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networks

practical tools for a changing environment

Exploring Telemedicine's Promises & Pitfalls

by Susan Milstrey Wells

Using advanced telecommunications equipment, a 47-year-old researcher and medical doctor at the South Pole who discovered a lump in

her breast in mid-July was prepared to beam images of tissue samples to pathologists in the United States. If she were to need emergency surgery, Douglas Perednia, M.D., president of the Association of Telemedicine Service Providers (ATSP), told *Newsweek* magazine, "There's no inherent reason why the surgery couldn't be directed by a surgeon in the U.S."¹

American healthcare stands at a crossroads. What began a few decades ago as a way to increase access to care in rural areas is viewed today by many as a means to manage chronic physical and mental health conditions at home, to provide psychiatric care to school children and prison inmates and to bridge cultural as well as physical distances that prevent individuals from receiving needed services.

defines telemedicine as "the use of electronic information and communications tech-

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Understanding the Technology

The pieces that make up an interactive video telemedicine system are familiar to most people—computers, cameras and telephone lines. However, the specific configuration of telecommunications equipment and transmission systems are as varied as the telemedicine programs that use them.

Equipment Prices Dropping

Telecommunications equipment can range from relatively low-tech videophones that cost several hundred dollars to full-scale "boardroom" systems whose price may exceed \$50,000. In recent years, dramatic reductions in equipment prices and the availability of desktop systems have made telemedicine more affordable and accessible. The unit that cost Thelma McClosky Armstrong, Director of the Eastern Montana Telemedicine Network (EMTN), \$75,000 in 1993 now sells for \$10,000 to \$12,000. The Billings-based EMTN offers a full range of telemedicine services, including psychiatry.

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A 1996 report by the National Academy of Science's Institute of Medicine (IOM) asserts that telemedicine "has the potential to radically reshape health care in both positive and negative ways."² In this often-cited report, the IOM

¹ Hayden, T., and Rogers, A. (1999). "Nowhere to Go for Help," *Newsweek* July 26, p. 68.

² Field, M.J. (Ed.). (1996). *Telemedicine: A Guide to Assessing Telecommunications for Health Care*. Washington, DC: Institute of Medicine.

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MESSAGE FROM NTAC'S DIRECTOR

This issue of *networks* explores the use of telemedicine to provide mental health services. A number of states have offered "telemental health" services for some years now: Arizona, Ohio, Oregon, Kansas, Montana, South Carolina and Virginia, among them. Originally motivated by the need to deliver physical and mental health services in largely rural and understaffed areas, rapidly improving technology and falling costs are generating new interest in the potential for telemedicine to bridge other types of distances to provide services to: inner-city school youth, aging persons, those confined to their homes because of illness and prison/jail inmates.

The issue addresses some of the "promises and pitfalls" of telemedicine and provides a brief primer on the technology that supports it. Interestingly, the interviews we conducted with experts in the use of telemedicine as we prepared for this issue raised as many questions as they answered. How valuable is telemedicine for individual and group psychotherapy? To date, it's been used primarily for consultations and medication management. Can the technology be effectively used to assess facial

expression, voice tone, body language and the hundred other small and large hints and cues that go into the "art" of therapy? Is telemedicine a new way to expand access to mental health services or another expression of society's tendency to depersonalize?

As a relatively young field, telemedicine offers both opportunities and challenges for the public mental health system. This issue of *networks* is designed to help you consider the technological and philosophical questions that arise with its use.

In keeping with our interest in cutting-edge technology, NTAC is redesigning its web site to be more up-to-date, user friendly and responsive to your needs for technical assistance and information. The new site—which should be ready to launch within the next month to six weeks—will increase our capacity to host special interest discussion forums, improve linkages with other behavioral health web sites, provide direct publication review and ordering, and connect you with your peers in other states. It's our way of helping you cope effectively with an ever-changing environment. Keep letting us know how we can support you in the important work you do! ♦

—Bruce D. Emery, M.S.W.

Telemedicine *(continued from front cover)*

ologies to provide and support health care when distance separates the participants."

The term telepsychiatry refers to the use of telemedicine in psychiatry, while the term telemental health encompasses all mental health applications, including non-clinical services, assisted by telecommunications technologies. Typically, telemedicine projects connect rural and other underserved communities with specialists at centrally located hospitals and universities.

Recent Growth

Many telemedicine projects initiated from the 1950s to the 1970s were short-lived because the technologies of the day were expensive and difficult to use and no plans were developed to continue financial support beyond the initial grant or trial funding period. In the 1990s, the Office of Rural Health Policy in the federal Health Resources and Services Administration (HRSA) provided new impetus to the field by making numerous "outreach
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grants” to establish telemedicine programs to address the “geographic maldistribution” of healthcare resources. This telemedicine initiative actually emphasized mental health services, notes Cathy Wassem, R.N., Director of Telemedicine/Telehealth Programs and Evaluation in HRSA’s Office for the Advancement of Telehealth.

With technology improving and equipment prices falling, the number of telemedicine programs has mushroomed in recent years. Nonetheless, the volume of patients remains relatively low. [See *Understanding the Technology on page 1.*] According to ATSP’s *1998 Report on U.S. Telemedicine Activity*, there were 157 active telemedicine programs in 1997, up from 10 in 1993. Of these, mental health services accounted for the largest single group of programs and consultations, 43 and 7,000, respectively. Other medical specialties making increased use of telemedicine include cardiology, dermatology and internal medicine. Interestingly, one-fifth of all telemedicine activity occurred in prisons.

The use of interactive video—which involves the simultaneous transmission of video images and sound, as if one were watching television—comprised 54 percent of all telemedicine consultations in 1997, according to the ATSP report. However, so-called “store and forward” technology—which involves transmission of data or images such as X-rays to be viewed by medical personnel at a later time—seems to be growing in popularity.

Telemental Health Services

Any mental health service that can be delivered in person can also be delivered using interactive video, asserts Henry A. Smith, L.C.S.W., Project Director of the Appal-Link Network in southwest Virginia. To date, medication management and consultations with specialists are the most common telemental health services offered by public and private mental health providers. Other services include pre-admission screening, treatment and discharge planning, case conferences, commitment hearings, individual and group therapy, family visits, support group meetings, staff training and administrative activities.

Although the American Psychiatric Association states that it is feasible to provide individual psychotherapy using interactive video, few telemedicine programs have chosen to do so. Of 30 rural telemental health programs surveyed in 1997 by the Frontier Mental Health Services Resource Network, 93 percent provided consultations, but only 17 percent offered therapy.³ In most cases counselors at local mental health programs provide therapy for consumers in conjunction with telemedicine consultations.

Telemedicine can also be used to provide specialized mental health services. For example, the South Carolina Department of Mental Health has pioneered the use of interactive video to serve persons with serious mental illness who are deaf or hard-of-hearing. The department’s Deaf Services Program recently received a \$20,000

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Understanding the Technology

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Selecting Bandwidth

In telemedicine, compressed audio and video signals are usually carried over telephone lines. The more advanced the transmission technology, the greater the bandwidth a system has available. Bandwidth refers to the size of the pipeline that carries the video and audio signal, measured in kilobits (1,000 bits) per second (kbps); the higher the bandwidth, the better the quality of image and sound. As one would expect, costs also increase with bandwidth.

To date most telemedicine programs use one of three primary telecommunications technologies: “plain old telephone” lines (POTS), which operate at 56 kbps; Integrated Services Digital Network (ISDN) high speed lines that carry up to 128 kbps and that can be “bonded” to create higher bandwidth; and T1 lines, which use a specialized cable to provide bandwidth of up to 1,536 kbps and which can accommodate up to 24 phone stations. A dedicated T1 line is fixed between two points for full-time operation and requires a flat-rate monthly access fee that usually ranges from \$500 to \$1,000, compared with a monthly maintenance fee of less than \$100 for an ISDN line. Many telemedicine programs use a one-quarter T1 line for 384 kbps. Other transmission options include satellite and cable-modem.

A relatively new technology, Digital Subscriber Lines (DSL), operates in conjunction with the Internet to provide bandwidth ranging from 128 kbps to 8,000 kbps. DSL’s advantages include the capacity for high bandwidth at relatively low cost—ranging from \$40 to \$200 per month—and the ability to use regular phone lines already installed in homes and businesses.

Deciding How Much is Enough

The question of how much bandwidth is needed to work with consumers effectively generates a lively debate in telemedicine circles. Although many project directors have settled on 384 kbps as the standard, others maintain that one should use the least expensive technology that can still get the job done. For example, the Kansas University Medical Center Tele-KidCare program operates at 128 kbps, and its hospice and home care programs both use videophones. [See *Focus on the States on page 5.*] In psychiatry, experts emphasize, different tasks require different bandwidths. ♦

³ LaMendola, W.F. (1997). *Telemental Health Services in U.S. Frontier Areas*. Letter to the Field No. 3. Frontier Mental Health Services Resource Network, July 29. Available at <http://www.du.edu/frontier-mh/letter3.html>

www.telemedicine.com

American Telemedicine Association (ATA): Offers a list of "Links and Resources" including general telemedicine resources and publications, legal issues, telemedicine in academic medical centers and federal agency initiatives. Includes information on ATA's Year 2000 meeting and the latest news and developments in telemedicine. <http://www.atmeda.org>

Association of Telemedicine Service Providers (ATSP): Copies of the *1998 Report on U.S. Telemedicine Activity* may be ordered online. Site includes an equipment exchange and a resource section with position papers, links and a 200-word glossary of telemedicine terms. <http://www.atsp.org>

Federal Telemedicine Gateway: Contains information on active, federally funded telemedicine projects that provide direct patient care, organized by sponsor agency, services provided and geographic location. This web site is a project of the Joint Working Group on Telemedicine (JWGT), a group of federal agencies that support the development and improvement of telemedicine. <http://www.tmgateway.org>

Kansas University Medical Center (KMUC) TeleMedicine Program: Provides detailed information about the KMUC telemedicine program, including its

history, clinical services, research and educational activities. Clinical services include psychiatry and home and school-based care. <http://www2.kumc.edu/telemedicine>

National Library of Medicine (NLM) Telemedicine Initiative: Contains program descriptions of and links to 19 multi-year telemedicine projects designed to evaluate the impact of telemedicine in the areas of health care quality, cost and access. <http://www.nlm.nih.gov/research/telemedinit.html>

Telemedicine Information Exchange (TIE): A comprehensive list of resources that includes a bibliographic database; a list of more than 200 telemedicine programs worldwide; information on meetings, funding sources, legal issues and job openings; a vendor list; and articles from the current issues of major telemedicine publications. <http://www.telemed.org>

Telehealth Discussion List: Send an e-mail to listserv@maelstrom.stjohns.edu to subscribe. In your e-mail, write: subscribe telehealth your first name your last name.

Usenet Newsgroup: Access at sci.med.telemedicine. Users can also post or subscribe at <http://www.deja.com>

Telemedicine *(continued from page 3)*

award from Harvard University's Innovations in American Government competition to replicate its approach to services, including telemental health services, in other states. "Through this program we are providing culturally competent services to the deaf community which have resulted in almost total cessation of hospitalization for this population," notes Stephen M. Soltys, M.D., South Carolina's Director of Mental Health.

Telemedicine's Promises

Increased Access. Telemedicine's greatest promise is the opportunity to improve access to health care for individuals in medically underserved communities. Although these communities are typically found in rural and frontier areas, lack of access can involve more than literal distance, observers note. For example, an innovative program at the Kansas University Medical Center (KUMC) provides primary health care and psychiatric services to

urban school children who might otherwise not receive these services. [*See Focus on the States on page 5.*]

Cost Savings. Proponents believe that telemedicine also enables providers to see more patients at lower cost. The Eastern Montana Telemedicine Network (EMTN) has saved its member community mental health agencies \$1 million in transportation costs since it began treating patients using interactive video in 1993, says Nancy McClosky Armstrong, network Director. The U.S. General Accounting Office (GAO) reports that the Texas prison system saved \$495,000 in two years by using telemedicine to treat inmates.⁴ However, Jim Grigsby, Ph.D., Senior Researcher at the Centers for Health Services and Policy Research at the University of Colorado Health Sciences Center, cautions that "cost offsets do not equal cost-effectiveness."

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⁴ U.S. General Accounting Office. (1997). *Telemedicine: Federal Strategy Is Needed to Guide Investments*. Washington, DC: Author.

Kansas Program Pioneers Telemedicine Applications

“The doctor will see you now.” In Kansas those words have taken on special meaning. For community mental health center consumers, inner-city school children with emotional problems or incarcerated individuals who have psychiatric health care needs, the doctor is more often than not at the Kansas University Medical Center (KUMC). Consumers can stay right where they are—in their case worker’s office, in school, or in a jail or prison—to receive the care they need.

The TeleMedicine Program at KUMC in Kansas City has pioneered the use of interactive video for both medical outreach and preventive services. In recognition of its achievements, the Kansas program received the 1999 American Telemedicine Association President’s Award for the Advancement of Telemedicine.

When KUMC instituted its telemedicine program in 1991, it was one of only four active telemedicine programs in North America, notes David Cook, Ph.D., the program’s Assistant Director. In 1998 the program conducted 1,643 consultations, making it one of the five most active telemedicine sites in the world.¹ The network connects more than 30 rural sites and 11 urban schools with some 200 specialists at the medical center.

The KUMC program is on telemedicine’s leading edge, both in its efforts to serve urban as well as rural populations and in its success in using relatively low-bandwidth systems to expand care for special groups. One of the program’s strengths, program Director Gary Doolittle, M.D., told *Telehealth* magazine, is its ability to “find the best technology to fit the need.”²

Adult and child psychiatric services account for the majority of KUMC’s annual telemedicine consultations, with the number of patient visits growing exponentially in recent years.³ Both adults and children have access to psychiatrists on an on-call basis and through regularly scheduled clinics that link the medical center to acute-care facilities, community mental health centers, group homes and jails throughout the state.

Using telemedicine technology, Charles Zaylor, D.O., Assistant Clinical Professor of Psychiatry in the Department of Psychiatry and Behavioral Sciences at KUMC, conducts medication management clinics for adults who are patients of the Crawford County Mental Health Center in Pittsburg, Kansas. He also provides about 30 consultations a month for

inmates of the Lyon County Jail in Emporia. Telemedicine, he says, “brings services to people who have limited choices.”

About 90 percent of Dr. Zaylor’s telemedicine consultations are done using desktop systems and about 5 percent using videophones—telephones that have their own monitor or that can be connected to a television set to transmit video images. Only 5 percent of his telemedicine work involves high-end technology. “You can acclimate to the lack of total clarity,” Dr. Zaylor says, noting that although individuals’ facial features are difficult to discern over low-bandwidth systems, he can still read their body language. Nurses at the remote locations examine consumers for evidence of medication side effects such as tremors and communicate that information to the psychiatrist. [See Understanding the Technology on page 1.]

One of the program’s strengths is its ability to “find the best technology to fit the need.”

Dr. Cook points out that cultural and economic barriers, in addition to physical distance, can render health care inaccessible. Inner-city Kansas City school children “may be only a mile away from the doctor, but they’re not getting care,” he says. KUMC’s TeleKidCare **K** bridges that gap by connecting school nurses’ offices to medical center pediatricians and child psychiatrists who diagnose and treat acute illnesses and manage chronic conditions ranging from asthma to depression. Parents unable to leave home or work can join the telemedicine session by phone.

Dr. Cook notes that staff of two participating Kansas hospice programs can provide “more care and more immediate care” to their patients using Tele-Hospice **K**, through which inexpensive, videophones are delivered to the homes of patients who volunteer to participate in the program. “Sometimes all the patient needs is to ask a question or be reassured,” Dr. Cook says. The transition from acute-care hospitals back to the home is eased for some patients by providing them with home telemedicine units.

For more information about the KUMC TeleMedicine Program, visit the program’s web site at <http://www2.kumc.edu/telemedicine> or contact David Cook, Ph.D., at (913) 588-2251.

¹ Allen, A. and Wheeler, T. (1998). “5th Annual Survey,” *Telemedicine Today* 36-37.

² “KUMC Finds Success with Low-Bandwidth Options.” (December 1998). *Telehealth*.

³ *Ibid.*

CALENDAR OF EVENTS

October 3-8: National Association of State Mental Health Program Directors (NASMHPD). **NASMHPD Forensic Division 20th Annual Conference/NASMHPD Children, Youth and Families Division 1999 Annual Meeting.** Tarrytown, NY. Call 703-739-9333.

October 6: University of California, San Diego, Extension. **Overview and Update on Telemedicine.** San Diego, CA. Call 619-534-3400.

October 13: Internet Healthcare Coalition (IHC). **Second Annual Quality Health Information on the Net: Healthcare Professionals and Consumers Online—Fixing the Broken Link.** New York City. Call 215-949-3805.

October 14-16: NASMHPD and NASMHPD Research Institute, Inc. **NASMHPD and NRI National Summit: Exploring the Changing Roles of State Psychiatric Hospitals.** Washington, DC. Call 703-739-9333.

October 24-26: University of Vermont. **How To Build a Telemedicine Program.** Burlington, VT. Call Christine Lash at 802-656-3386 or go to <http://www.vtmednet.org/howto>

October 27-28: **NASMHPD Medical Directors 3rd Annual Symposium.** New Orleans, LA. Call 703-739-9333.

November 6-10: American Medical Informatics Association (AMIA). **AMIA 1999 Annual Symposium: Cornerstones for a New Information Management Paradigm.** Washington, DC. Call 301-657-1291.

December 12-14: **NASMHPD Commissioners Winter 1999 Meeting.** Washington, DC. Call 703-739-9333.

January 13-14, 2000: National Library of Medicine. **Telemedicine and Telecommunications: Options for the New Century.** Bethesda, MD. E-mail telesymp@nlm.nih.gov; fax 301-402-4080; or go to <http://www.nlm.nih.gov/research/telesymp.html>

February 13-15: NASMHPD Research Institute, Inc. **10th Annual Conference on SMHA Services Research, Program Evaluation and Policy.** Washington, DC. Proposals for presentations are due by October 15. Contact Vera Hollen at (703) 739-9333, ext. 16, or fax to (703) 548-9517.

May 21-24. American Telemedicine Association (ATA). **ATA Annual Meeting.** Phoenix, AZ. Call 202-628-4700.

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Efficiency. Telemedicine is “a more efficient way to deliver good care,” asserts David Carlson, M.D., a psychiatrist at the Deaconess Billings Behavioral Health Clinic in Billings, Montana. Dr. Carlson used to fly to small communities around the state once a week to see 8 to 10 patients a day, many of whom, he notes, did not keep their appointments. Today, Dr. Carlson says his telemedicine clients have a no-show rate of only 2 percent. Although there is no national data, anecdotal evidence appears to support the view that patients are more likely to keep their telemedicine appointments.

Treatment Teams. Telemedicine also helps bridge fragmented systems of care for rural mental health consumers by creating what Ms. Wassem calls a “virtual treatment team” composed of the psychiatrist, the consumer, family members and community providers. More than 400 people with serious mental illnesses who were originally treated at the Southwest Virginia Mental Health Institute have received follow-up services over the Appal-Link Network by the same psychiatrists who treated them in the hospital, with family members often participating in discharge planning and case conferences.

Consumer Satisfaction. To date most information on consumer satisfaction and outcomes is anecdotal but positive. Catherine Britain, program manager of RODEO NET, which provides telemental health services in eastern Oregon, emphasizes that rural consumers always have the option to travel to a metropolitan area for a medical appointment or to wait for a doctor to visit. Given that choice, Mrs. Britain notes, most patients choose telemedicine.

Potential Pitfalls

Lack of Research and Evaluation. By far the biggest criticism of telemedicine is the lack of rigorous models or outcome studies that demonstrate clinical effectiveness and economic feasibility. Researchers attempting to study telemedicine face formidable difficulties, according to the IOM report, including relatively low numbers of subjects and the wide variety of telemedicine applications. Nonetheless, some studies have found telepsychiatry to be as effective as in-person care. Charles Zaylor, D.O., assistant clinical professor of psychiatry in the Department of Psychiatry and Behavioral Sciences at KUMC, conducted a retrospective records review of 49 patients with major depression or schizoaffective disorder, half of whom he saw in person and half through interactive video. He characterized both the in-person and video sessions as medication management with some supportive psychotherapy. Dr. Zaylor found no difference in the percentage change in Global Assessment of Functioning (GAF) scores between the two groups. Patients seen with interactive video had a greater attendance rate, and follow-up visits took less time.⁵

Despite the effectiveness of telemedicine in many areas of mental health, Russ Newman, executive director for professional practice at the American Psychological Association, points out that there are still important questions about using telemedicine to provide individual and group psychotherapy, which depend so heavily on

the interaction and relationship between consumers and providers. "There is not yet research to demonstrate that psychotherapy using videoconferencing technology might be beneficial," Mr. Newman notes. He adds that no reliable data exists about whether or how the introduction of telecommunications equipment affects the therapeutic relationship.

An American Psychiatric Association report cites research suggesting that although lower bandwidth systems (those with poorer sound and video images) are adequate for many clinical applications and for administering questionnaires and rating scales, higher bandwidth systems enhance recognition of the negative symptoms of schizophrenia and of manual tremors and pupillary reflexes.⁵

Provider Reluctance. Many doctors and other mental health professionals find telemedicine "less efficient and less convenient," Dr. Grigsby says. This is especially true if telemedicine equipment is not located where the provider practices, or if the referring doctor needs to be involved in the consultation with a specialist. Furthermore, rural practitioners who are not accustomed to referring patients to psychiatrists and other mental health professionals in a distant city may not feel comfortable doing so even when these individuals become available by telemedicine.

Licensure and Confidentiality. The use of telemedicine raises concerns about provider licensing and liability, consumer confidentiality and the lack of practice standards, the federal Joint Working Group on Telemedicine (JWGT) noted in its January 1997 report to Congress. In particular, lack of privacy and security standards may prompt legal challenges, especially in the treatment of "conditions that carry a social stigma," such as mental illness, substance abuse and HIV, the JWGT report notes.

Telemedicine's Future

Driven by what Ms. Wassem calls the "twin and sometimes contradictory imperatives" to increase health care access and reduce costs, telemedicine will continue to expand despite current obstacles, most observers believe. However, even telemedicine proponents raise questions about the prospects for this technology in rural areas. "You just don't have the numbers [of patients] in frontier areas that need it the most to make telemedicine economically viable," Ms. Wassem asserts. One strategy that rural communities, as well as other jurisdictions, can use to establish sustainable telemedicine services is to create what Ms. Wassem calls a "televillage," in which telemedicine programs share equipment and costs with a variety of other uses such as public health promotion and long-distance learning.

(continued on back cover)

⁵ Zaylor, C. (May 1995). "Clinical Outcomes in Telepsychiatry," *Journal of Telemedicine and Telecare* 5(1) 59-60.

⁶ American Psychiatric Association. (1998). *Resource Document on Telepsychiatry via Videoconferencing*. Available at <http://www.psychiatry.org> (See under Practice of Psychiatry, Delivery Systems and Special Interest Caucuses.)

SUGGESTED READING

Association of Telemedicine Service Providers (ATSP). (1998). *1998 Report on U.S. Telemedicine Activity*. Portland, OR: ATSP. (Cost: \$295 for non-members; contact ATSP at (800) 852-3591 or <http://www.atsp.org>)

Field, M.J. (Ed.). (1996). *Telemedicine: A Guide To Assessing Telecommunications for Health Care*. Washington, DC: Institute of Medicine. (Cost: \$44.95 list/\$35.96 at <http://www.nap.edu/catalog/5296.html>. Executive Summary available at <http://books.nap.edu/html/telemed/summary.html>)

Grigsby, J. (1997). "Telemedicine in the United States." In R.L. Bashshur, J.H. Sanders and G.W. Shannon (Eds.) *Telemedicine: Theory and Practice*. Springfield, IL: Charles C. Thomas 291-325.

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Spielberg, A. (1998). "Sociohistorical, Legal, and Ethical Implications of E-mail for the Patient-Physician Relationship," *Journal of the American Medical Association* 280(15) 1353-1359.

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Limits on reimbursements under federal medical insurance programs also pose a significant barrier to telemedicine's future growth, the GAO reports. Although Medicare began coverage for interactive video consultations in Health Professional Shortage Areas (HPSAs) in 1999, the federal Health Care Financing Administration's (HCFA) current narrow definition of a telemedicine consultation does not include most mental health services, Ms. Wassem says. However, state Medicaid programs now have the authority to experiment with alternative health care delivery systems, and at least 12 states cover some forms of telemedicine. In addition, a handful of managed care organizations and a few private insurers provide coverage for telemedicine. A recently enacted California law requires private managed care organizations to do so.

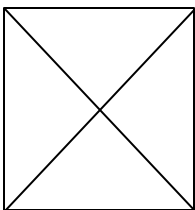
Although proponents acknowledge that telemedicine will never replace personal contact between health providers and patients, they predict that it will be used increasingly to augment the existing health and mental health services delivery systems. Eventually, says David Cook, Ph.D., Assistant Director of TeleMedicine Services at KUMC, "It won't be *telemedicine* anymore. It will just be medicine." ♦



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