a questionnaire or without the consumer's knowledge through the use of Internet "cookies," which track information about the online activities and characteristics of people who visit web sites. Cookie software allows e-businesses to recognize one customer from another and allows marketers to target advertisements to a consumer's computer. Banner advertisements

appearing on online health sites, when clicked on by consumers, are another way of collecting information about site visitors without their knowledge.

The study also reported that most sites do not meet minimum fair-information practices, such as providing notice to consumers about the gathering of information and holding business partners to privacy standards, and that most sites do not have adequate security to protect consumer information from hackers. Other studies, including those by the Federal Trade Commission, the Electronic Privacy Information Center, and the Center for Democracy and Technology, have reported similar findings.

Resolving privacy concerns. A.G. Breitenstein of Choosinghealth.com, a health-care information service, recently told House Public Health Committee members that security can be compared to a lock on a door, while privacy relates to who has the keys. The most sophisticated security system is rendered essentially useless, she said, if too many people have easy access to entry. Policymakers must consider both security and confidentiality issues to address consumers' and businesses' privacy concerns.

Some say that developments in technology and software and increased information about privacy issues will resolve consumers' concerns about security and confidentiality. Consumers can delete cookie programs embedded in their computers, increase the security settings on their browsers, and use other safeguards, such as those described on the Electronic Privacy Information Center's web site, *www.epic.org*.

Some experts also recommend informed consent as a means of informing users of the limitations of technology and the risks of electronic transmissions. Many providers voluntarily have enacted policies to obtain informed consent from patients before a telemedical consultation. In Texas, the BME requires a doctor to obtain written informed consent from any patient who is the subject of an out-of-state telemedical consultation, though the board has not established similar requirements for in-state telemedical consultations. The consent must include an acknowledgment that electronic transmission may compromise the confidentiality of medical information.

Others say that security and confidentiality vulnerabilities in closed-system telemedicine networks are no different from what large health-care systems and businesses are facing now, and that people will try to

commit fraud and other crimes no matter what kind of security system exists. They warn against employing security constraints that would inhibit the construction of large medical-record databases that could keep doctors fully informed of their patients' medical histories and improve patient care. Such databases also could support medical research and improve health care on a regional or statewide scale, they say.

Federal and state activities. Many activities related to privacy and security have taken place at the federal level, although Texas may need to implement programs to help the federal government or to address local issues. The federal Health Insurance Portability and Accountability Act of 1996 required the establishment of federal privacy standards for health information used by health plans, health-care clearinghouses, and all health-care providers that transmit health information electronically. The federal Department of Health and Human Services (DHHS) proposed rules in November 1999 and has received about 40,000 comments, which may cause final rules to be delayed for more than a year. The proposed rules include the following provisions:

- an individual's health information may be disclosed only for treatment, payment, and other specified purposes, such as law enforcement;
- in all other circumstances, individuals must give written authorization for disclosure of their health information and may revoke that authorization at any time; and
- health-care providers must establish policies and procedures to limit the use of protected information.

The Federal Trade Commission is investigating the practices of Internet health-care sites that allegedly share consumer information and of Web advertisers that use "cookies." Other federal activities include the formation by U.S. Senate Democrats of a Task Force on Privacy, which is examining suggested actions to protect the privacy of Americans' medical, financial, and other personal information kept electronically.

Recommendations on health-care confidentiality issued by such organizations as the National Conference of State Legislatures, the Southern Governor's Association, the E-Health Association, and Choosinghealth.com include:

- allowing states to adopt safeguards that may be more restrictive or more punitive than those established by the federal government;

- requiring strong measures to prohibit disclosure of protected health information to health-care marketing companies without the consumer's specific written consent;
- establishing strong penalties to protect the security and accuracy of protected health information.
- developing privacy policies that fit each practice;
- making protections follow the information regardless of the provider or whether the information is kept on paper or electronically;
- establishing a private right of action so consumers can protect themselves against confidentiality breaches; and
- applying federal privacy standards to parties who are involved in exchange of health information but who are not covered under the regulatory jurisdiction of DHHS.

The Southern Governor's Association task force on telemedicine further recommended the development of consistent laws and regulations to facilitate the exchange of digital identification or digital certificates, which would allow access to databases and protected health-care information only by authorized users.

Competition. Many doctors worry that growing telemedicine networks will encroach on their patient base or their control over patient care. They fear losing their patients' confidence or trade to doctors in distant or out-of-state medical complexes. Doctors and small hospitals participating in telemedicine networks also fear losing patients and business clout to medical-center hubs that are the keepers of a telemedicine network's health-care information system.

Others say that fears of competition should not stunt telemedicine's growth because systems can be created in which benefits exceed any market risks. They say that telemedicine can enhance the care and expertise of local providers by providing easy access to specialist consultations, thereby keeping patients close to home.

They also say that the utilization limits generally imposed by managed-care plans will minimize diversion of patients to outside doctors. Also, they say, telemedicine gives all Texas providers a chance to market their expertise and services regionally, nationally, and internationally, creating the potential to improve providers' revenues and the delivery of services to local residents.

Information quality. While health professionals, consumers, and businesses generally agree that accurate health-care information on the Internet can be beneficial to patient care and health maintenance, many worry about the proliferation of inaccurate, fraudulent, or misleading information. They say that inaccurate information can cause some individuals to refrain from seeking care for problems that require medical attention or to hurt themselves when attempting to treat their own conditions. Advertisers and other businesses financially linked to health-care Web sites may influence site content so that the information posted becomes misleading or one-sided. Inaccurate, fraudulent, or misleading information also is increasing the workload of many health professionals who now must spend time countering patients' demands for unsubstantiated remedies or resistance caused by heightened fears and mistrust.

Monitoring and regulating health information on the Internet is made difficult by the sheer number of sites, by differing expert views on what constitutes appropriate medical treatment and patient advice, by First Amendment protections of free speech, and by problems associated with regulating entities based out-of-state or outside the country. Some have suggested that the creation of voluntary "seal of approval" programs for health-care sites by one or more respected professional organizations or accreditation bodies could help direct consumers to sites with valid information. One such seal program, developed by the Health On the Net (HON) Foundation, is being used by more than 2,800 sites that voluntarily comply with the HON Code of Conduct. The foundation's Internet address is *www.hon.ch*.

— Kristie Zamrazil

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