

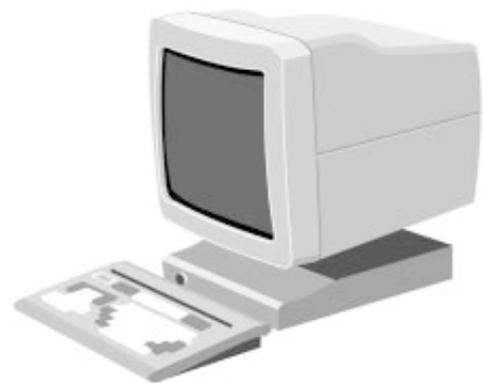
Telemental Health/Telepsychiatry



OPERATIONS AND IMPLEMENTATION MANUAL

For County Mental Health Plans

November 2002



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CALIFORNIA INSTITUTE FOR MENTAL HEALTH

Telemental Health/Telepsychiatry

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I. Introduction and Background

A. Telemedicine For Mental Health Services In California

The California Business and Professions Code defines telemedicine as:

2290.5. (A) (1) ...the practice of health care delivery, diagnosis, consultation, treatment, transfer of medical data, and education using interactive audio, video, or data communications. Neither a telephone conversation nor an electronic mail message between a health care practitioner and client constitutes “telemedicine”

(2) ... “interactive” means an audio, video, or data communication involving a real time (synchronous) or near real time (asynchronous) two-way transfer of medical data and information.

For purposes of this Manual, Telemental Health/Telepsychiatry Services are defined as *“Psychiatric or mental health services delivered ‘real time’ using the latest technology in teleconferencing and equipment.”*

Typically, telemedicine involves the use of state of the art video conferencing equipment such as large television monitors and cameras, coupled with high-speed communication lines to connect a “hub site” and a “remote site.” The remote site typically involves a physician and supporting staff, who request consultation from another physician or specialist. The remote site may also include the client, family and other relevant participants. The hub site provides the consulting physician or specialist and relevant support staff, with the end result being a simultaneous teleconferencing session. The current technology provides high picture definition and instantaneous data, which allows clinicians to observe a great deal of somatic information, such as reactions to medications, mental status, and affective responses. Because of this, telemedicine can be used to provide specialty consultation in almost all areas of medicine. Additionally, patients as well as clinicians report high satisfaction with telemedicine services as a substitute for face-to-face visits.

In 1999 it was estimated that over 74,000

telemedicine visits occurred in the United States¹, and mental health services are among the most highly utilized medical specialties via telemedicine. Telemental Health/Telepsychiatry (TM) services have consistently been among the most utilized of telemedicine services due to the scarcity of psychiatrists and other mental health professionals in rural and urban underserved areas as well as the traditional dependence on primary care settings for mental health related services.

TM services can be highly congruent with systems of care that value collaboration and integration among treatment team members and stakeholders. Because the immediacy of video conferencing can instantaneously involve people over distances, more direct collaboration is possible among treating clinicians, case managers, clients, family members, and other supportive people than is usual with traditional methods.

TM covers a wide range of services. The scope of TM can include:

- Office, home, and hospital-based procedures;
- Individual, group, and family assessment;
- Therapeutic interventions;
- Medication evaluation and monitoring;
- Emergency evaluations;
- Case management—brokerage and linkage;
- Distance learning and training;
- Supervision, case conferencing, and consultation;
- Administrative collaboration.

Through careful planning, telemedicine technologies can be used to address numerous issues facing county mental health plans. For instance, TM can also be used to provide cultural and linguistic competencies that are unavailable in the local area, thus compensating for staffing shortages and gaps in provider networks; And, after the initial cost for equipment and related expenses, a telemedicine site can be easily integrated into a county’s overall continuum of care for assessment, treatment, and case management.

(Crucial to the success of implementation and ongoing operations is the *Site Coordinator*, the staff member most responsible for the day-to-day running of a telemedicine site. The professional requirements and job duties of the Site Coordinator are explained in Section II of this manual).

B. CIMH/CMHDA Policy Initiatives

The California Institute for Mental Health (CIMH) and the California Mental Health Directors Association (CMHDA) are involved in a broad coalition of telemedicine providers, trainers, and educators, as well as the State Department of Mental Health (DMH) in an effort to coordinate new and ongoing telemedicine projects. This steering committee has developed protocols, provided technical assistance, researched billing issues and acted as a clearinghouse for counties and other interested parties as this new technology develops.

The mission of the project is: *“to promote quality and accessible services for underserved or inadequately served populations.”*

The priority objectives for CIMH/CMHDA are to:

- Develop clear reimbursement standards for services;
- Develop funding opportunities for equipment;
- Provide information to avoid duplicating existing efforts;
- Identify opportunities for collaboration;
- Develop education and training opportunities for counties;
- Develop a Clearinghouse of Information.

C. Current Models in California—Opportunities for Collaboration

The variety of county structures, the diversity of populations and geographies, and the availability of telemedicine programs in the state will inevitably result in different implementation models for county-based telemedicine programs. **Regardless of the model used, the basic documentation requirements for county mental health plans and clinics apply as they would for any other service:**

- Medical necessity for Specialty Mental Health services, or adherence to specific criteria for other non-Medi-Cal related services;
- Appropriate clinical documentation for client records in accordance with Attachment C of the contract between the county mental health plan and the State Department of Mental Health;
- Appropriate coding of services and adequate documentation of client demographic and service encounter data;
- Compliance with mandated performance outcomes measurements.

Since telemedicine involves two separate sites providing services to the client, accountability for proper documentation rests with both sites, as appropriate to the services delivered at each site. Also, as with other services, adherence to clinical best practices is just as important in telemedicine as in face-to-face visits.

As of this writing there are at least ten separate telemedicine networks in the state, each with its own unique structure and business model. Each county also has at least some current capability to implement TM services. For example, the California State Association of Counties (CSAC) has completed the implementation of teleconferencing sites and a communication bridge in each county's CAO office.

County mental health departments have always relied on collaborative efforts to avoid duplication and maximize cost effectiveness. This is especially true in rural areas, which have traditionally shared a small number of providers and hospitals. The establishment of TM services is no exception.

Listed below are examples of general models for implementing and using TM services within county mental health departments.

1. Contract Between County Authorities: Tri-City Mental Health Center Contracts with Counties

A description of the Tri-City Telepsychiatry program is included in Appendix A. Tri-City Mental Health Center, a Joint Powers Authority, was formed as an instrumentality of the cities of Claremont, La Verne, and Pomona. The Center has contracts with Los Angeles and surrounding counties for a wide range of behavioral health services. As of this writing Tri-City has developed 5 hub and 10 remote sites to serve 175 clients in 5 counties (Kern, Shasta, Mendocino, Humboldt and San Bernardino), holding independent contracts with each county. The contracts specify responsibilities of Tri-City (the provider of Telepsychiatry services) and the county (referred to as the “Contractor.”) The Contractor, for example, is responsible for providing space and equipment for its TM site, and for following the Tri-City Operational Guidelines.

Since Tri-City is a Medi-Cal billing authority, services rendered at the Center (Hub Site) are billed to DMH directly for Medi-Cal covered clients and services. The Center bills the Contractor for all county match dollars or non-Medi-Cal covered expenses (e.g. for Medicare beneficiaries, third party payers, etc.), at rates based on the SMA. The county contractor also incurs TM services at a remote or referring site and is responsible for obtaining revenue for these services as for any other face-to-face service.

Mendocino County operates three sites, one each in the cities of Ukiah, Willits, and Fort Bragg. The sites receive child psychiatry consultations from Tri-City clinicians. One Site Coordinator is responsible for all three sites, spending 8 hours per week in Ukiah, and about a half day per week in each of the other two sites. After one year of operation these sites have served 80 clients with 48 current open cases, and they now average 17 sessions per week. Clients are referred by county mental health.

2. Contracts Between County and Provider

a) The Sacramento Area Child Telepsychiatry Project

The Sacramento Area Child Telepsychiatry Project began under the impetus of an award of System of Care dollars by DMH to Sacramento County. The intent of the award was to develop up to three pilot telepsychiatry clinic sites in Sacramento County and nearby rural counties in need of child psychiatry. Each county would hold a contract with a telepsychiatry provider, UC Davis Health System, which would provide psychiatric consultation services to psychiatrists and staff in the three counties. The target population includes children and adolescents placed out of home, and the expected benefits of the program include increasing the availability of child psychiatry to counties with little or no internal capacity, as well as minimizing the travel distance for children and adolescents to receive psychiatric evaluations and ongoing treatment. At this writing the project is currently in the planning and implementation stage.

b) Modoc County/University of California at Davis Project

Modoc, California’s northernmost county, is a generally remote, rural county, which has presented significant challenges in terms of the technology needed to support telemedicine. However, in a collaboration between UC Davis, the Northern Sierra Rural Health Network, Modoc Hospital, and Modoc County Behavior Health, telepsychiatry is being delivered to Modoc youth. The hospital receives medical care through the UCD TeleMedicine Clinic site. When a Modoc youth requires medication evaluation, the mental health department contacts the hospital and a nurse practitioner opens a medical case on the child. After psychiatric evaluation, via the telemedicine site, medication prescription and follow-up may take place. This model is particularly well suited to small, rural counties.

c) Cedars Sinai Health Systems

The Cedars Sinai Telepsychiatry program is another example of a private provider. Cedars Sinai contracts with Regional Centers to provide pediatric and psychiatric consultation for developmentally disabled children. This program also provides intensive training to resident physicians in psychiatry, pediatrics, family practice and forensics via telesites. See Appendix E-2 for a more detailed description.

3. Internal TM Program in a County

The Department of Mental Health, County of Riverside (CA) has used a PC-based televideo system since 1995 to link the main psychiatric emergency room in Riverside with a branch psychiatric emergency room in Indio (CA), 120 miles away. The Riverside ER has physicians on site 24/7, and Indio has nurses and social workers, but no physicians. After evaluation, a non-MD clinician in Indio calls the ER physician in Riverside, presents the case, and receives orders or a request for telepsychiatry examination. These exams are provided on request by a physician, by client request, before a client can be released.

Riverside County has a population of about 1.5 million, with county mental health being by far the predominant provider of inpatient services, and the only provider of psychiatric emergency services. The TM system meets the needs not only of traditional public sector patients (indigent, Medicaid, Medicare), but also most of the private sector, including HMOs, managed care, and clients with indemnity insurance who utilize county services. Also, physicians' services are billed as part of comprehensive ER charges.

For the telepsychiatry examination, the client in the Indio site sits in front of a PC terminal with a computer screen and camera. The physician in Riverside also has a room with a monitor and camera. The nurse in Indio, who remains with the client during the exam, activates the system, and the examination is live, usually taking about 30 minutes. The consulting physician in Riverside then dictates orders and notes. Under California law the client has the option of a video conferencing or face-to-face exam, but the latter requires transport to Riverside, which no client has requested in five years of operation.

Two to three clients per day are currently evaluated

with this system, with high levels of satisfaction reported by patients, families, clinical staff, payers, and elected officials. The cost of site hardware (monitor and camera) in 1995 was about \$10,000, and the same equipment now costs about \$3,000. The county uses a single ISDN line on dial-up basis; The original cost of the ISDN line was about \$15/hour when actually connected, but is now down to less than \$1 per hour. Preliminary information, including oral discussion and fax of records, can use a standard phone line. It is also worth noting that quality improvement studies have shown no differences in diagnoses or dispositions by physicians, when comparing face-to-face with video conferencing.

Other counties are also developing TM programs to be used for in-county services. Los Angeles County Mental Health, for example, is developing TM sites to serve the remote areas of Palmdale and Lancaster.

4. Teleconferencing Training for Counties

Video conferencing can be an excellent way to provide training to multiple sites. TM sites and telecommunications set up for clinical services can also support conferences related to individual clients, or can be used for general trainings. This is especially useful for rural counties, since travel logistics and costs often prohibit rural staff from attending conferences.

For example, CIMH recently facilitated a training session in Therapeutic Behavioral Services. The training was provided by Edgewood Centers and offered to Lassen, Modoc, Siskiyou, Shasta, and Trinity counties via the telehealth facilities and ISDN bridge of the Northern Sierra Rural Health Network (NSRHN), under contract to CIMH. Edgewood Centers also utilized grant money from the California Telehealth and Telemedicine Center (CTTC) to set up a local TM site. This site has also been used to provide individualized consultation to rural counties.

D. Use of this Manual

1. Conflicts with State and Federal Guidelines or Mandates

This manual is directed towards county public health and mental health departments that are planning to implement TM sites and/or are planning to contract for TM services. It is meant to be an adjunct to current departmental policies and procedures: *in the event that any portion of this manual conflicts with relevant local, state or federal guidelines, those guidelines shall prevail.* This manual will be updated as needed to reflect changes in legislation, practice patterns, and technology.

2. HIPAA

The Health Insurance Portability and Accountability Act of 1996 (HIPAA) mandates standardized code sets for electronic transactions of healthcare data (e.g. electronic claims, clinical data, fax information). HIPAA also contains provisions to protect the privacy and confidentiality of any individually identifiable healthcare information, including behavioral health information. **All County Mental Health Plans will be required to comply with HIPAA. This legisla-**

tion will result in changes to many aspects of current data systems, as well as policies and procedures related to the privacy of client records. The mandated implementation timeline for the electronic transaction data sets is October 16, 2003 (delayed from the original 2002 date)², and the privacy regulations are to be implemented by April 14, 2003.

This edition of the manual is not intended to address these changes—however, the manual will be updated to reflect changes as they are implemented. For more information about implementation of HIPAA for California Mental Health Plans, please refer to the state Department of Mental Health website, at <<http://www.dmh.cahwnet.gov/hipaa2001/>>.

¹ Ellis, J. (no date). The state of telemedicine: California moves to the forefront. A CSRHA Special Report. Sacramento, CA: California State Rural Health Association.

Nickelson, D. (2001). Telecommunications & mental health: Legal, regulatory, and payment issues. January 17, 2001 Conference Call Summary, National Rural Development Partnership Taskforce, pp. 3-5.

² Covered healthcare entities must submit a summary of their compliance plan by 10/16/02.

II. Implementation of Telemental Health/ Telepsychiatry Programs³

A. Introduction

The successful implementation of TM programs requires strategic planning and project management processes that include key staff representing all levels of departmental functioning. The interface of new technologies with traditional services may be viewed with some skepticism by clinicians who were trained to focus on face-to-face interpersonal relationships between health care practitioners⁴ and clients. However, previous implementations of TM in traditional settings have surmounted initial resistance by initiating education programs about the benefits of TM as an adjunct to systems of care, the high satisfaction rates of consumers, and the effectiveness of TM. As staff members begin to understand how TM can assist in achieving the mission and objectives of county mental health, their participation will be invaluable in assuring a smooth implementation.

B. Technical Requirements for a Telepsychiatry Site

This section will introduce technical requirements for equipment and telecommunications for a typical TM site that will be used for purposes of teleconferencing, such as “real time” psychiatric assessments and interventions in tandem with another TM site. A list of basic technical system requirements will be introduced, followed by a more detailed description of the components, written especially for non-technical staff. (A summary of a typical TM site budget, including equipment and staffing, can be found in Section II, Section I.4. “Costs of Site Implementation and Operation,” page 20).

The basic setup of a TM site, whether hub or remote site, includes:

- **Large T.V.**

The video/television monitor should be at least 27”, preferably 32”.

- **Video conferencing camera**

Video cameras designed specifically for conferences are available for telemedicine sites. The camera must be capable of viewing the majority of space in a large conference room, preferably with the capability of voice-activated switching (camera automatically focuses on speaker). The camera should have a minimum data transfer rate of 512 kilobits per second (kbps). (See Section C. “Telecommunications and Networking Technology—A Primer” for a description of the nature of TM transmission.)

- **Telecommunications service**

The telephone/telecommunications services should preferably be ISDN or T-1 lines (See below, Section C. “Telecommunications and Networking Technology—A Primer”).

- **Fax machine**

A fax machine with its own dedicated phone line should be available for the transmission of paperwork, such as Releases of Information, progress notes, history, medication orders, etc. The fax machine may be needed for a Telepsychiatry session that is in progress.

- **Extra telephone and phone line**

Backup technical or clinical assistance may be needed while a Telepsychiatry session is in progress.

The video monitor, camera, rolling cart and related software can be purchased as a package that may also include installation and one year on-site maintenance service.⁵

C. Telecommunications and Networking Technology—A Primer⁶

1. Nature of telemedicine data and data transmission

TM data (what we'll call the sound and video information being transmitted) can be categorized as interactive or non-interactive. Non-interactive TM data are frequently transmitted in medicine. Examples include the transmission of lab pictures or X-Ray images. This is known as “store and forward,” and requires less sophisticated technology than interactive transmission if there are no requirements for immediate “real time” reception of and response to the data.

Telepsychiatry primarily requires systems that support “real time” interactive activities. The types of equipment and communications technology that are required depend on the amount of data being transmitted (e.g. phone calls transmit less data than video conferencing) and the speed with which the data are transmitted. (For example, email messages containing pictures will transmit at a slower rate than email with only text.)

Generally, higher speeds and larger amounts of data require higher bandwidth. Bandwidth is defined as the capacity of the combined technology components that determines how quickly information is sent through a telecommunications medium. In other words, bandwidth is the maximum amount of data that can travel a communications path at any given time. Bandwidth is measured differently for analog systems (such as standard home telephone voice communication) than for digital telephone and telecommunications. Analog systems are measured in cycles-per-second (hertz), while digital speed is measured in bits-per-second (bps). (*One thousand bits = 1 kilobit. One thousand kilobits = 1 megabit.*) Speed is important for interactive video conferencing, since slower speeds tend to result in distorted or disjointed images making it difficult to distinguish subtle movements and facial expressions. (Since voice transmission requires less bandwidth, it is possible to have disjointed images while at the same time receiving accurate sound.)

(See Section C.3., page 16, “How much bandwidth is required?”)

2. Connecting two or more sites

A network is a group of two or more computer systems linked together. A local area network (LAN) spans a relatively small area, usually confined to a single building or group of buildings. A wide area network (WAN) is a set of connecting links among several LANs. We will expand the definition of a network to include the linkage of two or more TM sites.

TM networks (like LANS and WANS) are connected by telecommunications technologies. Advances in these technologies have made telemedicine possible. These technologies vary by the physical medium of transmission (e.g. phone lines, cables, wireless, etc.) and by the bandwidth they can support. The most common telecommunications technologies in use are dial-up modem, ISDN, and T-1 lines.

Dial-up modems are now very common, and are typically installed in all new computers. Even though today's modems are faster than ever, they still rely on basic analog phone lines to connect with other modems. In the hierarchy of telecommunications technologies, “plain old telephone service” (or POTS) is the slowest, i.e. has the least amount of bandwidth capacity, compared to other technologies. POTS nevertheless remains the most cost-effective way to transmit fax data for small LANS and individual users, and most home computer users still rely on modems to use basic email and access the internet.

An Integrated Services Digital Network (ISDN) is an advanced telephone line-based system. It involves a dial-up digital connection to the telecommunication carrier, and can carry information nearly five times as quickly as a modem/POTS setup. ISDN is also an international communications standard designed to carry multiple data “signals” (voice, video and data) at the same time over digital phone lines. The bandwidth capacity of ISDN can be increased by adding more “channels” on to the basic setup of three channels. (Channel refers to a communications path between two devices such as telephones or computers.) The channels can be used separately for multiple types of concurrent data, or two of the three channels can be combined to provide the maximum bandwidth for one communications activity, such as telemedicine video and audio transmission. An ISDN service can also be used as a “gateway” for a LAN, accepting and routing voice mail and faxes to the individual computers or phones connected to the LAN. The flexibility of ISDN has made it very popular in LANs and telemedicine networks.

A **T-1 line** combines multiple channels (up to 24) into one dedicated phone line. Many telecommunications vendors also sell “fractional” or “partial” T-1 lines that have fewer channels. T-1 services are sold as **leased lines**, permanent telephone connections between two points set up by a telecommunications carrier. Unlike normal telephone service and dial-up ISDN, leased lines are always active (similar to cable modem service and DSL connections). Because other customers do not share the line, the quality of data transmission is quite high. Like ISDN lines, the available T-1 channels can be divided up for different types of data transmission (“multiplexing”), or combined to provide the maximum amount of bandwidth. T-1 lines are favored by businesses requiring constant, immediate access to the Internet as well as Internet Service Providers (ISPs). (In order to manage large amounts of data and many concurrent users, many ISPs use the more powerful T-3 lines that may have up to 672 channels.) The primary drawback of T-1 lines for telepsychiatry is that each line has only one endpoint. Having multiple lines for multiple endpoint sites can be very expensive.

Digital Subscriber Line (DSL) is increasingly being used. DSL operates in conjunction with the Internet to provide bandwidth ranging from 128 kbps

to 8,000 kbps at a lower cost than other high-speed technologies. DSL uses regular phone lines already installed in homes and businesses. The available bandwidth for downloading may be limited by the connection speeds of the DSL service provider.

Table 1 shows and compares the bandwidth and relative ongoing costs for each of these telecommunication technologies. (Source: “Technology 101,” William Halverson—Appendix F).

A few general points about these technologies:

- Higher bandwidth is almost always associated with higher cost.
- The decision to purchase a telecommunications technology should also take into account the general networking and telephonic needs of the site and the site’s location. Cost efficiencies can be realized with careful consideration of multiple uses of the technology, taking into account the current technologies already in place.
- The availability of high-end technologies such as ISDN, T-1 and DSL is highly varied, depending on geographical location. Often, rural areas most in need of telemedicine have the fewest number of available high speed telecommunications options. T-1 lines

Table 1: Comparison of Telecommunication Technologies			
SERVICE	BANDWIDTH PER...	TOTAL AVAILABLE BANDWIDTH	APPROX MONTHLY COST (Fixed & Usage)
POTS—voice communication	3 kilohertz (kHz) per line	3 kHz	\$20/month \$8/Hour
Dial-up modem with POTS	30 kilobits per second (kpbs)	30 kpbs	same as voice + Internet Service Provider fee
ISDN (3 channels)	2 digital channels @ 64 kilobits per second (kpbs), 1 system data channel @ 16 kpbs	128 kpbs	\$30-50/month \$16/hour (\$8/hour for each digital channel used)
T-1 (full)	64 kpbs per channel	1.554 megabits per second (mbps)	\$155/month (one endpoint) + \$25 per mile distance between points
DSL	128 kpbs and higher	128 kpbs and higher	\$40-\$200/month

may be all that are available in some rural areas. If a rural site only wants to connect to one location, and the distance is not too far, then one T-1 line can work well. Also, rural county mental health departments will qualify for subsidization of their T-1 lines costs through the Universal Service Program, which will reduce the out-of-pocket expense for the counties⁷. (See the insert box “Solutions for Rural California Sites,” below.)

Solutions for Rural California Sites—Northern Sierra Rural Health Network

The NSRHN operates a videoconferencing bridge that makes it possible for health facilities located in the Citizens Telecommunications service area to use partial T-1 lines to connect with ISDN users. This would allow a rural site with only T-1 availability to leverage multiple endpoint telemedicine sites. The phone charges for these lines are subsidized through the Rural Health Universal Service Fund operated by the FCC.

For more information, visit the Network’s website at <<http://www.nsrhn.org/>>

3. How much bandwidth is required?

Most telemental health projects use systems that transmit data at 384 kbps (from a survey conducted by the Association of Telemedicine Service Providers, as reported by Smith & Allison). This is considered to be a reasonable compromise between low and high cost systems. (This amount of bandwidth could be obtained by adding lines to a 3-channel ISDN line⁸, or by purchasing a one-quarter fractional T-1 line.) Some research into the quality of data transmission has been reported. Participants noticed a difference in quality comparing 128 kbps and 384 kbps. The perceived difference comparing 384 kbps and 762 kbps is less noticeable, although the cost difference between these three transmission rates is significant.

D. Space

(See also Appendix G, “Room Design: Assessing Equipment Configuration, Lighting and Sound.”) The room used for video teleconferencing should be large enough to accommodate a small group, yet small enough to allow most participants to be viewed at one time. The ideal camera distance from participants is 6-8 feet. (If a person is too close to the monitor, it will appear as though the person is looking down rather than making direct eye contact.) When there is only one client, the upper body should take up as much of the local viewing window as possible.

The room should be painted a light gray or white color. Overhead lighting that gives off the equivalent of natural sunlight is preferable, with the ideal placement in the area above the video conferencing unit. The space should minimize outside noise and interruptions as much as possible. (A posted sign is recommended indicating that a TM session is in progress.)

E. Human Resources

a) Implementation Staff

While existing staff may be used to implement a TM site, a dedicated staff member will be required at least part time for about three months to manage the start up tasks. (See “The Project Plan” on page 18 for a list of start up tasks.) Along with a dedicated project manager, time will be required of other staff and managers to ensure integration of the TM service with other programs. Those staff members may include the medical director, staff psychiatrists, program directors, and program managers. Representatives from administrative support staff will be needed to assist with the development of procedures, paperwork transmission, ordering supplies, etc., and MIS staff will be needed to order and install equipment and telecom services. (Counties that do not purchase TM equipment but use already existing TM sites will still need to develop program specifications and policies and procedures.) Staff representing the clinical, administrative and managed care departments will receive training during the implementation period (see Section IV, “Education and Training”).

At least one person (such as the eventual Site Coordinator or another designated staff member) should

be fully trained during the implementation period, and be available to coordinate ongoing training once the operations phase has begun. Time will also be needed to prepare forms and paperwork, as well as announcements of the new service to county departments, contracted providers, and the community.

b) Ongoing Operations

The following staff will have ongoing direct responsibilities for the operations and maintenance of a TM site (assuming some county to county variation given current staff roles and responsibilities):

Site Coordinator—oversees day-to-day operations; ensures that referrals, appointments, paperwork, client charts, and in-session activities are organized and coordinated. The site coordinator may very well be the most important “champion” for telemedicine services among the staff. To perform this crucial set of functions, the site coordinator must be skilled in several administrative functions and have a solid understanding of the clinical and technical issues. The Site Coordinator does not need to be a licensed behavioral health clinician, unless that person will also provide clinical supervision to clinic staff. (In some TM settings, the Site Coordinator may also provide billable case management services, in which case that person must meet the staffing requirements for that service.) The Site Coordinator may also have responsibility for more than one site. If a county has only one site, the coordinator may split his/her time among other administrative and/or clinical duties. **In the experience of other programs, for every hour of clinical service a TM site would require an equal amount of time per week of the site coordinator’s time.** For example, every four hours of clinical service time would require four hours of a site coordinator’s administrative time.

Medical Director—oversees the clinical policies and procedures; ensures that best practices are followed; may provide clinical supervision for complex cases, and at times may provide direct services to clients.

Fiscal/Administrative—tracks session utilization, paperwork and data entry; ensures proper billing procedures are in place

Management Information System (MIS) staff—“on call” county or departmental MIS staff to ensure that software, hardware and telecom services are working correctly; available for consultation or technical support as needed.

Other staff members who may be involved on a case-by-case basis include case managers, program managers, managed care intake/access staff, primary therapists, and psychiatrists.

It is recommended that case managers have the responsibility of attending most clients’ sessions with the hub site physician. This is important for a number of reasons: first, the case manager builds and maintains a liaison relationship with the physician; second, the case manager hears what the physician says and can help clients and families clarify issues; third, the relationship between the case management and the client and family is strengthened, and as a result, the family has a local contact person; and finally, having a referring agency staff member integrally involved in the day to day services helps the referring agency with oversight of the local agency.

F. Policies and Procedures

While many existing policies and procedures may cover aspects of the TM site or TM referrals, the unique nature of TM requires its own set of policies and procedures. For example, client information will have to be transmitted to the consulting (Hub) site, while a copy of progress notes, prescriptions, and other follow up information will be transmitted back to the referring site. Current county Releases of Information are probably sufficient, whereas Informed Consent forms unique to TM services should be developed (see Appendix D for a sample Informed Consent form).

The following is a non-inclusive list of areas in which it is recommended that policies and procedures be developed for TM sites or county clinics making referrals to TM sites (see Appendix A for selected samples):

- Intake procedures and screening for TM services;
- Staff roles and responsibilities;
- Use of equipment and TM room;
- Transmission of clinical data to hub site;
- Releases of information and informed consent;
- Appointment scheduling;
- Transmission of prescriptions, lab orders, progress notes, etc., from consulting site;
- Case management and continuity of care;
- Evaluation and outcomes.

G. Contracts

1. Types of Contracts

As shown in Section I.C., “Current Models in California—Opportunities for Collaboration”, the ways in which TM services can be procured and provided are highly varied. The basic contractual relationships for counties’ TM services can be summarized as:

- TM services delivered within county system (e.g. county mental health staff provide consultation to same county mental health clinics);
- County mental health staff provide TM consultation to other non-mental health agencies in same county;
- County mental health staff provide TM consultation to primary care physicians and clinics;
- County A requests consultation from county B, requiring memorandum of agreement (MOU) or contract;
- County contracts with private provider(s) for consultation services via TM (providers can be located within or outside of contracting county);
- A group of counties share resources (e.g. TM sites, TM consultation staff, or a single contract between a group of counties and an external provider).

2. Contract Components

TM service agreements require some deviation from standard contracts in use by counties. For county-to-county contracts or MOUs, there are already models in place (such as MOUs between counties for the provision and reimbursement of out-of-county Specialty Mental Health Services). Changes to current MOUs regarding TM services have to do with the following:

- a) Identification of target population for TM services;
- b) Roles and responsibilities specific to TM site staff and other non-site staff;
- c) Billing and reimbursement procedures for concurrent services at the referring and hub sites. (See Section III, “Billing and Reimbursement Guidelines.”) Contracts should specify the responsibilities of each party in billing for services, reporting

encounters, and accepting payment. MOUs should specify the responsibilities for coordinating which services are provided and billed, so as to ensure that the county’s (or counties’) claims meet all minimum fiscal and clinical requirements, such as those for claiming Medi-Cal Federal Financial Participation (FFP);

- d) The transmission of new forms related to TM services (e.g. Informed Consent);
- e) The transmission and efficient communication of pharmacy orders, lab orders and prescriptions. (Note: Relationships with labs and pharmacies, and procedures for filling prescriptions should be established. These support services should be a part of the stakeholders’ engagement process. A list of participating pharmacies can be generated after area pharmacies have been contacted and their participation has been established. Similarly, arrangements with area labs should be developed. These arrangements will help to ensure that important patient information is received by both the physician at the hub site and the mental health agency.)

Contracts with private providers will also require the changes listed above, with the exception of responsibilities for claiming Medi-Cal FFP. As stated elsewhere (Section III.B., “Medi-Cal Specialty Mental Health Services”), there are no new service codes for TM at this time.

H. Billing

Billing procedures for TM services will differ from those currently in use. See Section III, “Billing and Reimbursement Guidelines” for more information.

I. The Project Plan

1. Pre-Requisites for System Development

- Board and executive management support;
- Medical support;
- Sufficient staff;
- Strong MIS/IS department;
- Staff who embrace treatment innovations.

2. Components of project plan

The major categories of tasks for implementation are:

a) Program Planning

- Identify lead project manager for implementation;
- Identify relevant stakeholders;
- Perform needs assessment;
- Define the target client population(s);
- Define the scope of the TM services—How will TM be used?
- What are objectives of the TM Services (e.g. Provide more psychiatry services? Geographic penetration? Outreach? Training?);
- Define services to be offered via TM;
- Identify projected utilization (e.g. The number of projected clinical hours to be utilized by the TM site);
- Identify risk management issues;
- Develop business plan for implementation.

b) Stakeholder Orientation & Involvement

- Develop plan for stakeholder involvement in planning, strategies for “buy off” approval, potential problem areas;
- Develop and provide “kick off” orientation to stakeholders.

c) Budget Development

(See Section II.I.4., “Costs of Site Implementation and Operation” on page 20 for sample budget)

d) Facilities/Space

- Conduct geographic needs assessment (if necessary);
- Locate potential TM site room(s);
- Develop plan and budget for room preparation.

e) Telecommunications & Networking— Ordering & Installation (see also Appendix F, “Communications 101”)

- Inventory current telecom resources;
- Inventory existing wiring;
- Develop budget for telecom and networking equipment, installation and ongoing charges;
- Order telecom lines and service (allow 4-6 weeks prior to first use for ISDN, DSL, T1, and phone lines).

f) Hardware/Software—Ordering & Installation

- Inventory existing usable equipment;
- Order hardware (at least three weeks prior to first use, to allow for training and familiarization);
- Install and test hardware.

g) Procedures Development

(See Section II.F. on page 17 for list of policies and procedures.)

h) Development of Quality Improvement/ Evaluation Processes

- Identify accountable Quality Improvement (QI) lead;
- Define linkages with existing county QI processes;
- Identify existing QI/Outcomes indicators;
- Define TM related QI indicators;
- Identify data needs for evaluation (see also Section V., “Evaluation of TM Services”);
- Identify data collection procedures, as needed.

i) Contracts/Procurement

- Identify vendor procurement needs, if any;
- Inventory current relevant MOUs;
- Identify new partners (e.g. counties) requiring MOUs or contracts;
- Define appropriate procurement procedures;
- Develop procurement processes, as needed (e.g. Request for Proposal or Request for Qualifications);
- Develop new contract/MOU language as needed;
- Identify potential vendors/bidders;
- Negotiate contracts with vendors and providers;
- Finalize and sign contracts.

j) Staffing & Personnel

(See II.E., page 16, “Human Resources”)

- Identify site staff from existing personnel;
- Identify need for further staff hiring;
- Develop job descriptions (or amend current ones);
- Initiate recruitment activities, if needed.

k) Training of Staff, Providers, Other Stakeholders

(See Section II.E. “Human Resources” and Section IV. “Education and Training”)

3. Guidelines for project task development, initiation and monitoring

a) Project Management Lead

The style and methods of program implementation vary county by county. As mentioned above in the project plan tasks, it is recommended to appoint a lead project manager. The tasks involved in implementing TM are varied and require people from multiple programs and county departments. The Project Manager should be someone who understands the value of TM, is comfortable with technology, is familiar with the clinical issues, and is able to provide leadership to cross-functional work groups described below. In some cases, the person assigned as Site Coordinator might be the appropriate project manager, but for larger implementations a dedicated project manager might be required.

b) Implementation planning meetings

Many implementation and planning tasks require time limited work groups that are cross functional (e.g. have representatives from the various technical, clinical, administrative and stakeholder groups who will be part of ongoing operations). Some of these work groups may evolve into ongoing operations committees; for example, a work group developing clinical protocols may become a QI Committee that reviews data that support QI indicators for TM. The chair of each work group, along with the Project Manager, Medical Director, and project sponsor (e.g. Mental Health Director) would meet regularly as a Steering Committee to track progress and decide policy issues presented by the various work group representatives and the project manager.

Depending upon the needs of the county, some of the work groups might be:

- Clinical/QI—developing clinical criteria and protocols; developing QI indicators; ensuring Performance Outcomes Measurement (POPs) data collection;
- Technical—managing tasks involved with facilities, equipment, telecom, etc.;
- Administrative—managing tasks involved with business flow, intake procedures, billing, and records maintenance.

c) Tracking Progress; documenting status, problems and contingencies

The project plan should list, by category, the specific tasks with assigned lead (e.g. chair of work group or other person), target date for completion, precedent tasks, and any other information necessary to accomplish them. Progress can be tracked with written and verbal reports to the Steering Committee and should include the following:

- Name of task;
- Target date for completion;
- Completion status (e.g. in % terms);
- Expected cost variances (if relevant and known);
- Contingencies (e.g. precedent tasks that would impede progress if not completed);
- Next steps and responsible person(s).

4. Costs of Site Implementation and Operation

a) Site Equipment, Installation, Telecom

Setting up a telemedicine site for behavioral health is relatively inexpensive without the need for specialized equipment that is required for other specialty telemedicine services (e.g. dermatology, ophthalmology, etc.). Costs include a one-time purchase of equipment and installation fees, ongoing equipment maintenance (unless included in the purchase package), ongoing phone line/ISDN/broadband charges, and related phone call fees. The costs of equipment may vary based on room size. Other costs not shown may include room preparation, furniture, and office supplies. As mentioned above, extra staffing is also required both during the implementation period and for ongoing operations.

Some funding may be available for counties to defray telecommunications costs through the California Teleconnect Program of the California Public Utilities Commission, <http://www.cpuc.ca.gov/static/industry/telco/public+programs/ctf.htm> or the Universal Service Administrative Company (USAC) which administers federal subsidy programs for telecommunications <http://www.universalservice.org/>.

Table 2: Usual equipment and telecom costs for implementing a TM site⁹.

Item	One-time cost	Ongoing cost
Video conferencing package: includes 32" T.V., camera, software, cabinet & rolling cart, installation, service (e.g. 1 year on site)	\$11,250	
Network Termination device	\$500	
ISDN 3 line installation	\$800	
ISDN monthly fee		\$125/month
TM Usage Charge ¹⁰		\$350 +/-month
TOTALS	\$12,550	\$475 +/-month

b) Staffing Costs

First year staffing costs for implementation (assuming a three-month implementation period) and nine months ongoing operations are shown in the following tables. (The tables do not reflect costs of executive management time, marketing materials, or department overhead.) **Site Coordinators should be staffed to**

match the clinical hours provided at the site (i.e. for every four hours of clinical time, the site will require four hours of Site Coordinator time).

The tables reflect the following scenarios:

Scenario 1. County operating one site using half time Site Coordinator

Scenario 2. County operating three sites with one Site Coordinator.

Table 3: Scenario 1—One site

	IMPLEMENTATION (3 MONTHS)			OPERATIONS (9 MONTHS)		
	3 months' salary	25% benefits	Total	9 months' salary	25% benefits	Total
Project Manager	7,500.00	1,875.00	9,375.00			
Site Coordinator	3,125.00	781.25	3,906.25	18,750.00	4,687.50	23,437.50
Admin Support				19,687.50	4,921.88	24,609.38
MIS staff	4,375.00	1,093.75	5,468.75			
Training	3,000.00		3,000.00			
Travel	1,000.00		1,000.00			
SUBTOTALS	19,000.00	3,750.00	22,750.00	51,562.50	12,890.63	64,453.13
YEAR TOTAL						87,203.13

Assumptions:

Implementation

Proj Mgr: .5 FTE base salary \$60,000
 Site Coord: .25 FTE base salary \$50,000
 MIS: .25 FTE base salary \$70,000
 Training: UC Davis TLC or other trainings
 Travel: Training, conferences, site visits

Operations

Site Coord: .5 FTE base salary \$50,000
 MIS: .25 FTE base salary \$70,000
 Admin Supp: .75 FTE base salary \$35,000

Table 4: Scenario 2—Three sites

	IMPLEMENTATION (3 MONTHS)			OPERATIONS (9 MONTHS)		
	3 months' salary	25% benefits	Total	9 months' salary	25% benefits	Total
Project Manager	11,250.00	2,812.50	14,062.50			
Site Coordinator	6,250.00	1,562.50	7,812.50	28,125.00	7,031.25	35,156.25
Admin Support				26,250.00	6,562.50	32,812.50
MIS staff	8,750.00	2,187.50	10,937.50	26,250.00	6,562.50	32,812.50
Training	3,000.00		3,000.00			
Travel	1,000.00		1,000.00			
SUBTOTALS	30,250.00	6,562.50	36,812.50	80,625.00	20,156.25	100,781.25
YEAR TOTAL						137,593.75

Assumptions:

Implementation

Proj Mgr: .75 FTE base salary \$60,000
 Site Coord: .5 FTE base salary \$50,000
 MIS: .5 FTE base salary \$70,000
 Training: UC Davis TLC or other trainings
 Travel: Training, conferences, site visits

Operations

Site Coord: .75 FTE base salary \$50,000
 MIS: .5 FTE base salary \$70,000
 Admin Supp: 1 FTE base salary \$35,000

³ We are indebted to the following organizations for technical assistance and materials in the preparation of this section: U.C. Davis Telemedicine Learning Center, Tri-City Mental Health Center (Pomona), California State Association of Counties, and the California Telehealth & Telemedicine Center.

⁴ The Business and Professions code of the Medi-Cal manual, Section 2290.5, describes a “health care practitioner” as a “licentiate,” specifically referencing a “physician and surgeon, podiatrist, clinical psychologist, marriage and family, therapist, clinical social worker or dentist,” but the term may be used to describe other licensed health care workers.

⁵ For vendor information, visit <http://tlc.ucdavis.edu>, the U.C. Davis Telemedicine Learning Center Web site.

⁶ Sources: 1) Wachter, G. (2000). *Telecommunication: Linking Providers and Patients*. Telemedicine Information Exchange: <http://tie2.telemed.org/telemed101/topics/telecom.asp>, June 30, 2000. Last accessed April, 2002. 2) Smith, H. A. & Allison, R. A. (Draft Pending Publication). *Telemental Health: Delivering Mental Health Care at a Distance*. Washington, D.C.: U.S. Dept. of Health and Human Services, Substance Abuse and Mental Health Services Administration. 3) Halverson, W. (no date).

“Communications 101: Telecommunications Overview” (from U.C. Davis Telemedicine Learning Center training manual). Sacramento, CA: California Telehealth & Telemedicine Center. 4) Nemana, R. (no date). “TeleHealth Technology 101.” (from U.C. Davis Telemedicine Learning Center training manual).

⁷ More information on The Rural Health Universal Service Fund, administered by the Universal Service Administrative Company (USAC), is available at <http://www.universalservice.org/overview/>.

⁸ Two ISDN lines result in up to 256 kbps; three lines result in up to 384 kbps.

⁹ The prices quoted are approximate, and reflect market rates as of August 2001. As with other technology related equipment and services, prices change considerably over time. Ongoing telecom charges vary by geography, availability of telecom service, and available discounted packages. CIMH and its partner organizations are available to provide information on vendors and discounted purchase arrangements.

¹⁰ This includes the per-minute cost to connect the site to local and long distance carriers. Normal costs run between \$35-40 per hour.

III. Billing and Reimbursement Guidelines¹¹

A. Paying for Telemedicine in California—Overview

The funding sources that are available for reimbursing TM services are the same as for current services. As described below, federal and state authorities have enabled and encouraged local mental health programs to provide telemedicine services to publicly and privately funded beneficiaries.

Counties use a combination of funding sources to provide services, including the federal Mental Health Block Grant, Medi-Cal, EPSDT, Medicare, System of Care dollars, private insurance, local general funds and grants, and assorted other sources. (Some of these funding sources, particularly realignment and other System of Care dollars, are also used by counties to pay for services to the indigent and under-insured who meet criteria as severely and persistently mentally ill adults/older adults or severely emotionally disturbed children/adolescents.)

The “California Telemedicine Act of 1996” (see Section III.B.2., page 24) made the practice of telemedicine a legitimate means by which an individual may receive medical services from a health care provider without requiring person-to-person contact with the provider. Some Medi-Cal providers have already been successful in providing and billing behavioral health TM services for eligible Medi-Cal beneficiaries. The Healthy Families Program offers some ability to fund TM services, and there is a commitment from the Managed Risk Medical Insurance Board (MRMIB), the state agency that manages the Healthy Families Program, to further develop the capacity of health plans to pay for telemedicine services. The State Department of Mental Health has indicated that counties may also provide TM services under realignment funding in the absence of other payers.

Medicare policy has been steadily developing since the Federal Balanced Budget Act of 1997, which set initial objectives and standards for Medicare telemedicine services. Initially Medicare policy focused only on rural Health Professional Shortage Areas. Despite recent rule changes, which have clarified reimbursement policies, Medicare reimbursement for mental health services remains problematic for County Mental Health plans. Successful billing for Medicare TM services is contingent on the resolution of many policy issues that are creating barriers for counties to make full use of this payment source.

Private insurance or health plan policies may or may not yet include TM services. Each health plan must be approached individually to obtain policy information about TM procedures. As with other specialty mental health services, health plans usually require approval for services by the client’s primary care physician, prior authorization, and/or referral to a contracted provider.

Techniques to ensure the sustainability of TM programs are similar to those of any other ongoing mental health programs, and should include strategies to make full use of existing funding sources, provide outreach to potential beneficiaries, ensure successful billing, track costs accurately, and take advantage of sources of funding connected with new initiatives (e.g. system of care dollars, AB34, etc.). Telemedicine is not considered a separate program *per se*, in that it is one of many tools to support and enhance access to care. Hence, TM can be used as a treatment adjunct for any county beneficiary, provided that the county aggressively pursues a variety of funding sources.

B. Medi-Cal Specialty Mental Health Services

1. Overview

California’s Medicaid program, Medi-Cal, provides reimbursement for specialty mental health services under the oversight of county Mental Health Plans (MHPs), and under contract with the state’s Department of Mental Health (DMH). These services include inpatient care, rehabilitative mental health services, targeted case management, and other outpatient modalities for eligible beneficiaries who meet the state’s medical necessity criteria. MHPs authorize services and use a combination of county clinics, contracted organizational providers, group practices, hospitals, and independent practitioners to deliver services.

Since Medicaid is a joint state and federal program, and since MHPs have responsibility for providing medically necessary services, the funding for Medi-Cal mental health services is obtained from a combination of county “match” dollars and Federal Financial Participation (FFP) at an average county/FFP ratio of 48.77%/51.23%. Mental health plans are reimbursed the en-

tire non-federal share of cost for all EPSDT-eligible services that are in excess of expenditures made beyond the Fiscal Year 1994-95 baseline in the county being served. (Beginning in Fiscal Year 1998-99, each county's Fiscal Year 1994-95 baseline is adjusted according to a formula established by the DMH.)

Counties generally purchase Medi-Cal and EPSDT funded services under contract with providers (or provide services directly through county clinics), and collect encounter information from claims or by electronic means. The county prepares a Medi-Cal claim for processing by the Department of Mental Health, which is integrated with the claim sent by the Department of Health Services to the federal Center for Medicare and Medicaid Services (formerly HCFA) to obtain the FFP.

2. Medi-Cal and Telemedicine

The "California Telemedicine Act of 1996" made the practice of telemedicine a legitimate means by which an individual may receive medical services from a health care provider without requiring person-to-person contact with the provider (California Medi-Cal Provider Manual: Inpatient and Outpatient, 2001). Telemedicine services have been approved as reimbursable by the Department of Health Services and by the Department of Mental Health. Telepsychiatry and telemental health services are considered appropriate Specialty Mental Health Services under the following minimum conditions (sources: California Business and Profession Code, Section 2290.5; Welfare and Institutions Code, Section 14132.72):

- A telemedicine service must use interactive audio, video or data communication to qualify for reimbursement. The service must be in real-time or near real-time (delay in seconds or minutes) to qualify as an interactive two-way transfer of medical data and information between the client and practitioner. Neither a telephone conversation, an electronic mail message or facsimile transmission between a health care practitioner and a client, or "store and forward" client visits and consultations, which are transmitted after the client is no longer available, constitutes telemedicine and will not be reimbursed. (Non-TM phone conversations may be otherwise billed as appropriate Mental Health Services, Medication Support Services or Targeted Case Management within the guidelines of Title 9, Division 1, California Code of Regulations Sections 1840.324-1840.326.)
- The audio-video telemedicine system used, must, at a minimum, have the capability of meeting the procedural definition of the service code provided

through telemedicine. The telecommunication equipment must be of a quality to adequately complete all necessary components to document the level of service for the service code billed.

- The health care practitioner who has the ultimate responsibility for the care of the client must be licensed in the State of California and enrolled as a Medi-Cal provider (e.g. contracted or approved to provide services either by the referring county or by the county in which the hub site is located). Other approved clinic staff may also provide billable services via video conferencing appropriate to their professional training and scope of practice, in accordance with state law.
- The health care practitioner who has the ultimate responsibility for the care of the client must first obtain verbal and written consent from the recipient, including:
 - A description of the risks, benefits and consequences of telemedicine;
 - The client retains the right to withdraw at any time;
 - All existing confidentiality protections apply;
 - The client has access to all transmitted medical information;
 - No dissemination of any client images or information to other entities without further written consent.
- All medical information transmitted during the delivery of health care via telemedicine must become part of the client's medical record maintained by the licensed health care provider or certified Short-Doyle/Medi-Cal clinic.

In addition, Medi-Cal reimbursement for Specialty Mental Health Services is determined by Medical Necessity Criteria as outlined in Title 9, Division 1 California Code of Regulations, Section 1830.205, "Medical Necessity Criteria for MHP Reimbursement of Specialty Mental Health Services." A telepsychiatry/telemental health service must also be an approved CPT or other HCPCS code, in accordance with Title 9, California Code of Regulations, Section 1810.216.¹²

The existing Specialty Mental Health Service codes (including those relevant codes unique to county MHPs) are sufficient for Medi-Cal billing. At this time there are no new service codes for telepsychiatry/telemental health services¹³.

For services provided within certified Short Doyle Medi-Cal clinics, the current Service Function and Service Activity Codes are sufficient for Medi-Cal billing.

3. Documentation Requirements

The basic clinical documentation requirements for county mental health plans and clinics apply as they would for any other service. Since telemedicine almost always involves two separate sites providing clinical services to the client, accountability for proper documentation rests with both sites as appropriate to the services delivered at each site.

- Medical necessity for Specialty Mental Health services, or adherence to specific criteria for other non-Medi-Cal related services;
- Appropriate clinical documentation for client records in accordance with Attachment C of the contract between the county mental health plan and the state Department of Mental Health;
- Appropriate coding of services and adequate documentation of client demographic and service encounter data;
- Compliance with mandated performance outcomes measurements.

Contracts between counties and TM providers, or Memorandums of Understanding (MOUs) between counties should specify the responsibilities of each site in completing the required documentation. Examples of such operational guidelines and a sample contract are shown in Appendices A, B and C.

4. Billing Codes

This section will address billing codes that are unique to County Mental Health Plans and the California Department of Mental Health. Service codes

used by other settings, such as primary care practices, Medi-Cal health plans, and health clinics, may differ.

a) Clinic Service Function and Service Activity Codes

The nature of telepsychiatry and telemental health services requires that both the hub and referral sites provide concurrent services. Services may include direct care to clients and collateral services, as well as case consultation between professionals. It is expected that a combination of both types of services may be provided at different points in time. The services billed will depend on the needs of the client, as well as the scope of practice of available staff. For services provided within county clinics and/or by contracted Short Doyle certified organizational providers, the current Service Activity Codes are sufficient to claim Medi-Cal FFP, provided the requirements of Section 1840.314, Title 9, Division 1 of the California Code of Regulations are met.

To document a consultation session among two clinic based psychiatrists, the Service Activity called Plan Development is reimbursable under Mental Health Services or Medication Support Services service function codes. Plan Development allows certain clinical staff to consult about a client regarding development of a treatment plan, coordination plan, verification of medical or service necessity, or monitoring of a client's progress. This activity is reimbursable without the client being present.

The following table outlines *suggested scenarios* for billing telepsychiatry services using the Service Function and Service Activity Codes. These sce-

HUB (CONSULTING) SITE Service Function/Activity Label	REFERRING SITE Service Function/Activity Label
Mental Health Services/Assessment	Mental Health Services/Collateral Targeted Case Management/Linkage & Consultation
Medication Support/Evaluation	Medication Support/Collateral Targeted Case Management/Linkage & Consultation
Medication Support/Evaluation (follow up visits)	Medication Support/Administration (e.g. by R.N.) Targeted Case Management/Linkage & Consultation
Medication Support/Plan Development*	Medication Support/Plan Development*

narios are applicable to the “Consultation Model”, in which the hub site provides psychiatry consultation to a referring physician or psychiatrist. Note that all referral sites’ services include Case Management. The availability of case management at the referral site for continuity of care is very important, not only for those clients who are already assigned a case manager, or who meet the criteria for needing case management services, but also for new clients who may be in acute distress.

b) Specialty Mental Health Service Codes

Table 6 illustrates *suggested scenarios* of telepsychiatry services that may be administered concurrently at the hub and referring sites. These scenarios are applicable to the “Consultation Model”, in which the hub site provides psychiatric consultation to a referring physician or psychiatrist. While these services are common in a physician consultation model, the hub and referral sites are not limited to providing only these services if others are medically necessary and within the scope of TM services described above.

5. Service Billing Guidelines

a) Same Service Code Billed Concurrently

The Department of Mental Health has determined that the same service code provided concurrently by the hub and referral sites (e.g. Case Management) is allowable, provided that:

- There is adequate documentation (see above, Section B.3.);
- The service is not provided when “lockouts” apply, as per Title 9, California Code of Regulations, Division 1, Section 1840;
- The *total* amount of time billed per 24-hour period, by Service Function Code, is within the parameters of the Short-Doyle Medi-Cal Maximum Time Allowances.

Table 7 shows the current maximum time allowances for Service Function Codes.

b) Case Consultation/Plan Development

Plan development activities between the hub and referring site psychiatrists or staff are reimbursable un-

Table 6: Recommended Concurrent TM Service Codes

HUB (CONSULTING) SITE Service Label/CPT or HCPCS Code	REFERRING SITE Service Label/CPT or HCPCS Code
Case Conference X9544	Case Management Z5820 Office/OP Visit Established Patient 99205
Office/OP Visit New Patient 99205	Case Management Z5820 Case Conference X9544
Case Conference X9544	Pharmacological Management 90862 Case Management Z5820
Pharmacological Management 90862	Office/OP Visit Established Patient 99211 Case Management Z5820
Office/OP Visit New Patient 99205	Office/OP Visit Established Patient 99215 Case Management Z5820
Case Conference X9544*	Case Conference X9544*

*Consultation between two practitioners, client not present.

der Medi-Cal for the following purposes (Title 9, Division 1 of the California Code of Regulations, Sections 1810.225, 227, 233, 249, 316):

1. Development of coordination plans, treatment plans or service plans;
2. Approval of plans;
3. Verification of medical or service necessity;
4. Monitoring of the client's progress.

The client does not need to be present for this activity. These activities may be via telephone, video conferencing, or in person. In most situations, such consultation is related to medication evaluation and ongoing monitoring. Especially with children and adolescents, medication adjustments are common in the early stages of treatment and require a great deal of coordination among the treatment team members as well as the patient's family. Consultative activities are not reimbursable by Medi-Cal when the primary purpose is clinical supervision.

c) Present in Room

Billing for those participants in a TM session should follow the same guidelines as in face-to-face or billable non face-to-face sessions. Family members, friends, family support partners and ancillary agency staff members can participate in a TM session. The session may be billed as a "Collateral" visit if other non-family agency members are present and participate actively, whether or not the client is present.

"Collateral" means a service activity to a significant support person in a beneficiary's life with the intent of improving or maintaining the mental health status of the beneficiary. The beneficiary may or may not be present for this service activity. (Title 9, Division 1, Section 1810.206)

If the client is present with family members (no other agency or non-family participants), the session can be billed as family therapy using the existing Mental Health Services code 340.

6. Service Billing Procedures

Billing procedures for TM services are not very different from those currently in place for other services provided within the scope of County Mental Health Plans. However, the nature of TM services, i.e. the concurrent provision of services in two separate sites, adds a level of complication to the successful documentation and transmission of billing information.

The following typical billing scenarios will be addressed in this section:

- County contract with external TM provider;
- Two or more counties (i.e. hub or consulting county and one or more referring sites);
- Internal county TM program (county clinic model).

In addition, this section will also address billing procedures for Federally Qualified Health Clinics (FQHCs), the Statewide Administrative Services Organization (ASO), Medicare, and third party insurance reimbursement.

Table 7: Short-Doyle Medi-Cal Maximum Time Allowances¹⁴

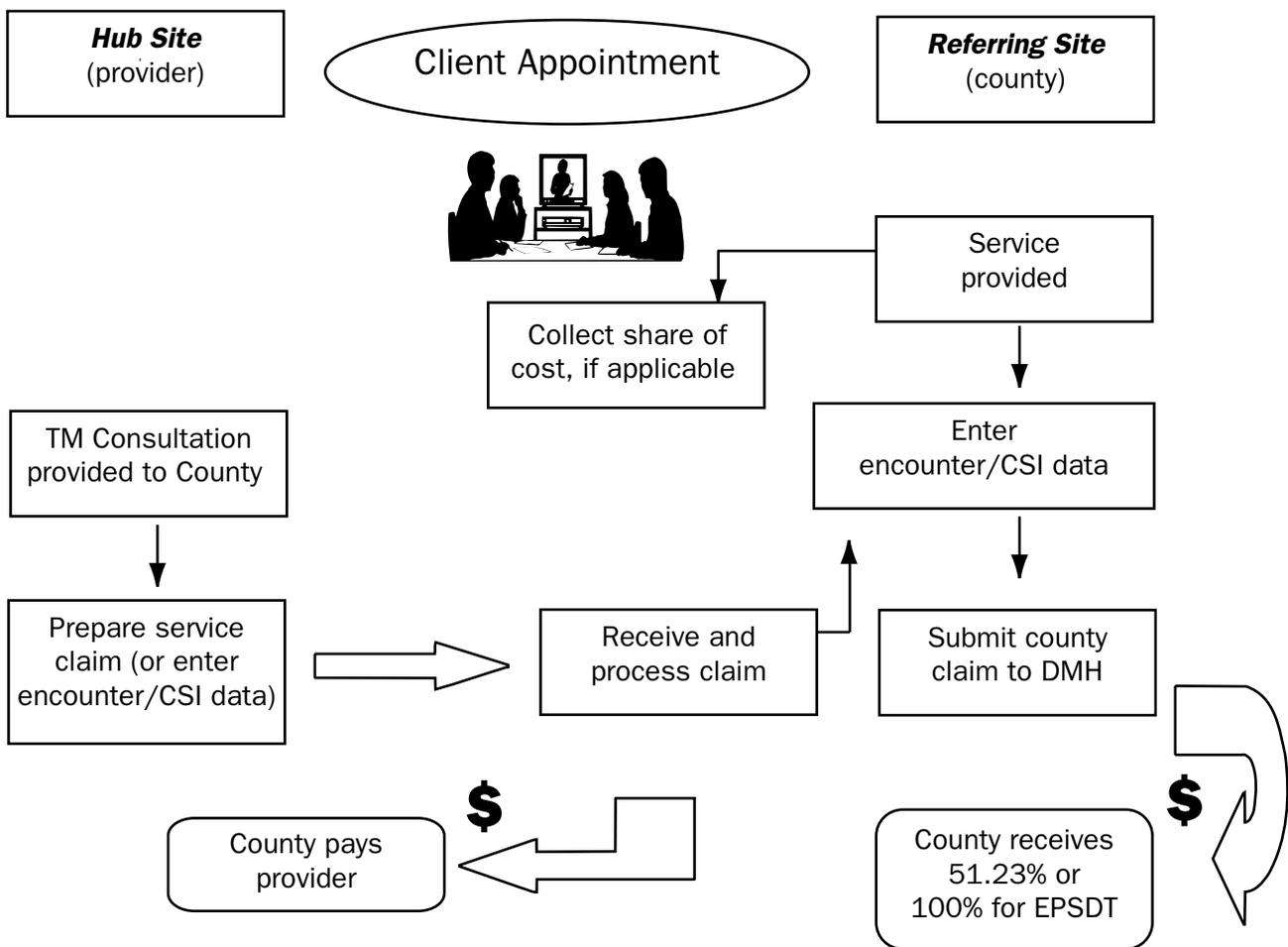
SERVICE	SERVICE FUNCTION CODE	TIME ALLOWANCE	TIME BASE
Case Management/Brokerage	01-09	1440	Minutes
Mental Health Services	10-19 & 30-59	2878	Minutes
Medication Support	60-69	240	Minutes
Crisis Intervention	70-79	480	Minutes
Stabilization	20-29	20	Hours
Day Treatment Intensive	81-89	1	Unit (Day)
Day Rehabilitative	91-99	1	Unit (Day)

a) County—Provider Model

Figure 1, “County-Provider Model—Medi-Cal/EPSDT Billing & Reimbursement Flow,” illustrates a scenario in which the county contracts with a provider (individual practitioner, group, organizational provider, or hospital) to offer TM consultation services to the county. Reimbursement for the provider’s services would be done in the same way that providers are currently being reimbursed, e.g. fee for service

for independent practitioners and groups, or through a cost reimbursement contract with organizations. Claims or encounter data from the provider would be added to the aggregate Medi-Claim that is prepared for submission to DMH. The county staff would also incur services concurrently at the Referral Site. Those services would be documented in the county’s MIS, and would be included in the county’s Medi-Cal claims to DMH.

Figure 1. Telemental Health / Telepsychiatry: County-Provider Model Medi-Cal/EPSDT Billing & Reimbursement Flow



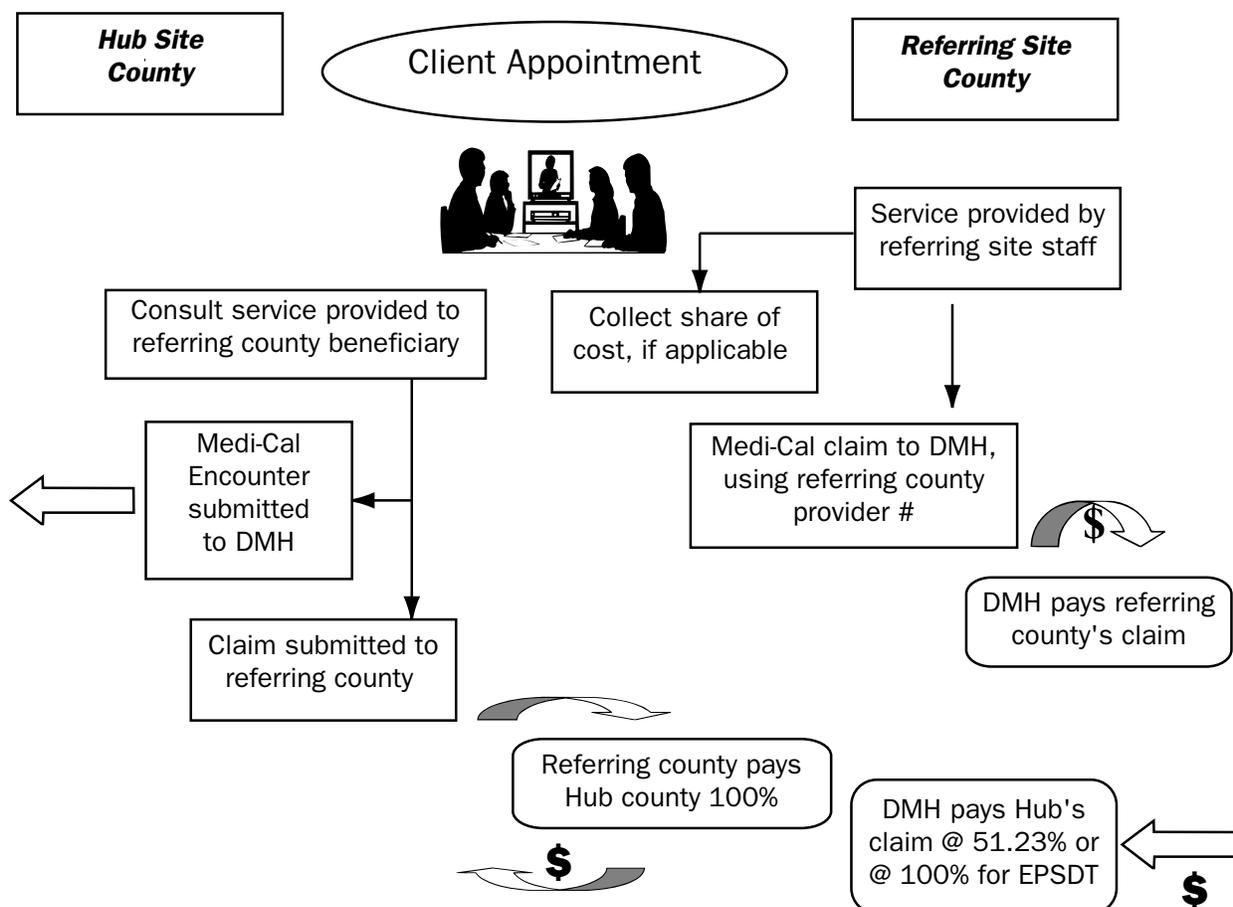
Rev. 1/7/02 III.B.6

b) Hub County-Referring County Model

Figure 2, “Hub County-Referring County Model—Medi-Cal/EPSDT Billing & Reimbursement Flow,” is a billing and reimbursement scenario modeled after the Tri-City Mental Health Center contract with counties (see Appendix B for Tri-City’s sample contract). In this scenario, two counties have developed a contract or Memorandum of Understanding (MOU) with dual billing responsibilities. (This scenario would also apply to a relationship between one county and two or more others.) The counties would negotiate the flow of data resulting in successful claims by both counties for the services rendered in each TM site. The hub (consulting) county would document its services in its information system (MIS) database. The

MIS system would reflect the client’s county code (referring county), and the hub county’s provider number. The hub county would then submit this encounter to DMH as part of its Medi-Cal claim file. Reimbursement by DMH for this service would be made to the referring site county at either 51.32% of the cost for the service or at 100% if the client was EPSDT eligible and the referring county met its annual EPSDT baseline¹⁵. The referring county would then reimburse the hub county for its services to the referring county beneficiary. The logistics of claiming and payment would be defined in the MOU. Concurrently, the services provided by staff at the referring county site would also be claimed to DMH as part of the referring county’s Medi-Cal claim file.

**Figure 2. Telemental Health / Telepsychiatry:
Hub County-Referring County Model
Medi-Cal/EPSDT Billing & Reimbursement Flow**



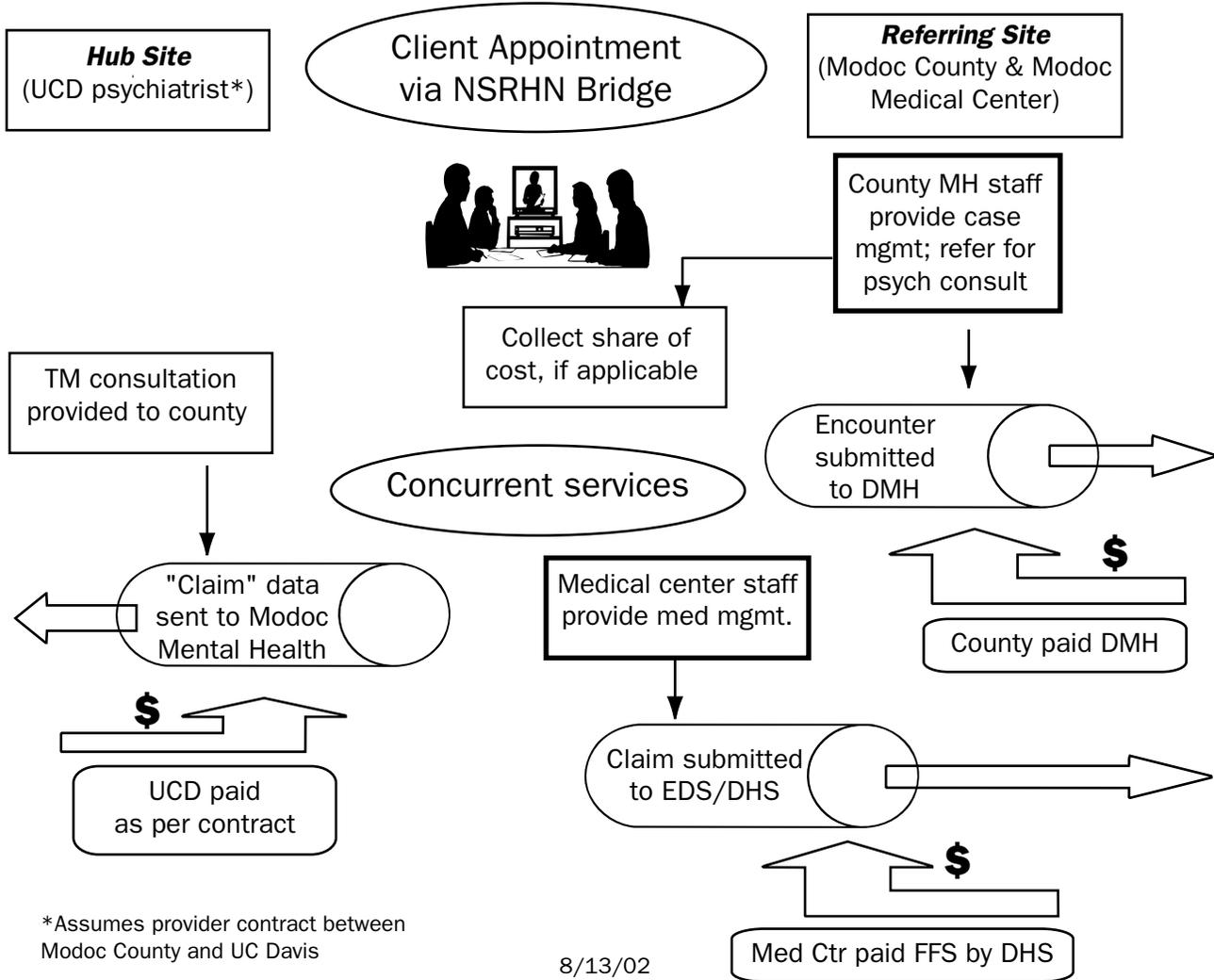
Rev. 1/7/02 III.B.6

c) County Clinic Model

Figure 3, “Modoc-UC Davis— Medi-Cal/EPSDT Billing & Reimbursement Flow,” is an example of a model that assumes a single county operating both hub and referral sites, using clinic staff, and in this case, UC Davis, without other external providers.

This billing and reimbursement model would follow the general rules and limitations for incurring and claiming concurrent services (see Section III.B.5.a., “Same Service Code Billed Concurrently”). Otherwise, billing and Medi-Cal claim procedures are the same as currently implemented.

Figure 3. Telemental Health / Telepsychiatry: Modoc-UC Davis Medi-Cal/EPSDT Billing & Reimbursement Flow



C. Administrative Services Organization for Specialty Mental Health Services to Children and Adolescents

The CMHDA Administrative Services Organization (ASO) contracted with Value/Options authorizes Specialty Mental Health Services that are delivered to out-of-county children and adolescents by the ASO network of practitioners. At this time, there are no designated telemedicine providers in the ASO network. However, if it is determined that TM services are required from the ASO network, prior authorization will be required and the contact is Denise Koenes at (916) 556-3477 x112.

D. FQHC and County Health Clinic Medi-Cal Claims

Normally in a Federally Qualified Health Clinic (FQHC), psychiatrists who provide services on site at the FQHC may have their services billed by the FQHC directly to the state's Department of Health Services (DHS). Services off-site (i.e. Specialty Mental Health Services) are the responsibility of the County Mental Health Plan (MHP). Payment for Specialty Mental Health Services usually requires authorization from the MHP and/or use of the MHP's contracted network practitioners.

In most TM scenarios, the FQHC would be providing services as a remote (referring) site, and the hub consultation services provided by another provider. **In order for off site services to be billed under Medi-Cal, that provider's services must be handled as a Specialty Mental Health Service, involving MHP authorization and network practitioners.** Services provided to the client at the FQHC site may be billed through the DHS Medi-Cal claiming system.

Since FQHCs and other local health clinics provide most of the health related services to Medi-Cal beneficiaries and the indigent, it is recommended that, in the implementation of TM services, the county MHP include as key stakeholders those primary care practitioners or health clinics. Their involvement would increase the coordination between primary care and behavioral health.

E. Medicare

Medicare now reimburses telemedicine sessions under limited conditions. (See the following for a summary of current Medicare regulations: Appendix H, "Laws and Regulations Affecting Telemedicine"; Appendix I, "Telehealth Provisions, Medicare, Medicaid and SCHIP Benefits Improvement and Protection Act of 2000" {H.R. 5661}.) For example, the client must reside in a partial or full Health Professional Shortage Area (HPSA) or a non-metropolitan statistical area (MSA). Eligible providers are the same providers that can currently bill for Medicare services. H.R. 5661 made allowances for non-medical professionals (e.g. R.N.s or LCSWs) to present or refer cases for consultation. Acceptable reimbursable services include consultation, office visits, psychotherapy and pharmacological management.

Medicare reimbursement for mental health services remains problematic for counties. Successful billing for Medicare TM services is contingent on the resolution of many policy issues that are creating barriers for counties to make full use of this funding source.

F. Third Party Payers/Private Insurance

1. Overview—Third Party Payment for Telemental Health

The California Telecommunications Act of 1996 (SB 1665) regulates reimbursable telemedicine services by both public and private payers. The Act also stipulates that

"on and after January 1, 1997, no health care service plan contract that is issued, amended, or renewed shall require face-to-face contact between a health care provider and a client for services appropriately provided through telemedicine, subject to all terms and conditions of the contract agreed upon between the enrollee or subscriber and the plan."

To date very few private insurance plans have developed benefits or reimbursement guidelines for telepsychiatry.

2. Current Policies of Major Payers— Status of Telemedicine

a) Blue Cross (See also Appendix E, “Program Descriptions of Current TM Implementations”)

As of this writing, Blue Cross is the only private Medi-Cal health plan that will reimburse TM visits. Blue Cross will reimburse its contracted providers for TM services to Medi-Cal or Healthy Families Blue Cross members. Telemedicine services are not yet a covered benefit for Blue Cross commercial (employer) based plans.

b) Kaiser

Kaiser is currently piloting telemedicine sites. Telemedicine as a covered modality is being considered but is not yet available to Kaiser Medi-Cal, Healthy Families, or commercial enrollees.

c) ‘Carve out’ plans

“Carve out” behavioral health plans include those employer-sponsored plans of United Behavioral Health, Value Options Behavioral Health, Pacificare Behavioral Health, and MHN, among others. These plans have not yet developed benefits or policies for reimbursing TM visits. **Enrolled members of commercial (employer) based plans administered by these companies may, however, be eligible for TM services. Pre-authorization would be required, and the use of TM would be considered only when face-to-face visits are clearly not feasible.**

G. Program Sustainability

1. Outreach Objectives

Sustainability of the Sacramento Area Telepsychiatry Project can be ensured with adequate funding through a variety of sources. In order to sustain the telepsychiatry program for all county residents who need care, counties should continue to provide outreach to Medi-Cal beneficiaries and potential Healthy Families eligible consumers. While the readiness of private insurers to reimburse telemedicine services is highly variable, counties should be encouraged to explore potential reimbursement from insurers. CIMH will provide technical assistance to assist with obtaining reimbursement from private insurer plans on a case-by-case basis and through work with health plan and insurance associations.

2. Healthy Families Program

From a policy level, the Healthy Families Program has approved telemedicine as a covered service. County mental health departments that provide mental health services through the Healthy Families standard benefit (e.g. those county departments that are subcontractors to health plans) may initiate telepsychiatry as needed. (It is highly advisable, however, to confirm reimbursement for telemedicine services from health plans prior to service provision. CIMH can provide technical assistance on a case-by-case basis.) For enrollees whose mental health benefits are provided through their health plan, the health plan must authorize all services¹⁶. For children evaluated as SED and who receive ongoing Healthy Families services through county mental health, telepsychiatry services may be initiated by the county as needed, and billed through the same mechanisms as other SED Healthy Families services are reported.

3. Eligibility for Other Funding

TM can be used as an adjunct to almost any program that provides services through federal or state grant money. Client eligibility for specific programs should always be checked. TM, for example, can be funded for clients enrolled in AB2034, Dual Diagnosis, Forensic Conditional Release Program (CONREP), and Projects for Assistance in Transition from Homelessness (PATH). For clients who are disabled, SSI funding should be pursued to provide basic income maintenance and partial costs of services.

For children and adolescents, eligibility should be determined for such funding as SB 163 and other system of care funds, Mental Health Services for Special Education Pupils’ Program (AB 2726), Healthy Families, and School-Based Early Mental Health Intervention and Prevention Services (AB 1650).

¹¹ We are indebted to the following organizations for their feedback and guidance in the preparation of this section: California Department of Mental Health Technical Assistance and Training Unit, Tri-City Mental Health Center, Pomona, California Telehealth & Telemedicine Center, Managed Risk Medical Insurance Board, Blue Cross of Northern California, and the Northern Sierra Rural Health Network.

¹² Service codes for health and behavioral health services will change as a result of HIPAA legislation. The

mandated national electronic transaction standards have been issued, with a compliance deadline of October 16, 2003 (extended from 2002). This manual will be revised to reflect the new standardized codes.

¹³ The California Department of Health Services requires a “TM” modifier for certain telemedicine Medi-Cal claims from non-mental health consultant physicians. At this time, the modifier is not required for Specialty Mental Health telemental health/telepsychiatry services.

¹⁴ Source: California Department of Mental Health Technical Assistance and Training Unit

¹⁵ Ideally, “credit” for incurring EPSDT funds should accrue to the Hub county for the eligible services provided by the hub site. The participating counties may want to negotiate a way to track this activity so that the Hub county is credited towards its annual baseline for the correct amount of EPSDT dollars.

¹⁶ As of August 2001, Blue Cross of California is the only contracted Healthy Families health plan that has implemented telemedicine services for Healthy Families enrollees.

IV. Education and Training¹⁷

This section will outline the training topics that are required or recommended in order to implement a TM site or begin participating in a TM program. A training program that meets your county's needs should be built into the implementation project plan. An effective training strategy would be to make use of TM experts and existing training programs, with the objective of building internal capacity for ongoing training activities. As mentioned in Section II ("Implementation of Telemental Health/Telepsychiatry Programs") the Site Coordinator or a Clinical Manager can become the resident expert in TM for training new staff, or to represent TM to other county programs and agencies.

The U.C. Davis Telemedicine Learning Center (TLC), consistently voted as one of the top ten TM programs in the nation, is a resource available to county staff (see Appendix C for a description of the program and a detailed training agenda). Several times each year the TLC holds 3-day training seminars (at no charge to county department staff) that cover the following areas:

- Executive management;
- Technical systems;
- Clinical practice;
- Operations management.

The TLC training program is especially useful to a county that has already had some experience in developing and using TM services. However, the training program is also set up for participants who are just beginning the planning process for implementation.

Each county will have its own unique training needs. However, there are suggested training efforts that have been shown to result in successful implementations.

■ Orientation to executive managers, advisory groups, and other stakeholders.

As mentioned in Section II ("Implementation of Telemental Health / Telepsychiatry Services") having key stakeholders and managers "buy off" on the benefits and need for TM services is crucial. Some of the "talking points" other programs have found helpful in presenting plans to implement TM services are:

- TM is an acceptable practice in almost every area of health care; standards and best practices are emerging rapidly;

- Emerging research has shown that TM is effective, and consumers consistently express high satisfaction with TM as a substitute for face to face interventions;
- The costs of running a TM program are stable and predictable after the initial investment in equipment;
- TM can increase access to care for underserved beneficiaries;
- TM may increase revenue to the county by providing services to more people who otherwise would not have been served;
- TM can improve the coordination of care due to the enhanced ability of treatment team members to communicate with each other;
- TM can improve the coordination between physical health and behavioral health services;
- Gaps in cultural competencies and languages can be filled using remote staff and clinicians.

Support must be garnered from all levels of county government, including the Board of Supervisors. Materials can also be obtained to help orient county government, agency executives and others.

■ Orientation to Medical, Clinical and Administrative Staff

"Pictures speak louder than words." Seeing a TM session in action, and practical descriptions of TM interventions in various clinical scenarios are powerful tools to introduce its importance and effectiveness. (As equipment is installed, role playing exercises would help staff understand the more technical aspects of video conferencing, as well as differences from face to face interactions.) Descriptions of current programs that represent a variety of models (such as those included in the appendices) would also show the potential to customize a TM program to a county's needs.

Once an orientation has taken place, there are several minimally required training topics related to ongoing operations.

- Policies and procedures (see Section II.F.);
- Clinical protocols and best practices;
- Effective use of facility and equipment;
- Troubleshooting problems;

- Case management and aftercare procedures;
- Integrating TM services with other System of Care programs;
- Documentation;
- Billing procedures.

■ Ongoing Training to Operations Staff

Operations staff will include, at a minimum, the Site Coordinator, Psychiatrist or Medical Director, Administrative Support, and Fiscal/Billing staff. The Site Coordinator(s) will benefit from re-training on such topics as clinical best practices, new county services that will interface with TM, new technologies or better ways to use current technologies, and innovative new approaches in TM used by other programs. Medi-

cal staff/psychiatrists will also benefit from ongoing new information about innovations, best practices, and the latest research. Administrative and fiscal staff will continue to require training on changes in administrative policies, such as Medi-Cal billing procedures, documentation standards, etc., while information system (MIS) staff will benefit from ongoing training in technological innovations, efficient ways to provide technical support, and orientation to any changes in program policy that would impact MIS systems.

¹⁷ We are indebted to the U.C. Davis Telehealth Learning Center and to Tri-City Mental Health Center, Pomona, for their assistance in the preparation of this section.

V. Evaluation of TM Services

Evaluations of TM services fall into the following categories (with non-inclusive lists of examples):

- *Structural Indicators*— status or success of implementation, e.g. equipment status; available capacity of TM appointment openings;
- *Process Indicators*—utilization data, e.g. numbers of patients served; types of services; length of treatment episodes; penetration rates; appropriate use of treatment modalities (such as medications);
- *Outcomes Quality Indicators*—client satisfaction; improvement on outcomes indicators or scales; reductions in more expensive or unnecessary levels of care;
- *Cost Benefit/Cost Effectiveness Indicators*—costs of providing TM compared to face to face visits; cost benefit of reduced travel time to clients and clinicians; revenue and costs resulting from increased outreach & penetration; revenue vs. costs of implementation and ongoing operations; costs of non-billable services.

Published reports of TM evaluations focus mainly on case studies, implementation status, program design descriptions, and utilization rates. There are very few cost benefit/cost effectiveness studies or outcomes studies, although client satisfaction surveys consistently result in high marks for TM services¹⁸.

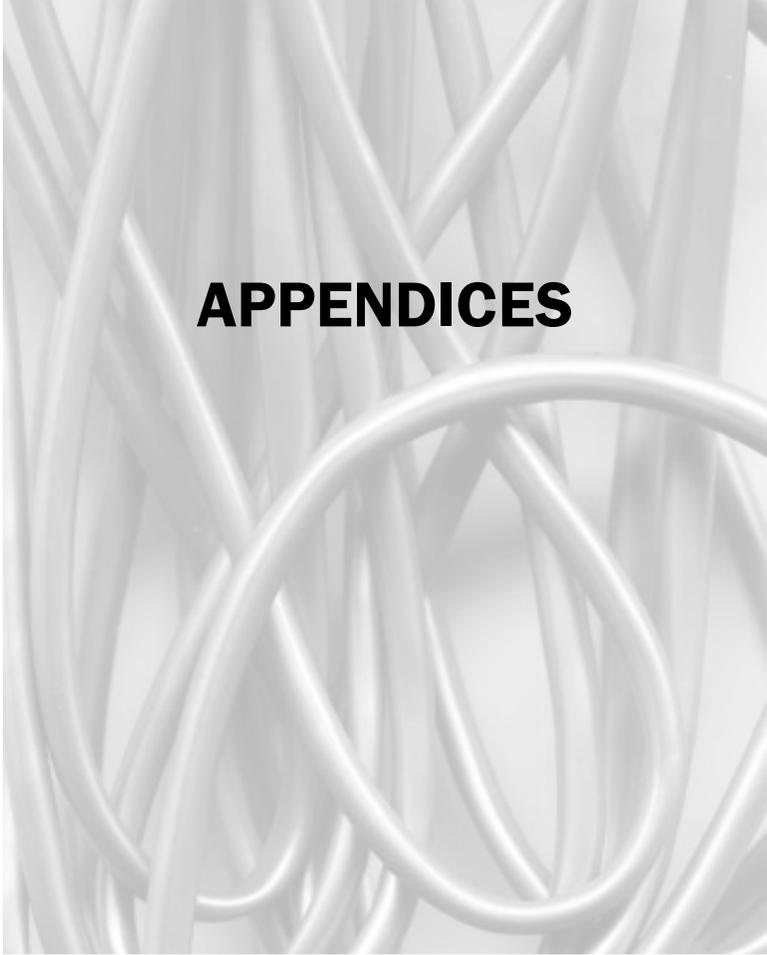
Further evaluation of TM services may be desired to assist in planning, and to justify ongoing operations to stakeholders. However, since TM programs in California counties would normally be integrated into existing QI and outcomes programs, such as the Performance Outcomes System and pilots for children and adults, one initial barrier to evaluating TM services is that the service codes being used do not differentiate TM for other services. **Therefore, prior to program implementation, evaluators may wish to design an *ad hoc* system of tracking TM services with the use of an appointment or contact log.** Tri-City Mental Health Center, for example, uses separate program codes to identify Telepsychiatry services for internal data collection.

Tracking the utilization of TM services would be the first step in evaluation, and would provide the building block for eventual analyses of outcomes, cost/benefits and cost effectiveness. A suggested list of preliminary data elements is as follows:

- Name or ID of client;
- Zip code of client (or other more specific geographical information);
- Date of appointment;
- Date of service;
- Service code, other service descriptors;
- Length of service;
- Payer source;
- Diagnoses;
- Results of session (e.g. continued treatment, medication monitoring, crisis management, suicide prevention, etc.).

With these data elements, simple utilization analyses can be performed. For example, since one objective of TM is to provide increased mental health services to rural areas, these data could be used to track whether services have been made more accessible to those who may not have had face-to-face visits, such as those in inaccessible geographical areas. Tracking the general results of sessions would also be a more immediate way to show interim and immediate effectiveness of TM services while the longer-range outcome data are being collected. A review of service demand and diagnoses would also be useful in planning for increased capacity.

¹⁸ Frueh, B. C., Deitsch, S. E., Santos, A. B., Gold, P. B., Johnson, M. R., Meisler, N., Magruder, K. M., & Ballenger, J. C. (2000). Procedural and methodological issues in telepsychiatry research and program development. *Psychiatric Services*, *51*(12), 1522-7



Appendix A

Tri-City Mental Health Center Operational Guideline

Subject: Telepsychiatry Services	Section No.:
Effective Date: 04/23/01	Page: { PAGE } of 5
Supersedes: All previous	
Approved By: Executive Director	Also Refer To:
Signature/Date:	Submitted By:

PURPOSE

The purpose of this operational guide is to define procedures for providing psychiatric services through a teleconferencing modality.

AUTHORITY

State of California Department of Mental Health (SDMH)

LEGAL/REGULATORY REFERENCES

Short Doyle/Medical Manual for the Rehabilitation Option
Business and Professional Code 2290.5
HIPAA – Health Insurance Portability Accountability Act of 1996; 2001

MISSION STATEMENT

Tri-City Mental Health Center strives to provide culturally sensitive mental services, by qualified mental health providers, based upon a person's needs. Tri-City Mental Health Center will provide services, using telemedicine techniques to those people who would not otherwise have had access to services. Services provided in this modality will minimize not only the associated cost for services, but travel time as well. This service is dedicated to a consultative and collaborative model between multiple disciplines, Consumers and family members. In this way we ensure that all Consumers receive the benefits of each specialty service, and actively participate in their own treatment planning.

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DEFINITIONS

Remote Site Coordinator (RSC) – The person in the originating county (AKA: Network Subscriber) who will coordinate all Telepsychiatry appointments and clinical issues.

Hub Site Coordinator (HSC) – Tri-City’s Site coordinator who will coordinate all Telepsychiatry appointments and clinical issues.

Network Subscriber – The agency, entity, and/or county that has contracted with Tri-City to receive Telepsychiatry Services at one or more sites local to the subscriber.

Consumers – Those participants/patients that meet target population requirements identified by the Net2work subscriber and have agreed to be treated using the teleconferencing modality.

INITIATION OF NEW NETWORK SUBSCRIBERS

- A. Identification of need and estimated number of hours.
- B. Identification of target population to be served.
- C. Identification of primary contacts for:
Contracts, site coordinator, physical site supervisor, technological staff, billing, management.
- D. Identification of site address and telephone numbers.

PROCEDURE

- A. Initial request for services: Typical flow of consumer care shall proceed in this fashion:
 - 1. A consumer/guardian requests services in his or her county.
 - 2. That county then provides a full psychosocial assessment, as defined in the Short-Doyle / Medi-Cal Manual for the Rehabilitation Option.
 - 3. If it is determined that a psychiatric assessment is necessary, that consumer is then referred (with all the relevant information) to the Remote Site Coordinator (RSC).
 - 4. The RSC logs request.
 - 5. The RSC then sends the following information to the HUB Site Coordinator (HSC):
 - a. Application for Services (Tri-City’s)
 - b. UMDAP
 - c. Psychosocial Assessment
 - d. Progress notes
 - e. Service plan
 - f. Care coordination plan
 - g. Release of Information to and from Network subscriber and Tri-City

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- h. Evaluation/Outcome measures as needed
- i. Informed consent for treatment with Teleconferencing as the modality
- 6. The HUB Site Coordinator will then:
 - a. Review submitted information
 - b. Log request
 - c. Create chart
 - d. Complete data entry
 - e. Schedule appointment
 - f. Ensure that Evaluation/Outcome measures are completed
- 7. On appointment date, the RSC calls the HSC to inform them of the consumer's arrival.
- 8. The RS calls the HS via the teleconferencing equipment and the appointment begins.
- 9. After the appointment, the Site Coordinators schedule the next appointment.
- 10. The doctor's note is faxed to the Network subscriber and the original is placed in the chart at Tri-City.
- 11. Medications are ordered in the following way:
 - a. Prescriptions will be phoned in or FAXED to the pharmacy of the consumer's choice.
 - b. Triplicate prescriptions are sent via courier (i.e. Federal Express) to the pharmacy of the consumer's choice.
- 12. For ongoing consumers, emergency care issues can be handled over the phone, during normal business hours, by coordinating with the Hub Site Coordinator.
- B. Ongoing requests for services:
 - 1. Consumers will receive ongoing services from the same psychiatrist wherever possible. Scheduling will be done with consumer and the site coordinators.
 - 2. All caregivers will participate in disposition meetings on consumers, using the teleconferencing modality or by telephone. Consultation is welcomed and should follow the needs of the consumer.
 - 3. Participation of entire families is considered a component of all treatment whenever possible.
- C. Financial Eligibility

The Network Subscriber in accordance with Medi-Cal guidelines will obtain financial Eligibility, Share of Cost, and liability. This information will be forwarded to the Hub Site Coordinators with initial requests as well as when any changes are made.
- D. Evaluations and Outcomes

The RSC, Consumer and Psychiatrist will obtain the following measures:

 - 1. Children's Outcome Measure Questionnaires: CLEP, CSQ-8, CAFAS, GAF.

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2. Adult Outcome Measure Questionnaires: BASIS32, CLEP, MSHIP, GAF.

E. Emergency Assessments

When the Network Subscriber determines that a Consumer's needs are immediate and critical, an emergency medication assessment can be arranged. The arrangements can be made by the HSC, in conjunction with the psychiatrist.

F. Intake Packets

1. Completed by Consumer/Guardian/Conservator at network subscriber site

- a. Payor Financial Information
- b. Authorization for Reimbursement
- c. Application for Services
- d. Outcome Measures – In Spanish only
- e. Evaluative tools
- f. Informed consent for Telepsychiatry modality
- g. Consent for mental health treatment
- h. Release of information to and from Tri-City

2. Completed by Network Subscriber/and Psychiatrist

- a. Psychosocial Assessment
- b. Progress Notes
- c. Medication consent
- d. Care Coordination Plan
- e. Service Plan
- f. Referral Form
- g. FAX form
- h. Designated evaluative tools.
- i. Outcome measures

G. Referral for Medication

Many consumers with severe mental disorders will benefit from medication treatment and should be referred for medication evaluation, unless the consumer is unwilling or the mental disorder is mild, the Psychiatrist may request some brief clinical information to be used to prioritize appointments when a shortage of psychiatric resources develops. Assessment paperwork must be completed before the consumer is seen. This will facilitate the psychiatric evaluation and eliminate duplication of clinical interview questions.

H. Release of Information

A release of information will be needed to transfer documents from Network Subscriber to Tri-City. An additional release will be needed that allows Tri-City to release

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information to the Network Subscriber. For documents that are considered “third party” documents, a summary of relevant information from the referring staff will be helpful.

RESPONSIBILITIES

Psychiatrists: Review and confirm information on Medical History Questionnaires; review assessment information and diagnosis; make note of all diagnostic changes in progress notes. Advise consumer of medication side effects and contraindications. Consult with Remote site staff and Hub site staff in order to provide continuity of care and professionalism. Provide prescriptions for psychotropic medications as needed. Provide psychiatric services via teleconferencing modality.

Site Coordinators: Organize consumers’ charts, appointments, and evaluations. Assist doctors with needs. Fax records and organize all statistical data. Facilitate all critical care issues with consumers, doctors and remote site providers.

Program Supervisor: Assist with problem solving, consumer care, agreement questions (i.e., Grant, Contract Memorandum of Understanding), compliance issues and facilitation of ongoing service provision and new subscribers. Supervise and facilitate all training at new sites, site visits and evaluation reviews. Submit all monthly statistical data to Executive Director.

Management of Information Systems (MIS) Coordinator: Assist with all trouble shooting issues and technology problems. Assist with installation of equipment and training of remote site staff on technology. (Available during all normal business hours M-TH 8:30 am to 5:30 p.m. Fridays 8 am to 5 p.m.)

EXHIBIT B

FISCAL YEAR 2000 - 2001
SHORT-DOYLE/MEDI-CAL
MAXIMUM REIMBURSEMENT RATES
 July 1, 2000 through June 30, 2001

SERVICE FUNCTION	MODE OF SERVICE CODE		SERVICE FUNCTION CODE	TIME BASE	SHORT-DOYLE/MEDI-CAL MAXIMUM ALLOWANCE	
	CR/DC CODE	SD/MC Claiming Code				
A. 24-HOUR SERVICES	05	07, 08, 09	10 – 18	Client Day	\$772.74	
Hospital Inpatient						
Hospital Administrative Day			19	Client Day	7/1/00-7/31/00 \$221.64	
					8/1/00-6/30/01 \$230.29	
Psychiatric Health Facility (PHF)			05	20 – 29	Client Day	\$441.92
Adult Crisis Residential			05	40 – 49	Client Day	\$249.19
Adult Residential	05	65 – 79	Client Day	\$121.54		
B. DAY SERVICES	10	12, 18	20 – 24	Client Hour	\$77.36	
Crisis Stabilization						
Emergency Room						
Urgent Care			25 – 29	Client Hour	\$77.36	
Day Treatment Intensive			81 – 84	Client ½ Day	\$117.93	
Half Day						
Full Day					85 – 89	Client Full Day
Day Rehabilitation	91 – 94	Client ½ Day	\$68.80			
Half Day						
Full Day			95 – 99	Client Full Day	\$107.38	
C. OUTPATIENT SERVICES	15	12, 18	01 – 09	Staff Minute	\$1.65	
Case Management, Brokerage						
Mental Health Services			10 – 19	Staff Minute	\$2.12	
			30 – 59			
Medication Support			60 – 69		\$3.95	
Crisis Intervention	70 – 79	Staff Minute	\$3.18			

Appendix B

BOILERPLATE TRI-CITY MENTAL HEALTH CENTER TELEPSYCHIATRY SERVICES AGREEMENT

THIS AGREEMENT is made and entered into this _____ day of _____, 2001, by and between Tri-City Mental Health Center, a Joint Powers Agency, formed under Section 115 of the Internal Revenue Code, as an instrumentality of the cities of Claremont, La Verne and Pomona each of which is a municipal corporation of the State of California (hereinafter also referred to as “TRI-CITY”) and _____ (hereinafter referred to as “CONTRACTOR”).

- I. WHEREAS, TRI-CITY Mental Health Center is the duly appointed mental health authority in the cities of Claremont, La Verne, and Pomona for the State of California: and
- II. WHEREAS, TRI-CITY Mental Health Center is desirous of increasing access to services for at risk populations via a teleconferencing modality; and
- III. WHEREAS, the following terms, as used in this Agreement shall have the following meaning:
 - A. Telepsychiatry Services (hereinafter also referred to as “Services”) is broadly defined as the application of electronic communication technologies to the practices of psychiatry and related services. Related services include, but are not limited to, Case Consultation, Case Management – Brokerage and Linkage, and Administrative Collaboration. The essence is the delivery of services, data and information to individuals in their own communities instead of the movement of people to concentrated centers of health care. As Such, Telepsychiatry is emerging as a significant new tool in addressing cultural, socioeconomic and geographic barriers to health services and information in underserved urban and rural communities. The key to Telepsychiatry is collaboration between one or more sites to expand the range of resources and services available at the point of service. Benefits include improved access to specialty care, enhanced primary-care services, and the increased availability of medical education, training programs and health information in underserved communities.
 - B. “Parties” means TRI-CITY and CONTRACTOR.
- IV. WHEREAS, the CONTRACTOR is desirous of these services;

NOW THEREFORE, in consideration of the mutual promises, covenants and conditions set forth herein, the Parties hereto do agree as follows:

1.0 PURPOSE:

TRI-CITY is desirous to expand and improve access to a full spectrum of psychiatric care for CONTRACTOR as well as to address the identified psychiatric needs and significantly improve the mental health of those individuals receiving psychiatric care via the Telepsychiatry Network.

2.0 OBLIGATIONS OF TRI-CITY:

Pursuant to the terms of this Agreement, TRI-CITY will provide Telepsychiatry and related services (hereinafter referred to as “Services”) to residents of the jurisdiction of the CONTRACTOR. TRI-CITY shall employ, contract with, or otherwise arrange the services of qualified health professionals to provide Services hereunder. The days and times during which TRI-CITY shall render Services and the total amount of Services provided hereunder shall be determined solely at the discretion of TRI-CITY. TRI-CITY is responsible for updating the Operational Guidelines attached in Exhibit A, incorporated herein by this reference into the Agreement.

3.0 OBLIGATIONS OF CONTRACTOR:

CONTRACTOR shall do the following during the term hereof:

- A. Cooperate with TRI-CITY to facilitate the provision of Services;
- B. At its sole cost and expense, provide space and Equipment; and,
- C. Be responsible for following the current Operational Guidelines attached in Exhibit A, incorporated herein by this reference, and any revisions provided by TRI-CITY.

4.0 TERM:

The term of this Agreement shall commence on _____, 2001 and shall continue in full force and effect through _____, 2002.

5.0 NON-RECURRING/RECURRING COST:

Non-Recurring Cost

Poly Com View Station	\$ 9,000.00
View Station Set-Up and Installation (includes 1 year Technical Support under this Contract)	\$ 2,250.00
ISDN 3 Line Installation	\$ 800.00

Recurring Cost

Administrative Consultation	\$ 50.00 per hour
Training (including Travel Time & Materials)	\$ 50.00 per hour
Site Coordination	\$ 50.00 per hour

It is estimated that ISDN Line Service and Maintenance charges will be approximately \$15.00 per hour/per line.

The pricing matrix above reflects costs CONTRACTOR is responsible for. TRI-CITY shall order the above equipment, lines and services on behalf of CONTRACTOR. CONTRACTOR shall be named as payor on all contracts associated with the matrix above.

6.0 PAYMENT:

CONTRACTOR will be billed at the end of each month by TRI-CITY. Payments are due within 30 days after receipt of invoice.

TRI-CITY will bill for services as follows:

6.1 Medi-Cal Clients: TRI-CITY will bill the State Department of Mental Health directly for all clients who have Medi-Cal.

CHILDREN:

- The 48.77% match for children will be paid by CONTRACTOR from E.P.S.D.T. funds.
- For those children who do not qualify for E.P.S.D.T., the 48.77% match will be billed directly to the CONTRACTOR based on TRI-CITY's current Medi-Cal rates.

ADULTS:

- The 48.77% match for adult clients will be billed directly to the CONTRACTOR based on TRI-CITY's current Medi-Cal rates.

6.2 Medicare Clients: Medicare does not currently pay for Telepsychiatry and related services. According to Health Care Financial Association (HCFA), psychologist or psychiatrist services must be provided in-person in order to be covered by Medicare. However, proposed regulations were issued on June 22, 1998 which, when adopted, will cover certain physician and psychologist services provided via a telemedicine network if certain requirements are satisfied. TRI-CITY shall review the possibility of billing Medicare for Services upon the issuance of a final ruling by HCFA pertaining to Telemedicine or Telepsychiatry services. In the event that a final ruling is not issued, or in the event that Medicare reimbursement is not made available to pay for Services provided hereunder, TRI-CITY will continue to bill and CONTRACTOR will continue to pay for services rendered to Medicare beneficiaries under this Agreement.

6.3 Medi-Cal/Medicare Crossover: For clients who are eligible for Medi-Cal and Medicare, services must be billed to Medi-Cal as follows:

- PART A: TRI-CITY has elected not to be a Medicare provider for partial hospitalization. Therefore, Medi-Cal only will be billed directly.
- PART B: TRI-CITY is a Part B provider; however, Telepsychiatry is not a Medicare reimbursable service. TRI-CITY will only bill Medi-Cal.
- For Adult clients, the CONTRACTOR will be billed for the remaining 48.77% of the required match based on TRI-CITY's current Medi-Cal rates.

6.4 Third Party Insurance: TRI-CITY will bill CONTRACTOR directly for any client who has Third Party Insurance using the current Statewide Maximum Allowable (SMA) rates (Exhibit B), incorporated herein by this reference. These rates will be adjusted annually upon receipt of the new schedule of SMA rates from the State Department of Mental Health. It will be the CONTRACTOR's responsibility to bill the Third Party Insurance for reimbursement.

6.5 Self-Pays: TRI-CITY will bill CONTRACTOR directly based on the SMA rates for all services to clients who do not have any source of revenue.

6.6 No Shows: It is the CONTRACTOR's responsibility to ensure that the client keeps all scheduled appointments. No shows will be billed to the CONTRACTOR per each missed appointment as follows:

- \$25 per visit for a medication visit
- \$100 per visit for an evaluation visit

7.0 MEDI-CAL DENIALS:

TRI-CITY executes monthly adjustments for actual Medi-Cal services denied by the State. Any Medi-Cal unit denied by the State due to client ineligibility, will be billed directly to the CONTRACTOR based on the current SMA rates.

8.0 PROFESSIONAL SERVICES:

TRI-CITY will provide, via Telepsychiatry, medication support and related services to the CONTRACTOR based on the current SMA rates provided by the State Department of Mental Health.

9.0 EQUIPMENT:

All Equipment, furnished by CONTRACTOR under this contract shall remain the property of CONTRACTOR and shall be used only for the purpose specified under this contract. The CONTRACTOR shall be responsible for providing a secure room for the Equipment. It is the responsibility of the CONTRACTOR to repair or replace Equipment if it is damaged or stolen, due to the CONTRACTOR's negligence.

10.0 RELATIONSHIP OF PARTIES:

It is the intention of the Parties to this Agreement that the relationship created hereby is that of independent CONTRACTORS and does not constitute an employee-employer relationship. Nothing in this Agreement is intended to create nor shall it be deemed or construed to create any relationship between the Parties hereto other than that of independent entities contracting for the purposes of affecting the provisions of this Agreement. Neither of the Parties hereto,

nor any of their respective officers, directors or employees shall be construed to be the agent, employer or representative of the other.

11.0 INDEMNIFICATION AND INSURANCE:

11.1 Indemnification – CONTRACTOR agrees to indemnify, defend and hold harmless TRI-CITY, its agents, officers and employees from and against any and all liability, expense, including defense costs and legal fees, and claims for damages of any nature whatsoever, including, but not limited to, bodily injury, death, personal injury, or property damage arising from or connected with, CONTRACTOR’s operations or it’s services hereunder, including any worker’s compensation, suits, liability, or expense, arising from or connected with services by any person pursuant to this Agreement.

11.2 Insurance – CONTRACTOR shall obtain, at its’ sole cost, prior to exercising any right or performing any obligation pursuant to this Agreement, policies of General Liability and Worker’s Compensation insurance. CONTRACTOR shall provide certificates of general liability and worker’s compensation insurance to TRI-CITY within thirty (30) days of the effective date of this Agreement.

- General Liability shall name TRI-CITY as an additional insured and shall provide a combined single limit of not less than One Million Dollars (\$1,000,000) per occurrence that provides against liability for any and all claims and suits of damage or injuries to persons or property resulting from or arising out of operations of CONTRACTOR. CONTRACTOR shall notify TRI-CITY not less than thirty (30) calendar days prior to any modification or cancellation of insurance coverage required under this Agreement.
- Worker’s Compensation insurance in an amount and form to meet all applicable requirements of the Labor Code of the State of California, including Employers Liability with a limit not less than One Million Dollars (\$1,000,000), covering all persons providing services on behalf of CONTRACTOR and all risks to such persons under this Agreement.

12.0 INTELLECTUAL PROPERTY:

All copyrights and other intellectual property produced as a result of this Agreement shall be produced for the “public domain”. As such, TRI-CITY, CONTRACTOR, or any other party shall have a nonexclusive irrevocable, perpetual and royalty-free license to reproduce, publish, copy, alter, or otherwise use the intellectual property so produced.

13.0 RECORDS AND AUDITS:

13.1 Clinical Records – CONTRACTOR and TRI-CITY shall maintain adequate clinical records on services provided by the various professional and para-professional personnel in sufficient detail to permit an evaluation of services, in accordance with State and local requirements. Service records will include all documentation as required by the State Department of Mental Health in the Rehabilitation Option and Targeted Case Management, and other documentation requirements.

13.2 Audit

- A. CONTRACTOR and TRI-CITY shall maintain for at least five years all books, records, documents and other evidence, accounting procedures, and practices, sufficient to reflect properly all direct costs of whatever nature incurred in the performance of this Agreement.
- B. TRI-CITY reserves the right to conduct an audit of the CONTRACTOR for any reason TRI-CITY deems appropriate and necessary based on the requirements of the State Department of Mental Health in the Rehabilitation Option and Targeted Case Management Manual or for any reason deemed appropriate and necessary.

14.0 ACKNOWLEDGEMENTS:

- A. CONTRACTOR agrees to acknowledge TRI-CITY, in publications, press releases, brochures, videotapes and other publicity or public relations materials or presentations, whether printed or electronic communications, implemented by CONTRACTOR to promote services made available or resulting from this Agreement.
- B. The CONTRACTOR agrees to credit TRI-CITY, when any service, product, performance, or other tangible outcome results from this Agreement.

C. The CONTRACTOR agrees to provide one copy of all press releases, news articles, and other published references (e.g., newsletters initiated by the CONTRACTOR regarding this Agreement) to TRI-CITY.

15.0 CONFIDENTIALITY:

Neither party shall use, appropriate, or disclose to any third party any confidential or sensitive information of the other party, except as required in the performance of this Agreement or by law. “Confidential Information” means all information and data, confidential in nature, provided or disclosed by either party to the other, whether oral, written, graphic or other form, including Agreements, correspondence, financial data, forecasts, projections, feasibility and marketing studies, consulting information, procedures, concepts or ideas and all copies and reproductions, but does not include any information that is generally known to the public, was in a party’s lawful possession prior to the disclosures by the other party hereunder, or was lawfully obtained from a source other than the other party. The Parties agree to use their best efforts to prevent disclosure to third Parties of such confidential information. Neither party shall, however, be held liable for inadvertent disclosure beyond its control of such confidential information, provided they have exercised reasonable care and adequate security aimed at maintaining the confidentiality of the information. This provision shall survive the termination, expiration, or cancellation of this Agreement.

16.0 GENERAL PROVISIONS:

16.1 Notices – Any notices to be given hereunder by either party to the other may be effected by personal delivery in writing or by mail, registered or certified, postage prepaid, return receipt requested. CONTRACTOR shall notify TRI-CITY in writing of any change in business address as reflected on this page, a minimum of ten days prior to the effective date thereof. Unless otherwise designated by either party in writing, such notice shall be mailed to the following:

CONTRACTOR: _____

TRI-CITY: **Gary Barnes, Deputy Director/CFO**
 Tri-City Mental Health Center
 3201 Temple Avenue, Suite 250
 Pomona, CA 91768

16.2 Governing Law – The validity and interpretation of the Agreement shall be governed by the laws of the State of California.

16.3 Arbitration – Any controversy or claim arising out of or relating to this Agreement, or the breach thereof, shall be settled by arbitration in accordance with the Commercial Arbitration Rules of the American Arbitration Association. The arbitration decision shall be final and binding on both Parties, except that errors of law shall be subject to appeal.

16.4 Partial Validity – If any provision of this Agreement is held by a court of competent jurisdiction to be invalid, void, or unenforceable, the remaining provisions will nevertheless continue in full force without being impaired or invalidated in any way.

16.5 Attorneys’ Fees – If either party hereto brings any action interpreting or enforcing this Agreement, or arising out of the performance of this Agreement, the prevailing party is entitled to reimbursement of costs and reasonable attorneys’ fees (which may be set by the court in the same action or in a separate action brought for that purpose), in addition to any other relief to which the prevailing party is entitled. This section also applies to both judicial and arbitration proceedings.

17.0 TERMINATION:

Either party may terminate this Agreement for material breach of default hereunder by the other party by giving not less than thirty (30) calendar days prior written notice to the breaching or defaulting party setting forth the nature of this breach or default. Termination shall be effective upon expiration of the thirty (30) calendar day notice period if the breach of default stated therein shall not at that time have been cured.

In the event of any additions, deletions, or amendments to laws or regulations governing the subject matter of this Agreement, or to interpretations of such laws or regulations, the Parties shall use all reasonable efforts to revise this Agreement to conform and comply with such

changes; provide, however, that if, as a consequence of such changes, either party, upon the advice of counsel, determines that this Agreement poses an unreasonable risk of liability to it, and the Parties cannot mutually agree upon amendments necessary to eliminate such risk of liability, then this Agreement shall terminate upon expiration of ten (10) calendar days prior written notice.

CONTRACTOR shall remain liable for the processing and payment of invoices and statements for covered services provided to beneficiaries until effective date of such expiration or termination of this Agreement.

18.0 ENTIRE AGREEMENT:

This Agreement constitutes the entire understanding between the Parties respecting the subject matter contained herein and supersedes any and all prior oral or written Agreements respecting this subject matter. No waiver or modification of any provision of this Agreement shall be binding unless it is in writing and signed by both Parties. This Agreement may only be modified by written amendment, executed by the Deputy Director/CFO of TRI-CITY.

Approved as to Form:

Gary Barnes
Deputy Director/Chief Financial Officer
TRI-CITY MENTAL HEALTH CENTER

Dated: _____

Dated: _____

Appendix C

AGREEMENT FOR SERVICES BETWEEN THE REGENTS OF THE UNIVERSITY OF CALIFORNIA AND DEPARTMENT OF HEALTH AND HUMAN SERVICES

Telemedicine Consulting and Project Implementation Services:

- A. UC Davis Center for Health and Technology, Telehealth Program (hereinafter referred to as CHF) performance:

For 2 designated county mental health clinics (hereinafter referred to as “county”) sites (Exhibit A) CHT shall:

1. Complete a project assessment -- Gather data to assess overall scope of the project—this includes compiling the project goals, needs, and technology approaches to achieving those goals; financial viability; operational viability; compiling a list of sites, preparing a budget.
2. Perform research on available telecommunications—CHT will consult vendors re: switch type, availability of ISDN v. other technologies, costs of those telecommunication services to be used for telemedicine.
3. Perform one visit per county site to assess needs and capabilities— this site visit will examine lighting, audio issues, clean power, emergency power if any, storage space, space for supplies, support personnel, phone ‘demarc’ for expansion capability, local wiring implementation, personnel literacy.
4. Complete network architecture planning—Using information gathered from project and site assessments, telecommunications research and conversations with the remote site, CHT will design and develop a telecommunications architecture. This will be delivered in the form of a diagram (sample diagram, Exhibit B) showing the appropriate sites, their equipment and location in the network.
5. Prepare order forms for installation of telecommunications (sample form, Exhibit C). This form will allow the county to more easily order telecommunications services at each site.
6. Select equipment—Based on project assessment, network architecture, and telecommunications availability, CHT will choose the appropriate equipment to carry out audio/video. This equipment will be able to provide audio/video teleconferencing, and it will include an audio/video teleconferencing unit, a television-type display, and a cart. Since this is a telepsychiatry project only, no peripheral scopes will be included.
7. Purchase and assemble equipment—CHT will prepare purchase orders, negotiate prices with vendors, purchase equipment, receive and store equipment, assemble the necessary components, test the assembled unit, and configure the units for delivery and installation.

8. Deliver, install and perform testing of equipment—CHT will transport the equipment to each site, where it will be stored until installation. An installation team will arrive within 60 days to unpack and deploy the unit. Final configuration and testing of the telecommunications and video system will be completed at that time. As proof of installation, CHT shall demonstrate operational audio/video from each county site.
9. Troubleshoot telecommunication installation—if during installation and training process, the telecommunications fail, CHT will assist a county designee in working with the telecommunications provider to reach a resolution.
10. Prepare user training materials—CHT will prepare and issue to each county site user training materials and “quick-reference” cards. These cards will enable each user to quickly learn to place and receive calls.
11. Perform one on-site user training (2-hour) session per county site immediately following equipment installation.
12. Perform up to three 1-hour follow-up training sessions via video per county site
13. Provide technical support for one year from execution of this contract. Technical support detailed in Exhibit D.

The above deliverables shall be provided at the rates listed in the budget detailed in Exhibit E.

B. Performance: In order for each of the 2 county sites to be implemented as detailed in 1A, must assure completion of the following items.

1. Shall designate ISDN or Ti capable county sites within the state of California, and notify CHT within 2 weeks of execution of this contract of the site name, location (physical address) telephone and fax numbers, and the name of a project coordinator local to each site.
2. Will assure each county site designates 3 individuals (one to act as telemedicine coordinator, and the 2 other individuals as back-up) for system and operations training. Designated coordinator may also serve as technical liaison to CHT in all troubleshooting efforts.
3. Each county clinic shall ensure all sites will be available to CHT personnel during normal working hours, 8am - 5pm, Monday - Friday, excluding holidays, for installation, testing and training purposes.
4. Shall accept a signed letter of acceptance (Exhibit F) as proof of work completion for each site installation. CIMIH shall instruct each county site to sign the letter when the work is completed.
5. County shall retain the responsibility of ordering and paying for the installation and on-going service of all telecommunications services necessary for successful

operation of videoconferencing unit, as advised by CHT.

a) County will place telecommunications order with telecommunications vendor (refer to 1 .A.5.) within 14 days of receiving order form from CHT.

b) County will forward a copy of the completed, submitted telecommunications order to CHT.

6. County shall retain sole financial responsibility for maintaining telecommunication service at all County sites throughout the duration of this project.
7. In the event of a telecommunications failure, County will initiate trouble ticket calls with telecommunications provider, obtain ticket number and be responsible for working (under CHT guidance) to resolve the problems. County will send a copy of all correspondence relating to trouble tickets, and will report all trouble ticket numbers to CHT technical personnel.

1. This Agreement shall be effective upon execution of this contract and end one year after execution date.

B. INVOICING AND PAYMENT

1. For services rendered and upon receipt and approval of the invoices, agrees to compensate CHT in accordance with the rates specified in the project budget, Exhibit E.

The start-up costs in the amount of ____ for the procurement of equipment and staffing expense will be paid within ten (10) days of receipt of CHT invoice.

Invoices shall include the contract number and be submitted not more frequently than monthly in arrears, with the exception of start-up costs, to:

Address

EXHIBIT B Sample Network Diagram

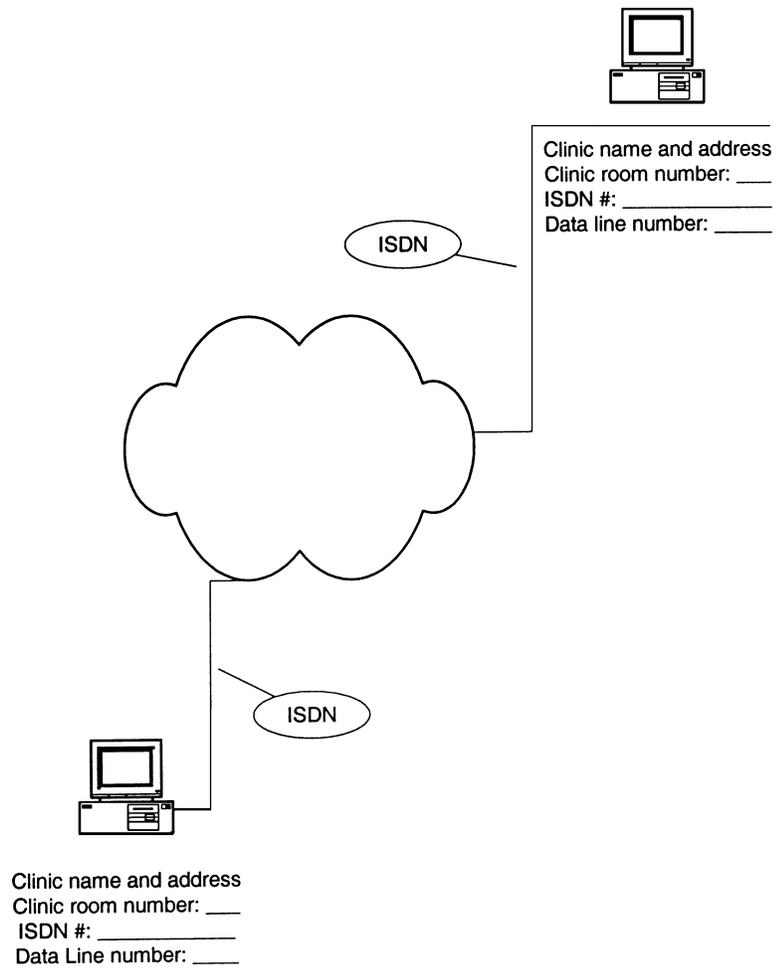


EXHIBIT C

Sample Telecommunications Order Form

(Fields of information to be completed for each county site)

Today's Date:

Requested due date:

AM or PM:

Person placing order:

Phone number:

Business location

Name

Address

City

Phone number Billing summary#:

Business name

Address

Phone number

City/state/zip code

Site contact name (the person who will know where the jack is to be installed) Phone number

Billing BTN:

Existing

New

Termination

MOPE

Ru 1

SJA 11

Switch type:

Number of lines needed

Line configuration

Voice

Date

Voice/data

National

Custom

Point to point

Long distance carrier

Line blocking

Caller ID complete

Caller ID selective

Hunting

Equipment make and model:

Model number

Vendor contact name and number

EXHIBIT D TECH SUPPORT

Technical Support will cover:

- 1.) Installation Troubleshooting—provide installation and troubleshooting of the videoconferencing and related communications equipment at all sites.
- 2.) Training Support—provide phone support 8 AM —5 PM, Monday through Friday (excluding holidays) for user questions and issues.
- 3.) Phone Consulting—provide phone support 8 AM — 5 PM, Monday through Friday (excluding holidays) for troubleshooting telecommunications issues.
- 4.) Telecommunications provider problems -- Placing the trouble ticket calls, obtaining the~ticket number, working with the phone technician are things the county site will have to do. When requested by county clinic site, CHT will advise and help county isolate the cause of the problem and determine steps for resolution.
- 5.) Fault isolation -- fault testing, devising a cause of action to effect repairs, and participating in technical conference calls with the telecommunications provider.

What we don't do:

- 1.) Troubleshoot the remote site if the remote site is not a county site (listed in Exhibit A).
- 2.) Alter the original configuration of the videoconferencing units for purposes other than what was intended
(Administrative video conferencing and telepsychiatry).

Appendix D

Tri-City Mental Health Center

CONSENT FOR TREATMENT

I am applying for mental health services from Tri-City Mental Health Center for myself { }, for my child { }. I agree to be contacted so that the agency may determine my satisfaction with and outcomes of treatment services.

Client's Signature

Date

Client's Signature

Date

I have been informed by Tri-City Mental health Center about the following (please initial):

1. _____ Acceptance and participation in the mental health system at Tri-City is voluntary and is not required as a prerequisite for any other community services.
2. _____ I have a right to request a change of service providers, Coordinators, therapist, or Case Manager.
3. _____ I have been advised that I have the right to designate an agent to be the legal authority to make health care decisions on my behalf in accordance with the provisions of Durable Powers of Attorney for Health Care statutes.
4. _____ I may not be rejected for possible services based on race, color, sex, sexual preference, age, handicap, national origin, religious or political affiliation.
5. _____ The medical record of my treatment at Tri-City is confidential information that may not be released to anyone without my written permission, except as required by law, such as a court order.
6. _____ If a clinician at Tri-City suspects abuse or serious neglect of a child, helpless adult, or senior citizen, a report must be made to a designated agency within 24-hours and permission is not required.
7. _____ If a LPS Certified clinician believes that I am a danger to myself or others or unable to care for myself, then I may be sent to an Evaluation Facility involuntarily.
8. _____ If I threaten to harm an identifiable person or government official, a clinician is required to warn that person and inform law enforcement.
9. _____ If I threaten staff or individuals at Tri-City, bring illegal drugs on the premises, or commit a crime against someone at Tri-City, I may have my services terminated.

APPEAL PROCEDURE

Please review the appeal procedure in your own county,
as it is the policy that must be followed.

CL19622.09.96



Main Office/Administration
3201 Temple Ave., Suite #250, Pomona, CA 91768-3279
(909) 594-5400 FAX (909) 623-3932

Telepsychiatry Services
2750 S. Towne, Pomona, CA 91766
(909) 364-8801 FAX (909) 364-8920

Serving Pomona, Claremont, and LaVerne since 1961

Telepsychiatry Consent for Treatment Using Teleconferencing Equipment Consumer

Your mental health agency has agreed to participate in a grant given to Tri-City Mental Health - Pomona CA, from the California Telemedicine and Telehealth Center to provide mental health and psychiatric services using teleconferencing equipment.

Teleconferencing is a simple technology. It requires the use of a monitor and/or television and a small camera to talk to another person, over special phone lines, much like a face-to-face contact and in real time. This type of equipment does not use any internet connections. The telephone lines are dedicated only to this use. This service is confidential. This is not a satellite or broadcast service, it is merely a video signal sent over a dedicated phone line in what is referred to as a "site-to-site connection". This is a standard that is considered the most secure and confidential.

ASSOCIATED RISKS: Reasonable and appropriate efforts have been made to reduce the risks associated with Telepsychiatry consultation, and all existing confidentiality protections under federal and California laws apply to information disclosed during this Telepsychiatry consultation. Despite these measures and protections, there remains a remote possibility that: the transmission of information could be disrupted or distorted by technical failures in transmission; the transmission of information could be intercepted by unauthorized persons.

Telepsychiatry will use this same technology to provide you with your psychiatric care. You will see your doctor for regular visits, crisis evaluations and medication side effect issues, just as you would if your doctor were actually in the clinic. You will sit and talk with the doctor as you would if the doctor were in the clinic. If you normally bring family members with you, you would continue to do the same using Telepsychiatry. Your treatment should not change significantly, except to receive more trained, specialized and accurate treatment without waiting or driving for significant periods of time. You would have the opportunity to discuss your needs and have them resolved to the best of our ability.

RIGHTS: While we encourage you to try this service, it in no way diminishes your opportunity to use face-to-face visits within your mental health clinic; it should only increase your opportunities to see a psychiatrist.

You may withhold or withdraw consent at anytime without affecting your right to future care or treatment.

You have the option of using a face-to-face visit with a psychiatrist and need to ask your agency for this information. The face-to-face appointment with a psychiatrist will not include Tri-City Mental Health services or doctors as an option.

I/or guardian to, _____, **agree to participate** in psychiatric treatment, using teleconferencing equipment.

Signature of participant or guardian

Date

I/or guardian to, _____, **do not agree** to participate in psychiatric treatment using teleconferencing equipment.

Signature of participant or guardian

Date

Telepsychiatry, SA, 11/03/00

**TRI-CITY MENTAL HEALTH CENTER
AUTHORIZATION FOR THE RELEASE OF INFORMATION AND/OR RECORDS**

Name: _____ Date of Birth: _____

INFORMATION TO BE RELEASED FROM:

Name/Agency _____
Address _____

INFORMATION TO BE RELEASED TO:

Name/Agency _____
Address _____

PURPOSE FOR RELEASE:

- Aid by the Above-Named Agency
- Claims Settlement with Insurance Company
- Continued Care by the Receiving Facility/Doctor/Therapist
- Legal Proceeding
- Other _____

INFORMATION TO BE RELEASED:

- | | | |
|---|---|---|
| <input type="checkbox"/> Assessments | <input type="checkbox"/> Diagnosis Only | <input type="checkbox"/> Progress Notes |
| <input type="checkbox"/> Closing Summary | <input type="checkbox"/> Discharge Summary | <input type="checkbox"/> Psychiatric Evaluation |
| <input type="checkbox"/> Communications Only* | <input type="checkbox"/> Lab Reports | <input type="checkbox"/> Psychological Tests |
| <input type="checkbox"/> Consultation Reports | <input type="checkbox"/> Medication Records | <input type="checkbox"/> Service Plan |
| <input type="checkbox"/> Coordination Plan | <input type="checkbox"/> Neurological Testing | <input type="checkbox"/> Other |

(*Specify the specific party/agency where oral communication is to be conducted.) _____

This authorization is effective immediately and subject to revocation at any time, except to the extent that action has already been taken, and shall expire within 365 days from the date of signature.

I understand this authorization is required and I must voluntarily and knowingly sign this authorization prior to any records being released. In the event I refuse to sign the authorization, records cannot and will not be released.

I further release my attending physician, the clinic, and employees of the clinic from any liability arising from the release of information to the person(s)/agency designated above.

I have received a copy of this signed authorization. This authorization shall be terminated when withdrawn, and becomes void on my date of discharge.

Signature of Client	Date	Signature of Witness	Date
Signature of Parent/Guardian	Date	Relationship to Client	Date

Note: A copy of this signed authorization must be given to client; use of this form must be noted in client's record.

**TRI-CITY MENTAL HEALTH CENTER
2750 S. TOWNE AVENUE
POMONA, CA. 91766**

Consent For Medication

I consent to treatment with the following medication: _____

- _____ (a) The nature of my mental condition and the reasons for prescribing the specific medication(s) have been explained to me.
- _____ (b) The reasonable alternative treatment, if any, and the likelihood of improving with and without the medication have been explained to me.
- _____ (c) The type of medication, the dosage range of frequency, the route of administration (oral/IM), and anticipated length of treatment have been explained to me.
- _____ (d) The possibility of side affects that can result from this medication include drowsiness, lowering of blood pressure which can cause dizziness, rigidity of the muscles, and tremors.
- _____ (e) Additional possible side affects which may occur in certain patients taking these medications for extended periods (over 3 months) include persistent, involuntary movements of the face or mouth or extremities (hands/feet). These symptoms of tardive dyskinesia are potentially irreversible and may appear after medications have been discontinued.
- _____ (f) Lithium therapy will include certain lab tests on a regular required basis.
- _____ (g) Lithium side effects may include tremor, diarrhea, vomiting, drowsiness, impairment of coordination, dizziness or blurred vision, ringing of the ears, muscular weakness, and increased urination.
- _____ (h) Benzodiazepine side effects may include drowsiness and some unsteadiness of gait. They may produce physical dependence, and after prolonged use they should be withdrawn gradually.
- _____ (i) Carbamazepine side effects may include lowering of the blood cell count.
- _____ (j) Antidepressant (tricyclic or tetracyclic) side effects can include dry mouth, blurred close vision, hand shaking and drowsiness, heart palpitation or irregular heart beats, constipation, difficulty starting to urinate, or feeling dizzy when I stand up quickly.
- _____ (k) Antidepressants (SSRI-serotonin specific reuptake inhibitors) side effects may include nausea, headache, nervousness, insomnia, drowsiness, diarrhea and decreased appetite.
- _____ (l) Atypical antipsychotic medications (Risperdal) side effects may include drowsiness, dizziness, decreased coordination, and inflammation of the nasal mucous membrane.
- _____ (m) Other: _____

I understand that my consent to take these medications may be withdrawn at any time by informing a member of the treating staff that I no longer consent to take these medications.

Date _____	Signature of Patient _____
Date _____	Signature of Physician _____
Date _____	Signature of Witness _____

REVISED 12.23.94

Tele-Etiquette

1. Arrive at least 15 minutes prior to appointment's to review charts and any documentation that may come in during the week.
2. Review chart notes before entering the consult room.
3. Start each appointment on time and attempt to stay on schedule.
4. If you need assistance ask the case managers.
5. Remember to smile.
6. Introduce yourself immediately after beginning the consult session
7. Introduce anyone who enters the room during the session (even if they cannot be seen at the remote site).
8. Obtain approval for additional consultants in the room (before the guest enters the room).
9. Speak clearly with normal speaking volume – remember that whispers can be heard.
10. Protect patient confidentiality at all times.
11. Do not make negative comments about equipment issues.
12. Mute the microphone when dictating or speaking to others.
13. Do not return phone calls or pages during consult.
14. Wear name badge during consult.
15. No food allowed in consult room.
16. Inform your case manager of all requests made (labs, authorizations, etc.), and of any information you are waiting to receive.

02/15/01

Conceptual Models of Consultation-Liaison Psychiatry Interventions¹

Several models of psychiatric consultation to the primary care setting have been described (8-10). These models are on a continuum where the critical variable is the amount of direct contact which the consultant has with the patient. These models include: 1) the traditional referral or replacement model where the psychiatrist is the principal provider of mental health services and there is limited communication between primary care physician and psychiatrist; 2) the consultation care model where the primary care physician is the principal provider of mental health services and occasionally communicates with the psychiatrist; and 3) the collaborative care model or liaison-attachment model where mental health services are provided jointly by the primary care physician and psychiatrist, including frequent communication between providers.

Psychiatrists in Great Britain have looked at the utilization of these models of psychiatric consultation to primary care. All three models are utilized in Great Britain with the slight majority of psychiatrists functioning in the traditional referral model, followed by the collaborative care model, and finally the consultation model (10). Strathdee and Bailey have also surveyed general practitioners and psychiatrists on the practice patterns of psychiatric consultation in ambulatory clinic settings in Great Britain (10-11). Younger psychiatrists were more likely to be involved in some form of consultation to primary care physicians as compared to older psychiatrists. Approximately one-third of consulting psychiatrists were involved in some formal educational activity at the primary care site, including lectures, case-based discussions or conferences, and informal process groups for staff to discuss problems. The majority of primary care physicians favored the collaborative care model. There is nearly unanimous support from primary care physicians and psychiatrists that the consultation process was improved by physically locating the psychiatrist in the primary care clinic setting (10-12).

Patient, Physician, and System Factors Affecting Consultation

A number of factors affect the nature and effectiveness of psychiatric consultation to a primary care clinic, including the location of the consulting psychiatrist, the predominant primary care practice in the clinic, the continued presence of the consulting psychiatrist, and fiscal issues.

A psychiatrist who provides consultation in the primary care clinic is usually well received by patients and primary care physicians. Many patients are more comfortable seeing a psychiatrist in the familiar surroundings of their primary care clinic rather than a trip to a freestanding psychiatric clinic, which can be stigmatizing. In particular, patients who are resistant to psychological explanations for their problems or symptoms may be more likely to accept referrals to see psychiatrists in their medical clinics. Referring physicians also benefit from the close proximity of a consulting psychiatrist in many ways: opportunities for follow-up are greatly enhanced; face-to-face communication is possible; and joint sessions with patients can be arranged. "Curbside consultations", which are informal discussions about patients (e.g. medication selections or changes), commonly occur. Consulting psychiatrists benefit by witnessing first hand the workings of the clinic, the practice styles of the referring physicians, and the need for parties involved. A disadvantage for these psychiatrists is that they must leave their practice and travel to medical clinics.

Psychiatrists providing consultation in free-standing psychiatric clinics or separate offices are challenged to establish effective lines of communication with primary care physicians to offset the absence of face-to-face communication, and if they have never worked in such a clinic, they may not understand the needs of the parties involved. Advantages of separate locations for psychiatric consultation include a greater sense of confidentiality for the patient (e.g. separate charts for the primary care physician and the psychiatrist), less

time spent by the consulting psychiatrist traveling and learning new administrative systems, and office space which is more appropriate to psychiatric interviews.

The predominant primary care practice of the consultees in the clinic often affects the choice of consultation model utilized by the consulting psychiatrist. Family practice physicians and general practitioners are generally more comfortable with the collaborative care or consultation care models in which the primary care physician plays a significant role in the provision of mental health services. Physicians in internal medicine and pediatrics are often more comfortable with a traditional referral model.

References

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1. Telepsychiatry for the Developmentally Disabled:

Treating, Teaching, Training

Roxy Szeftel, M.D.

Director, Child Psychiatry & Training & Telepsychiatry

Cedars Sinai Health System

(310) 423-3564

szeftelr@cshs.org

2. CSMC Programs

- Telepsychiatry at 3 sites
- First site started in 1997
- Doctors Immersion Program at Manirnoth Mountain and Lake Tahoe, Special Sports Program
- Genetics & Behavioral Phenotype Research
- Specialty in Autism & Fragile X Treatment
- Early childhood 0-3 Specialist Training (to be training telesites also)

3. Current Telepsychiatry Clinics

- Porterville Developmental Center
- Kern Regional Center in Bakersfield
- Mercy Medical Center in Redding
- Mercy Medical Center Statistics:
- Start date was March 13
- 40 consumers seen
- Almost all received a new Axis I diagnosis
- Total of 59 sessions
- Age 4 to 38
- 37 of the consumers under the age of 22
- 3 people have left the program - 2 moved and 1 withdrew
- We are fully booked through November 20, our tentative end date with a waiting list
- We have also provided 50 genetic review sessions and 2 neurological reviews in addition
- We have 10 family practice residents in Redding, 7 residents in psychiatry at Cedars, 5 residents in pediatrics/genetics at Cedars who have participated in the training

4. Clinic Set Up

- Regional center clients exclusively
- Attended by child psychiatry sub-specialists
- Mercy Clinic, attended by genetics also
- Expertise in MR and DD
- Experience with severely disabled people
- Expertise in psychiatric medications, special education, UT, speech and language, psychotherapy
- Availability for long term follow up

5. What is the need?

- Lack of access to psychiatric consultation
- Consultant who can talk to the patient
- Can talk to the family
- Can address the “whole person” not just prescribe meds at a distance
- Available for long distance back up 24/7
- Provides ongoing assistance to the local primary care doctor

6. Program Goals:

- Treat: Provide quality psychiatric treatment
- Teach: Collaborate with and educate health professionals at local site
- Training: Resident Physicians in Psychiatry, Pediatrics, Family Practice Forensic on rotation at hub or telesite

7. Physicians in Training on Rotation

- Sepulveda VA residents in adult psychiatry
- CSMC residents in adult psychiatry
- C SMC residents in child psychiatry
- CSMC residents in pediatrics
- Mercy Medical residents in family practice
- UCLA-Oliveview forensic psychiatry fellows (starting September)

8. Immersion at Mammoth

- Yearly Mammoth Special Sports Skiing Program
- Physician participates as a chaperone and a skier
- Exposed to people with disabilities in a normative setting
- Experience of pediatricians last year:
- “Mountain Sickness” vs. “Performance Anxiety”

9. Goals: Health Professionals

- Learn what psychiatric diagnoses are common
- Learn psychiatric assessment of people with limited communication skills
- Learn effective psychiatric treatments

10. Goals: Physicians in Training

- Increased exposure to DD individuals
- Improved clinical skills for assessment
- Improved knowledge base for DD
- Less anxiety and resistance to seeing these patients
- Better overall attitudes to this clientele

11. Essentials for a clinic

- Remember the Jetsons?
- Big TV
- Small room
- Dedicated personnel

12. Telepsychiatry Coordinator

- Enjoys new technologies
- Liaisons well with professionals at both sites
- Can work out kinks in the process: technical and professional
- “Hands on” style
- Controls the remote
- Calls into “Lifelines” for virtual presence: parents, doctors, teachers, and therapists
- Able to get necessary data for the consult in time and set up a complete medical record

13. Scheduling

- Weekly 3 hour sessions
- 2 new patients and 3 or 4 follow-ups
- Writes progress notes

- Immediately faxes notes
- Client takes notes to local MD
- Local MD follows through on treatment
- Notes regarding school are brought to school IEPs

14. Preparing the Consultation

- All relevant materials are priority mailed one week beforehand
- Materials are all read and highlighted *before* consult
- Review of data summary page in hand before consult begins
- Medical record prepared beforehand
- “Ready to start” when the patient arrives

15. Complete Consultation

- Time allocation
- 1/2 hour is clinical interview
- 1/2 hour is case discussion and treatment planning
- Client, family, staff, teachers, pharmacist, psychologist, caseworkers, care providers, therapists and others all present.

16. Who is the Consultee

- Local MD on site participating in consult
- Local MD off site in the community,
- Consultation is sent to the treating physician

17. Consultation Experience

- Client is interviewed with support from staff who know him well
- Interactive communication is stressed
- Clients stay entire hour usually without disruption
- Every attempt is made to assess patient directly, not just by staff report

18. “The Happening”

- Unique experience for hub and site
- Collaborative open discussion among consultants and consultees
- All discussion is inclusive
- Audio is always on
- Maximum participation by all

- Try to get good mental status exam and Dx
- Treatment plan is discussed *as it is formulated*

19. Treatment issues

20. Diagnostic Overshadowing

- Conceptual Bias among clinicians
- Presented with the same information about symptoms
- Clinicians make Axis I Dx for patients without MR
- Clinicians do not make Axis I Dx for MR patients
- Symptoms instead attributed to MR

21. Symptoms vs. Behaviors

- When psychiatric symptoms are recognized
- Called “behaviors” by staff
- Treatment plans target these “behaviors”
- Not recognized and treated as part of a psychiatric disorder

22. DSM System

- DSM III created 5 Axis diagnosis
- Differentiated Mental Retardation by putting it on Axis II
- Leaves Axis I wide open



Shasta County Mental
Health System of Care

Telepsychiatry

**Improving Your
Mental Health Care
Patients**

Tri-City Mental Health
2750 S. Towne Avenue
Pomona, CA 91766-6205

What is Telepsychiatry ...

Teleconferencing is a simple technology. It requires the use of a monitor and/or television and a small camera to talk to another person, over special phone lines, much like a face to face contact and in real time.

- ◆ This type of equipment does not use any internet connection. The telephone lines are dedicated only to this use.
- ◆ This service is confidential and secure.
- ◆ This is not a satellite or broadcast service. It is merely a video signal sent over a dedicated phone line via what is referred to as a “site-to-site connection.”

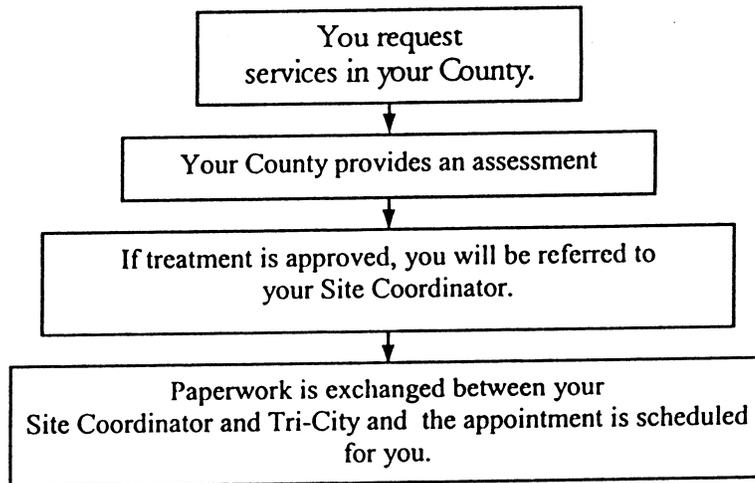
Tri-City’s Telepsychiatry Program...

Tri-City Mental Health, with the help of the California Telehealth and Telemedicine center has created a Telepsychiatry Network throughout California. This network was developed to provide services to clients who would not normally receive services or might otherwise have to drive long distances to obtain services from a qualified psychiatrist. Each location will receive services from psychiatrists specializing in both adult and child psychiatry.

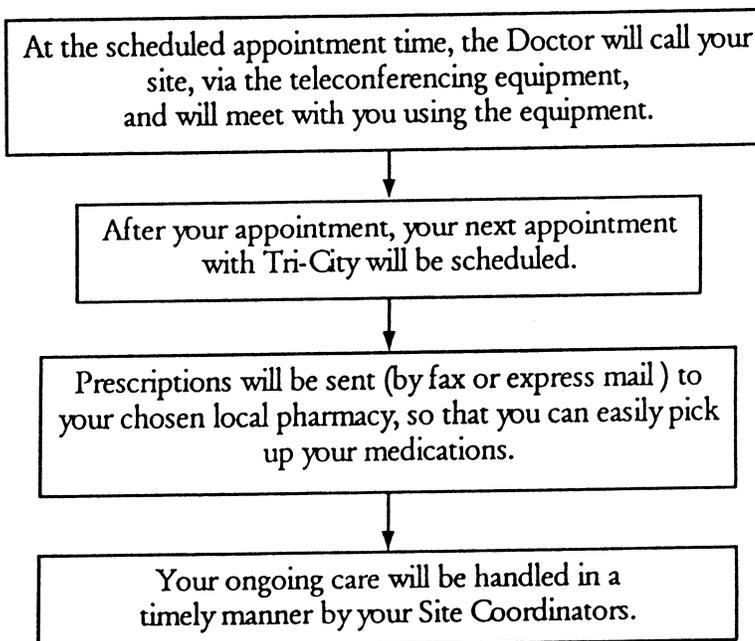
Tri-City has partnered with counties throughout the State to bring services to rural areas that have difficulty obtaining and/or maintaining the services of child or adult psychiatrists. Services will include full psychiatric evaluations, followup visits, ongoing care and case management, as needed.

We are a certified Medi-Cal provider. We can also bill other third-party payors when Telepsychiatry is an approved service.

How Telepsychiatry works...



NEXT



Telepsychiatry visits ...

Every effort will be made to ensure that your visits are easy, and provide for your needs.

- ◆ Services will be provided by the same psychiatrist whenever possible.
- ◆ Your scheduling will be done through Remote and Hub Site Coordinators.
- ◆ Consultation is welcomed. Caregivers will be able to participate in treatment planning meetings using teleconferencing equipment.
- ◆ Treatment of entire families is considered a component of mental health services whenever possible.

To find out more, contact ...

Shasta County
2640 Breslauer Way
Redding, California 96049
Site Coordinator
(530) 225-5962

Tri-City's Telepsychiatry program is funded by the California Telehealth & Telemedicine Center, a program generously supported by The California Endowment, a foundation committed to improving the health of all Californians.

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Medical Clinic, Inc.
Nevada City

Rita Scardaci, RN, MPH
Plumas County
Health Services
Quincy

Executive Director

Speranza Avram
Nevada City



NSRHN Regional Telemedicine System Project Summary

The Northern Sierra Rural Health Network (NSRHN) is a non-profit corporation dedicated to improving the health of residents living in the counties of Shasta, Modoc, Lassen, Plumas, Sierra, Nevada, Trinity, Siskiyou and the Yuba County foothills. Most of our members are located in rural medically underserved areas and/or serve patients from rural communities. While patients are able to access primary care locally, specialty and tertiary care centers are located in distant communities, sometimes over one hundred miles away. Inclement weather and treacherous roads often make it difficult for patients to access care.

As a Network, we have been working to expand the use of telehealth/telemedicine in the region for the past three years. We have developed a regional telemedicine system that links rural providers with specialists in urban areas and with each other. This type of system increases access to care to patients, decrease provider isolation, and provide increased opportunity for continuing education for rural providers.

Funding and support for the regional telemedicine system has been received from the following sources:

- California Telehealth/Telemedicine Center
- Blue Cross of California through a Healthy Families Rural Demonstration Grant
- UC Davis Health System
- Far Northern Regional Center
- Regional Health Occupations Resource Center
- Butte College Rural Utilities Services Distance Learning and Telemedicine Grant
- HRSA Office of Rural Health Policy
- Northern Sierra Air Quality Management District
- Office of Statewide Health Planning and Development

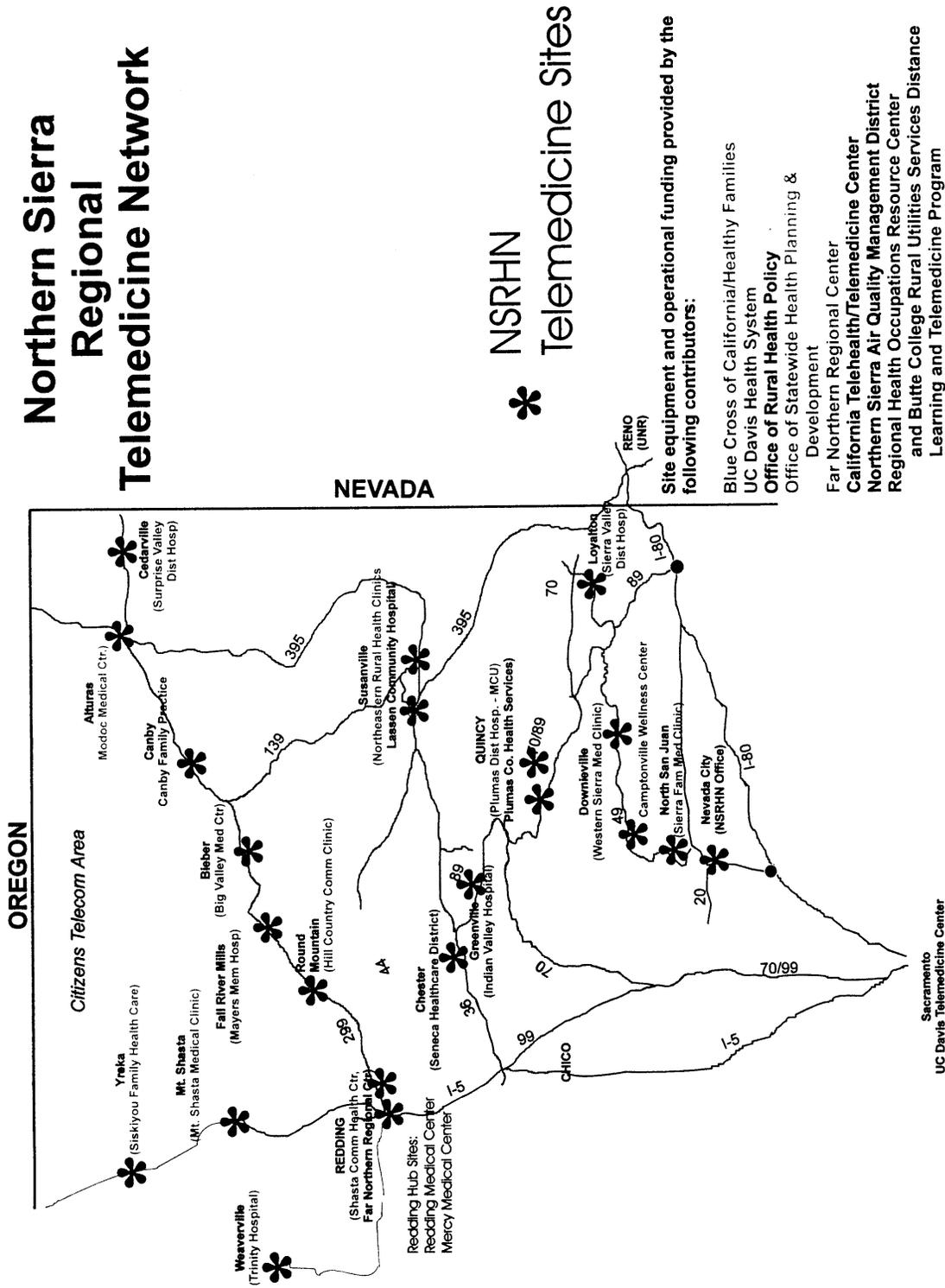
Video conferencing and telemedicine units have been installed in 21 clinical and health care organization sites in Lassen, Plumas, Sierra, Nevada, Modoc Yuba, Trinity, Shasta and Siskiyou Counties. These units enable rural providers to consult with specialists located in urban areas and participate in continuing education seminars. The telemedicine system is also used to hold regional health care provider meetings and to facilitate the development of a regional delivery system.

UC Davis Health System and the Far Northern Regional Center, have provided the NSRHN with funds to purchase a videoconferencing bridge located in Quincy. The bridge makes it possible for health facilities located in Citizens Telecommunications service area to use partial T-1 lines to connect with ISDN users. The phone charges for these lines are subsidized through the Rural Health Universal Service Fund operated by the FCC. Multi-site video conferencing is also available for all our telemedicine partners for professional education purposes.

For more information about the NSRHN Regional telemedicine System, contact Executive Director Speranza Avram at 530-470-9091 or info@nsrhn.org. For more information about our system, visit our web site at www.nsrhn.org.

700 Zion Street, Suite E Nevada City, CA 95959

Northern Sierra Regional Telemedicine Network





BLUE CROSS OF CALIFORNIA TELEMEDICINE PROGRAM SUMMARY

Since 1998, Blue Cross of California, the California operating subsidiary of WellPoint Health Networks Inc., has been awarded more than \$2.7 million in grant funding to develop a comprehensive telemedicine network in California. The grant funding was awarded by the Managed Risk Medical Insurance Board (MRMIB), the administrative entity for both Medicaid and the Children's Health Insurance Program in California, with the dual focus on both geographic access and medically underserved population issues. With this funding, in addition to direct administrative and financial support from Blue Cross, the current network of 43 primary sites and 6 specialty locations was established.

Unique Features and Benefits of the Program:

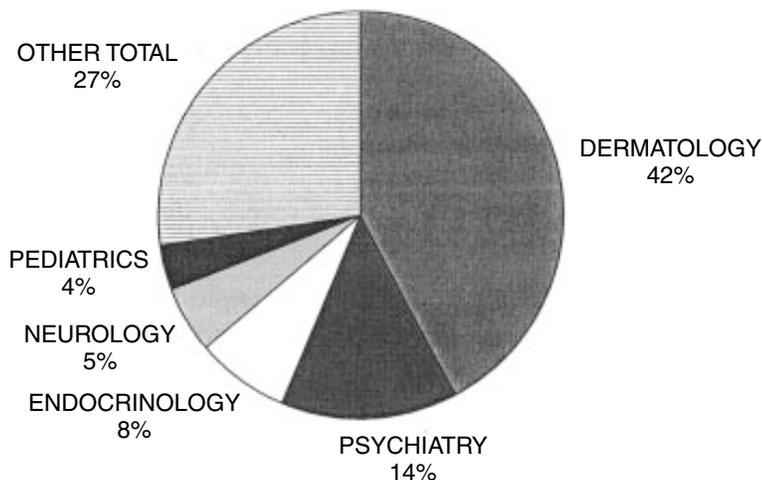
- Unlike the traditional Hub-and-Spoke configuration, the Telemedicine Network was created under an open "spider-web" approach. Based on this concept:
 - Any primary care location within the network, traditionally called the "spoke", is able to connect both to any other primary care site and/or any specialty site.
 - Any Blue Cross provider with the technical capabilities may refer to and/or join the network.
 - Any licensed practitioner with the appropriate telemedicine equipment can connect to the network.
 - Numerous specialty locations, traditionally called the "hub", can be partnered with to expand the potential services to the patient as well as promote competition for quality telemedicine specialty services within the network.
 - The network can be expanded to address access as well as professional development needs.
- The Telemedicine Network was created both through the creation of telemedicine locations "from scratch" and through strategic partnerships with strong, existing programs within the state.
- "From scratch" locations were equipped with a computer system, video conferencing equipment and software, a general exam camera, ENT scope, and other applicable medical peripherals.
- Two types of teleconsultation methods are used in the network:
 - Live video (simultaneous) teleconsult connects the patient, the primary care provider, and the specialists at the same time to discuss the patient's medical condition. This approach accounts for more than 90% of the current telemedicine events.
 - Store and Forward (asynchronous) teleconsult uses software to store and encrypt the pertinent medical data (e.g., picture, ECG, x-ray, etc.). The secured data is then transmitted electronically to the specialist for review and consult. Full implementation of the selected Store and Forward software is currently underway.

- In addition to live video and store-and-forward capability, the administrative burden associated with coordinating the telemedicine event is supported with the use of a customized, web-based scheduling system.
- Therefore, the Telemedicine Network is supported through equipment installations, training, software, technical support and reimbursement beyond the existing federal and state reimbursement levels.
- Blue Cross of California has committed to reimbursing both ends of the telecommunications event – the primary care provider and the specialist – for live as well as store-and-forward teleconsultations for their members. This commitment exceeds the current federal and state reimbursement levels; thus, encouraging and fostering provider participation in the program.
- Blue Cross also provides discount opportunities and structured reimbursement for telecommunication charges.

Utilization – Specialty Volume

Given the open “spider web” network configuration, the ability to partner with multiple specialty locations has provided an extensive cadre of utilization opportunities. Through regular utilization log submissions, the Blue Cross of California Telemedicine Program is monitoring more than 25 specialties including Behavioral Health, Cardiology, Dermatology, Endocrinology, Internal Medicine, Neurology, Pediatrics, and Psychiatry. The top 5 specialties by volume are noted in the chart below.

**Blue Cross of California Teleconsultations by Specialty
July 1999 – June 2001**





The California Managed Risk Medical Insurance Board

PO Box 2769
Sacramento, CA 95812-2769
(916) 324-4695 FAX: (916) 324-4878

Board Members

John L. Geesman, Chair
Clifford Allenby
Areta Crowell, Ph.D.
Virginia Gottlieb
Sandra Hernández, M.D.

March 6, 2002

Governor Gray Davis, Members of the California Legislature and fellow Californians:

On behalf of the Managed Risk Medical Insurance Board and staff, I am pleased to present the 2002 Healthy Families program (HFP) Rural Health Demonstration Project Fact Book. The 2002 Fact Book presents data on all aspects of the Rural Health Demonstration Projects - strategies, funding, and project outcomes. The Fact Book draws on data from the monitoring reports, the HFP enrollment database, participating plan partners, and clinic/provider information.

The purpose of the Rural Health Demonstration Projects is to fund rural collaborative health care networks participating in the HFP, to alleviate unique access problems to health, dental and vision care for HFP members and uninsured children living in rural communities. Funding is provided annually by the California Legislature. Federal funds provided through the State Children's Health Insurance Program (SCHIP) provide the majority of funding for the projects.

Since inception in FY 1998-99, the HFP Rural Health Demonstration Projects have increased access to health, dental, and vision care through the implementation of two strategies. The Geographic Access strategy funds projects in geographically isolated communities. The Special Populations strategy funds projects in communities with underserved populations of migrant seasonal farm workers, American Indians and fishing and forestry workers.

Two hundred and thirty-eight projects have been funded through the HFP Rural Health Demonstration Project. The individual projects are grouped into six major categories: (1) Extended Provider Hours, (2) Mobile Dental and Health Vans, (3) Increase Available Providers, (4) Rate Enhancements, (5) Portability of Coverage and (6) Telemedicine.

Key findings in the 2002 HFP Rural Health Demonstration Project Fact Book for each of the individual project types include:

- "Extended Providers Hours" projects have been successful in expanding access to services and in providing the base for new community resources. Eighty-three percent of the projects funded in this category have continued to offer extended hours of service to their communities beyond the Rural Health Demonstration Project funded demonstration period.

- Mobile Dental Vans and Health Vans have been instrumental in taking services to communities where there are no dentists or doctors available to provide care for HFP members. Over 13,000 HFP visits have been provided through the Rural Health Demonstration Project mobile services. Mobile vans services have increased awareness of the HFP in rural communities.
- Recruitment and retention of health and dental care providers continues to be a challenge in rural communities. Clinics participating in “additional provider projects ” have experienced a sixty-eight percent retention rate of staff hired using Rural Health Demonstration Project funding.
- Rate enhancements that are passed on directly to providers have been another strategy used to increase access in rural communities. This strategy has been effective in areas where the plans do not have an adequate provider network; and where recruitment of providers into health or dental plan networks is a challenge.
- A special “Portability of Coverage” project offers a combination of health, dental, and vision coverage to HFP children of migrant seasonal farm workers, American Indians and fishing and forestry families. This option is designed to provide portable access to health care for HFP members whose families have to travel with their employment.
- Telemedicine has been implemented as a means of utilizing new technology to increase access to specialty care in rural communities where such care is not available. The development of the telemedicine network has been completed and utilization of this technology is on the increase.

We present this Fact Book to increase understanding of the Rural Health Demonstration Project structure, operations and achievements.

Sincerely,

Sandra Shewry
Executive Director



***Rural Health Demonstration Project
2002 Fact Book***

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OVERVIEW OF THE HEALTHY FAMILIES PROGRAM RURAL HEALTH DEMONSTRATION PROJECT

➤ *Background*

Up to five Rural Health Demonstration Projects (RHDPs) were authorized in the enabling legislation for the Healthy Families Program (Assembly Bill 1126, Chapter 623, Statutes of 1997). The purpose of the demonstration projects is to fund rural collaborative health care networks to alleviate unique access problems to health, dental and vision care in areas with significant numbers of uninsured children

The State of California adopted three strategies for implementing the RHDPs. Each strategy comprises one of the five RHDPs authorized by the legislation. The three strategies that have been implemented are:

Geographic Access: Projects designed to address the lack of health care services in rural geographic areas of California.

Special Populations: Projects designed to address unique access problems of special populations (children of migrant and seasonal farm workers, fishing and forestry workers, and American Indians).

Infrastructure: Projects designed to address the development or enhancement of infrastructure in rural areas where health care services are not accessible.

The Managed Risk Medical Insurance Board (MRMIB) has administrative responsibility for the implementation of the *Geographic Access* and *Special Populations* project strategies. The California Department of Health Services (DHS) has administrative responsibility for the *Infrastructure* strategy.

All health, dental, and vision plans participating in the Healthy Families Program (HFP) are eligible to participate in the RHDP. Since fiscal year 1998-99, six health plans and three dental plans have participated in the RHDP. The health plans are:

Blue Cross of California
Health Net of California
Health Plan of San Joaquin

Inland Empire Health Plan
Santa Barbara Regional Health Authority
Sharp Health Plan

The dental plans are:

Access Dental
Delta Dental

Premier Access

This report describes the RHDP strategies administered by the MRMIB and includes information on individual strategies, project solicitation and evaluation, funding, and individual project outcomes.

Appendix 5-1

Rural Health Demonstration Project—Telemedicine Rural Sites



Source: Blue Cross of California

California Prison Telemedicine Program

As described at conferences and in magazines such as *Telemedicine Today* (Volume 7, Issue 5, October 1999, pp. 32 - 33), California's prison telemedicine program began in January 1997 as a result of psychiatric staffing difficulties at Pelican Bay (a correctional facility). Connections with the California Medical Facility (Vacaville) were established in April 1997 to provide telepsychiatry services. Through September 1999, 2,400 total patient encounters were handled through the program with 46% involving mental care (including group therapy). Telemedicine is particularly advantageous for providing initial consultations and establishment of specialty services based on patient needs has been successful in all such efforts accomplished through 1999 in this program. One of the major attractions to inmates is the ability to be seen by the

same clinician. In order to ensure constant use of specialists' time, a suite of side-by-side rooms has been set up in a telemedicine service center in Sacramento to avoid downtime due to unattended appointments (because of lock-down or other circumstances). Despite the tendency to think that prison telemedicine might only work in large systems (such as those in California and Texas), at least one administrator with the California program believes this is a viable solution for all states, with more limited or less robust applications as needed.

*Source: Feedback Research Services (2000). Prison Telemedicine. *Telemed-E-Zine*, 3 (9-10). Available: <http://www.feed-back.com/sepoct00ezine.htm>



Communications 101

Telecommunications Overview

Bill Halverson, MScNE, MBA
Co-Director & Technology Advisor
California Telehealth and Telemedicine Center

whalverson@calhealth.org

CTTC for Communications 101 TLC

1



Objectives

- Provide an overview of WAN, LAN, and video conferencing technologies - references to the details
- Define important telecom jargon
- Define important telecom standards
- Give samples of which applications require which technologies
- Discuss real world limitations

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2



Overview

- Inside the 'cloud'
- Networks send information using either 'circuits' or 'packets'
- 'Quality of Service' is important for video conferencing
- 'Delay' complicates audio/video networks
- Telecom services use 'fixed' and 'usage' based price components
- Both Synchronous Telemedicine (Video Conferencing) and Asynchronous Telemedicine (Store & Forward) units can work with WAN/LAN technologies
- LAN (Local Area Networks) are used inside buildings or on a campus
- WAN (Wide Area Networks) connect LANs across distances

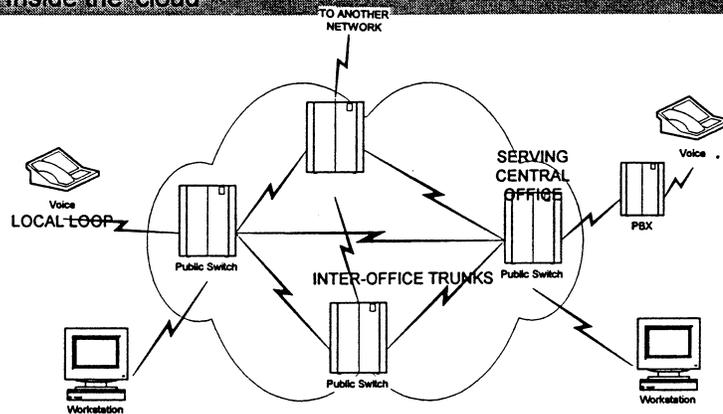
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3



Overview

- Inside the 'cloud'



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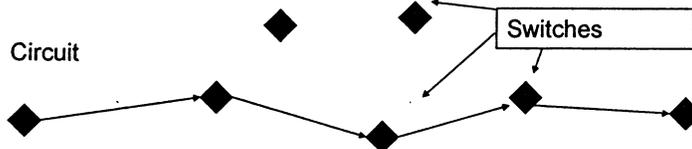
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Overview

- Networks send information using either 'circuit switched' or 'packet switched'
 - A 'circuit' is a dedicated communication path through the network
 - End - to - end (209 564 2345 to 049 2 234 8723)
 - Bandwidth is guaranteed - no sharing with others
 - Usually a point - to - point connection
 - A 'packet' is a way to segment a message
 - Depends on software to reassemble the message in the right order
 - Hop - by - hop, not end - to - end
 - Bandwidth is not guaranteed - shared with others
 - Usually a 'cloud' connection - packets 'bounce' across the network

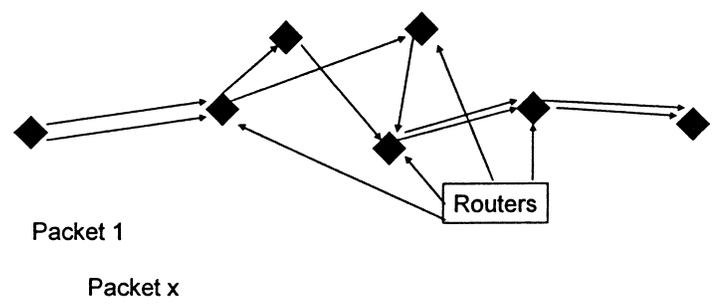
Overview

- Networks send information using either 'circuit switched' or 'packet switched'



Overview

- Networks send information using either 'circuit switched' or 'packet switched'



Overview

- Quality of Service is important (for video conferencing)
 - Data is like the mail ... delay is expected and OK
 - Voice and video is 'delay sensitive' ... delay is a pain
- Points about delay:
 - WAN:
 - POTS, ISDN, and T1 circuits add *fixed* delay
 - Packet networks and IP/Internet require careful design: the delay they add *is not fixed*
 - LAN:
 - *Switched hubs* are better than broadcast hubs
 - *Layer 3 switches* are better
 - *Fast Ethernet* is better than Ethernet
 - Gateways are needed to convert H323 to H320 video sessions
- Audio and Video don't like variable delay!

Overview

- Quality of Service is important (for video conferencing)
- ITU G114 gives recommendations for acceptable network delay

	Fixed Delay	Variable Delay
Coder Delay G.729 (5 ms Look-ahead)	5 ms	
Coder Delay G.729 (10 ms per frame)	20 ms	
Packetization Delay—Included in Coder Delay		
Queuing Delay 64 kbps Trunk		6 ms
Serialization Delay 64 kbps Trunk	3 ms	
Propagation Delay (Private Lines)	32 ms	
Network Delay (e.g., Public Frame Relay Svc)		
Dejitter Buffer	50 ms	
Total	110 ms	

Technical guidelines summary

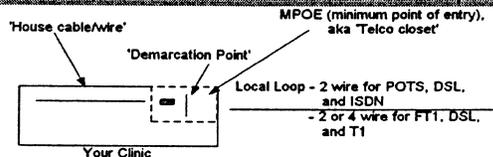
- Balance voice quality, delay and bandwidth
- Determine acceptable delay and delay variation thresholds
- Calculate delay for the chosen model
- Avoid tandem (or multiple) conversions

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Overview

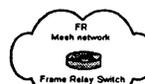
- Telecom services have several components



Price components:
 - FT1, T1
 * Mileage
 - Frame Relay
 * PVC/DCLI
 * Port speed
 - ATM
 * Port speed
 Local loop access:
 - FT1 or T1



Price components:
 - POTS
 * Usage
 - ISDN (BRI, 2B+D)
 * Usage
 - ISDN (PRI, 23B+D)
 * Usage
 * Features
 Local loop access:
 - BRI by 'U loop'
 - PRI by T1 (DSL?)



Price components:
 - Frame Relay
 * PVC/DCLI
 * Port speed
 Local loop access:
 - T1 or FT1 (soon
 DSL, too)

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Overview

- Telecom services use fixed and usage based price components

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Overview

- Both Synchronous Telemedicine (Video Conferencing) and Asynchronous Telemedicine (Store & Forward) units can work with WAN/LAN technologies

- VC
 - H320 for circuit switched networks
 - H323 for packet networks
 - H324 for low speed analog (POTS) networks
- S&F
 - Standards are not defined by the telecom industry
 - Vendor specific solutions do not inter-operate
 - Health Level 7 may be the solution
 - How will these integrate with existing HIS?

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12



Overview

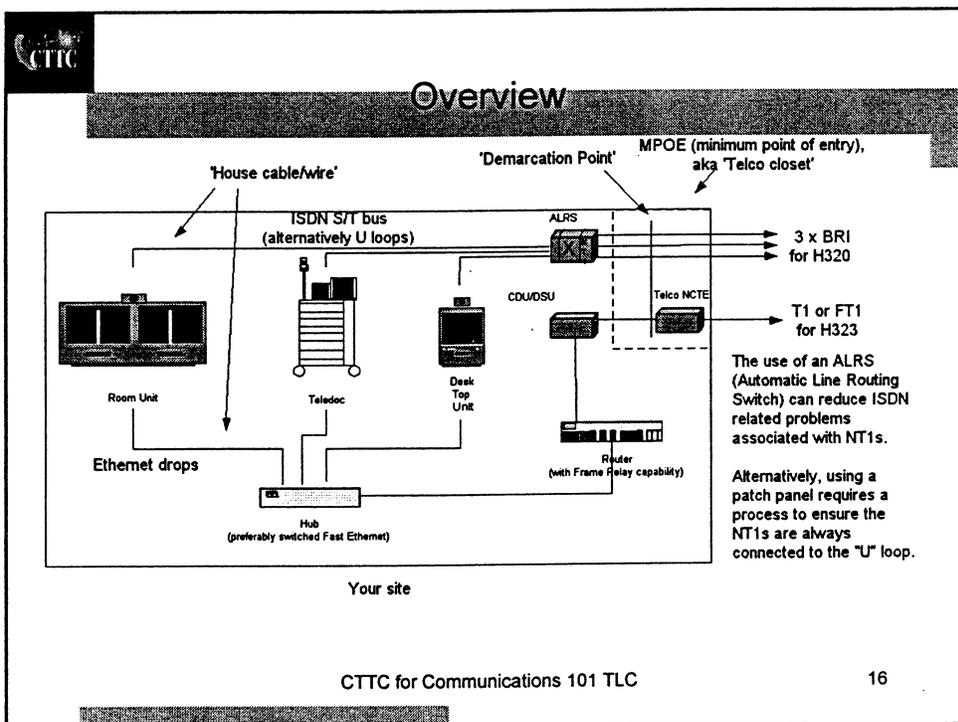
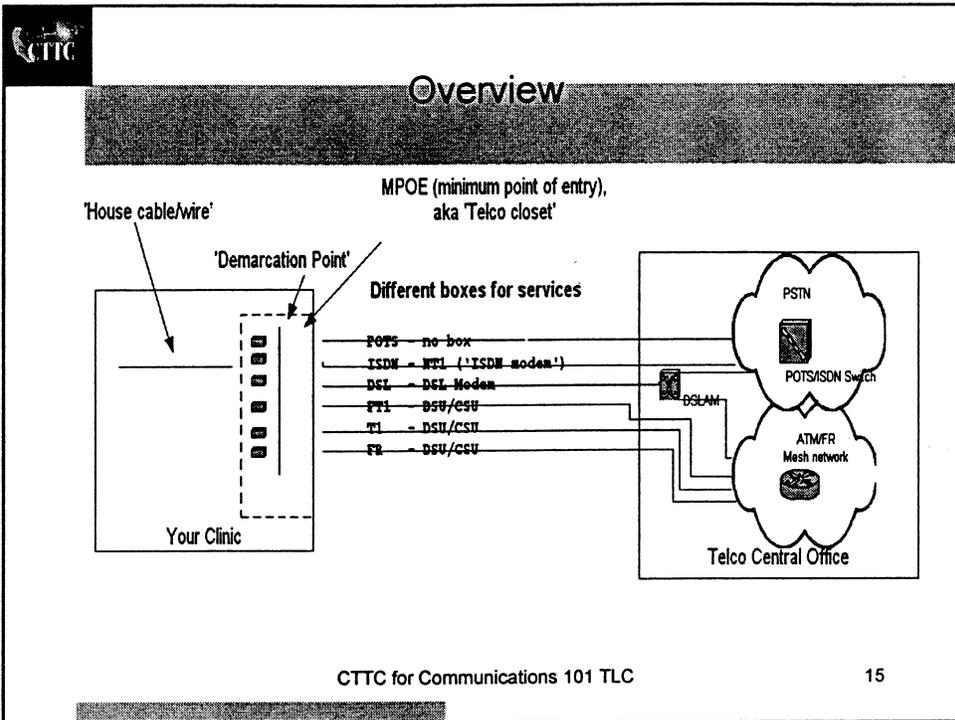
- LAN (Local Area Networks) are used inside buildings or on a campus
 - How good is my wiring?
 - How good are my hubs?
 - How good are my routers and bridges?
- WAN (Wide Area Networks) connect places together
 - Who is my Telephone Service provider?
 - What services can I get?
 - Do the bridges wash out often?



Overview

WAN (Wide Area Networks) components

- At your building:
 - CSU/DSU for T1 or FT1 (fractional T1)
 - FRAD (Frame Relay Access Device) for Frame Relay
 - NT1 for BRI ISDN (Basic Rate Interface ISDN)
- Between your building and the telco
 - Local loop (can be T1, ISDN, POTS, DSL)
 - Repeaters (to extend service in rural areas)
- At the Telco
 - Serving Central Office (houses the equipment to furnish you ISDN, or links to your ISP or Frame Relay network)





Telecom Jargon Glossary

• ISDN:

- SPIDs: Service Profile Identifiers These numbers identify the services and features the telephone central office switch provides to ISDN devices. When a new ISDN line is added, the telephone company assigns a SPID for each directory number (DN) so that the switch will sync up correctly with the customer's ISDN device
- NT1s: Network Termination Type 1: Each ISDN phone line from the Telco (called the Network loop or U-Loop) can use the same 2-wire connection that your analog line currently uses, and can extend up to ~3 miles without signal boosting. The NT1 converts the U loop signal to the S/T bus signals (8-wire interface is used (2 transmit lines, 2 receive lines, 2 power lines, and two unused.)



Telecom Jargon Glossary

• ISDN:

- B & D Channels: Bearer (64kbps) and Data (16kbps) channel. The names given to the communication channels on ISDN lines. The B channel is used for 'user' data (voice, video, or data) and the D channel is used for signaling or (in some areas) packet data.
- BRI: Basic Rate Interface, a 2 wire U loop with 2 B + 1 D channels.
- PRI: Primary Rate Interface, a 4 wire T1 circuit with 23B + 1D channels. The D channel is 64kbps on the PRI.
- DS0, DS1, DS3: Digital Signal Hierarchy
 - DS0 = 64kbps
 - DS1 = 1.544Mbps (24 x 64k = 1536k + 8k = 1544k)
 - DS3 = 45Mbps (28 x 1544k = 43232k + 1508k = 44736k)

Telecom Jargon Glossary

• Frame Relay

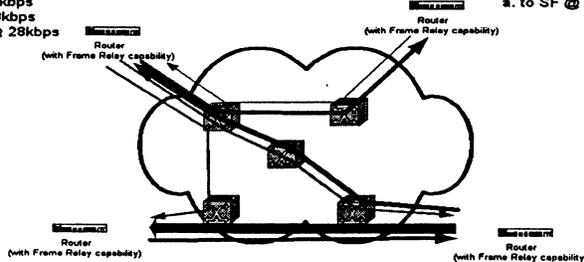
- PVC: Permanent Virtual Circuit, a logical 'end-to-end' channel through a FR network.
- DLCI: Data channel link identifier, a locally significant ID agreed to by the FR vendor and you. Used by routers to direct traffic to correct far-end locations.
- Port Speeds: The maximum speed you can send data into the FR network.
- CIR: Committed Information Rate, the minimum data bandwidth of a PVC that is guaranteed by the FR vendor. Data above this rate may be dropped by the FR vendor.
- BIR: Burst Information rate, the maximum data bandwidth of a PVC you can send data on a PVC and *hope* for its safe passage.

Telecom Jargon Glossary

• Frame Relay

SF HQ data center
 - T1 access and port
 - PVCs:
 a. to Ukiah @ 56kbps
 b. to Willits @ 28kbps
 c. to San Jose @ 28kbps

Ukiah data vault
 - 56kbps access and port
 - PVCs:
 a. to SF @ 8kbps



San Jose Design Center
 - FT1 access and 256kbps port
 - PVCs:
 a. to SF @ 56kbps
 b. to Willits @ 128kbps

Willits factory
 - FT1 access and 512kbps port
 - PVCs:
 a. to SF @ 128kbps
 b. to San Jose @ 384kbps



Telecom Standards

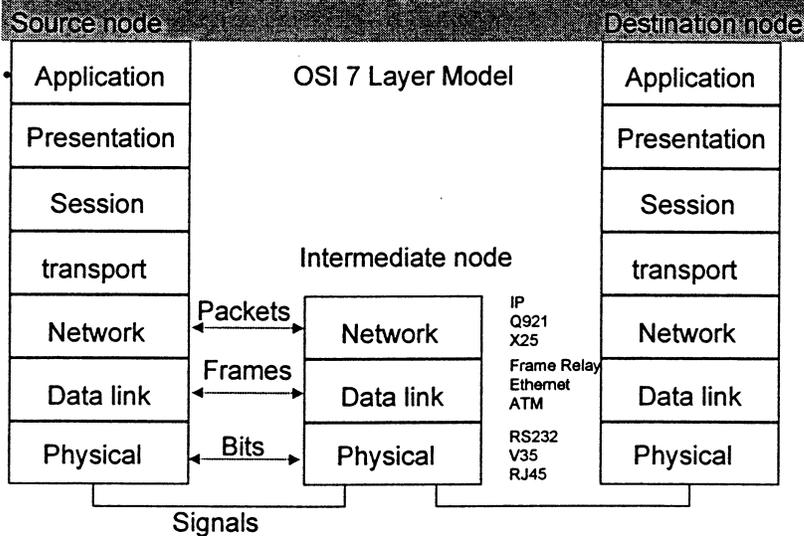
- Introduction:
 - ITU (old CCITT) is the international standards body
 - ANSI has US standards setting responsibility
 - The Internet's Internet Engineering Task Force (IETF) has an important standards setting role, but it does not have 'the force of law' behind it.
 - LAN Standards are set by the IEEE and ISO

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Telecom Standards



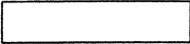
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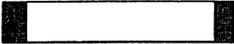
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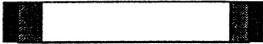
CTIC

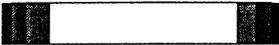
Telecom Standards

"Enveloping" of the User data (could be voice, video, or data)

Application: "This is my picture" 

Session: "Send it to Him@Overthere.org" 

Network: "Send it to 192.234.5.200" 

Data Link: "Send it to 6F:3D:2E:00:01:02" 

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CTIC

Telecom Standards

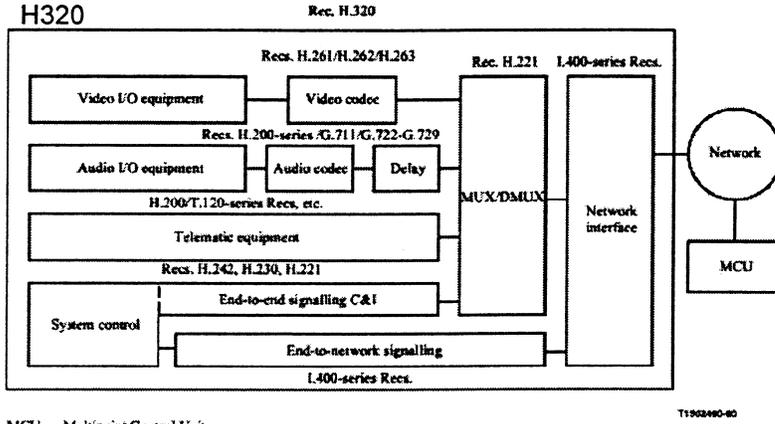
The ITU has a series of standards

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Telecom Standards

H320



MCU Multipoint Control Unit

Figure 1/H.320 – Visual telephone system



Telecom Standards

H324

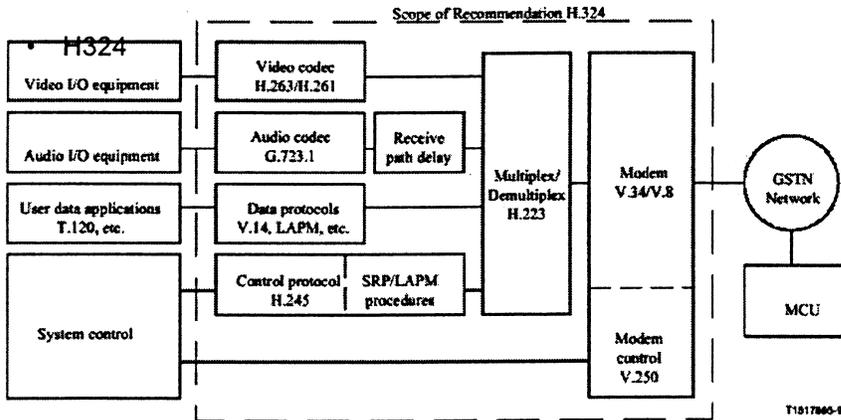
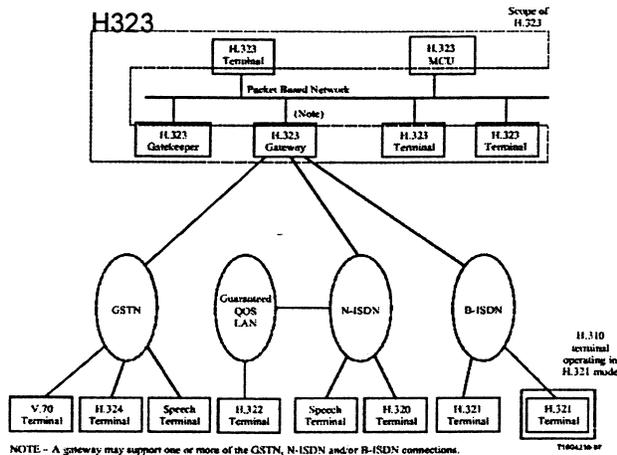


Figure 1/H.324 – Block diagram for H.324 multimedia system

Telecom Standards



NOTE - A gateway may support one or more of the GSTN, N-ISDN and/or B-ISDN connections.

IETF Standards

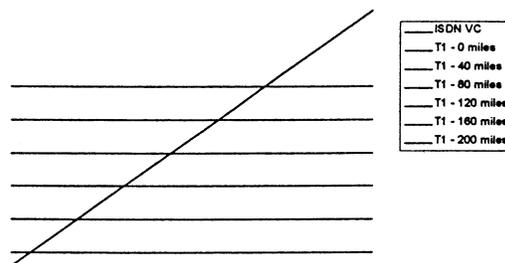
- An "de facto" standards body
 - Anybody can submit an RFC (Request for Comment) and eventually it can be adopted
 - "The best idea should win"
- Important open issues are:
 - How do H323 gateways work with private IP address networks?
 - What 'Quality of Service' protocol should be implemented?
 - "The QoS Forum is an international, industry forum accelerating the adoption of standards-based QoS technologies. Utilizing a comprehensive set of education, marketing and testing services, the goal of the QoS Forum is to educate the market and facilitate deployment of QoS-enabled IP products and services. Note: The QOSF is NOT a standards-setting group. Where appropriate, it will work with standards bodies such as the IETF."
<http://www.qosforum.com/about.htm>

Samples

- Design Tradeoffs
 - Volume: How many hours/day will I be connected? Fixed vs Usage
 - Distribution: Where are my locations? Hub vs mesh
 - On Campus Only? Shared vs Dedicated
- Point - to - Point
 - Low Volume vs High

Design Tradeoffs

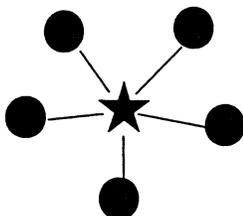
- Volume: How many hours/day will I be connected? Fixed vs usage
 - Estimating considerations
 - Point-to-point T1 networks ~\$400 + \$25/mile
 - One hour of 'VC-time' [that's 6 B-channels] ~ \$48



Design Tradeoffs

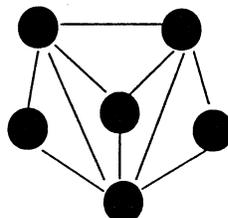
- Distribution: Where are my locations? Mesh vs hubbed

Hub - spoke



Hub, or Star

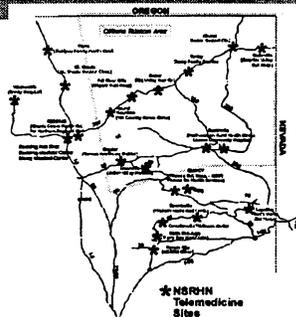
Peer - peer



Mesh

Design Tradeoffs

- Distribution:
 - Where are my locations? Mesh vs hubbed



The equipment and operational facility provided by the following organizations:

West Coast of Contra-Columbia Facility
 UC Santa Monica Station
 Office of Rural Health Policy
 Office of Forensic Health Planning & Development
 For Northern Treatment Center
 California Behavioral/Developmental Center
 National Health Air Support Management Center
 Regional Health Communications Center
 and West Coast Rural Health Services Outreach Learning and Demonstration Project



Real World Limitations

- Point - to - Point Pomona to Garberville
 - Frame Relay \$ 3,275/mo on 2 yr contract, 384Kbps CIR
 - T1 circuit \$ ~ 3,513/mo on 1 yr contract
 - 3BRI ISDN \$ 153 + ~ 48/VC hour + ... if you can get it
 - 6 SW56 \$ 486 + ~ 48/VC hour



Real World Limitations

- Where are you connecting?
 - Availability
 - Reliability
- Time Frame
 - Urban areas ~ 6 weeks
 - Rural areas ~ 2 months ... if at all
- Costs
 - Does FCC Universal Fund apply to me?



Overview

- Telecom services use 'fixed' and 'usage' based price components

Service	Component	Type	\$ Range	Comment
POTS	Local loop	F	~\$20/mo	"Monthly line charge"
	Usage	U	~\$8/hr	
DSL	Local loop	F	~\$40/mo	Packages include POTS and Email accounts
	Internet Access	F		
T1	Local Loop	F	~\$155 per end	
	Mileage	F	~\$25 per mile	
FT1 (fractional T1)	Local Loop	F		Uses T1 local loop
	Mileage	F		
ISDN BRI	Local Loop	F	\$30 – 50 /mo	The 'U' loop
	Usage	U	~\$8/hr per B channel	
ISDN PRI	Local Loop	F	~\$150	Uses T1 local loop
	Port	F	~\$300	
	Features	F	Varies	
	Usage	U	~\$8/hr per B channel	
Frame Relay <i>Complex pricing!</i>	Local loop	F	\$47 (56k) to \$165 (T1)	There are 23 B's per PRI Uses T1 or FT1 loops - The speed into the network End-to-end bandwidth path Varies widely
	Port	F	\$71 (56k) to \$473 (T1)	
	PVCs or DLCIs	F		
	Packet charges	U		
ATM	Local loop	F	\$ 1.4k for 3Mbps to \$7.0k for 148Mbps	
	Mileage Features	N/A F	\$30 per VP \$15 per VC	

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Telecom Standards

• The ITU has a series of standards

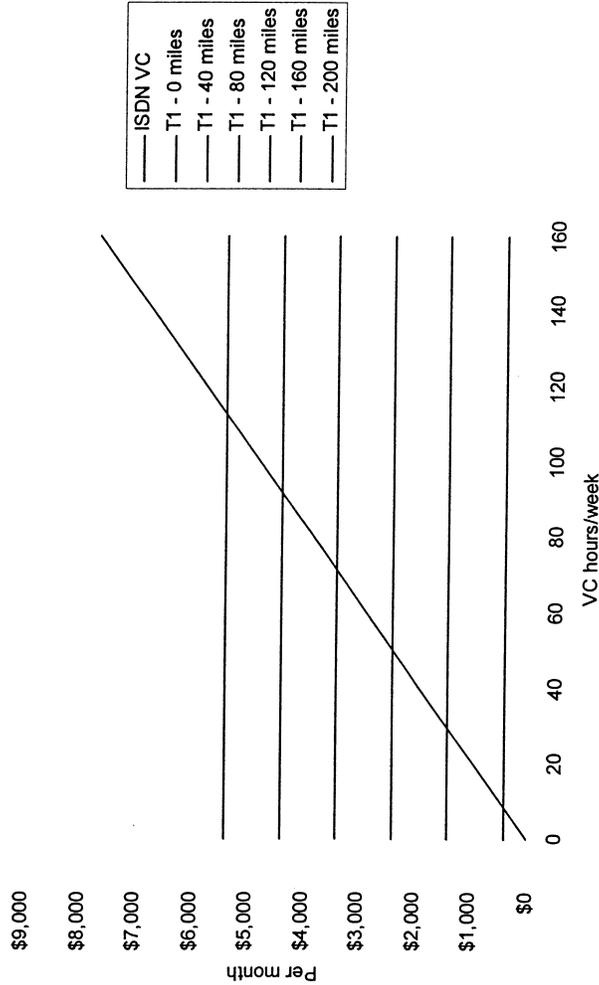
ITU-T Recommendation Series

- A Organization of the work of the ITU-T
- E Overall network operation, telephone service, service operation and human factors
- F Non-telephone telecommunication services
- G Transmission systems and media, digital systems and networks
- H Audiovisual and multimedia systems
- I Integrated services digital network (ISDN)
- J Transmission of television, sound programme and other multimedia signals
- K Protection against interference
- M TMN and network maintenance: international transmission systems, telephone circuits, telegraphy, facsimile, and leased circuits
- O Specifications of measuring equipment
- P Telephone transmission quality telephone installations, local line networks
- Q Switching and signalling
- T Terminals for Telematic Services
- V Data communication over the telephone network
- X Data networks and open systems communication
- Y Global information infrastructure and Internet protocol aspects
- Z Languages and general software aspects for telecommunication systems



Design Tradeoffs

- Volume: How many hours/day will I be connected? **Fixed vs usage**
 - Estimating considerations
 - Point-to-point T1 networks ~\$400 + \$25/mile
 - One hour of 'VC-time' [that's 6 B-channels] ~ \$48



Room Design

*Assessing Equipment Location and Configuration,
Lighting and Sound*

Kathy J. Chorba

Room Design

Assessing Equipment Location and Configuration, Lighting and Sound

Patient Site

Room size	Large enough to accommodate small groups, i.e. procedure room size, but not the procedure room
Room location	1) Inside primary care clinic. Easily accessible by all potential referring physicians 2) Away from noisy areas (waiting room, street or parking lot, large equipment -X-ray, copy, etc)
Electrical considerations	Dedicated circuits with dedicated neutrals are desired, in order to avoid problems caused by “dirty power” which adversely affects the microphone, speakers, and other components. These problems cannot be resolved by using a UPS.
Placement of video conferencing unit	6-8’ from where the patient will be viewed, and preferably to the right of left of the door of the room (to enable doctor and assistant to enter and leave the room without disturbing consult)
Placement of video, data and phone lines	Behind where the unit will be placed, and as close to the door as possible
Placement of exam table	Side of room opposite video unit, or at least where foot of table faces video unit. Must also be far enough away from the wall for the physician to stand behind when using scoping equipment in order to be able to view video monitor and patient at the same time
Proper lighting	Type of lights: Overhead lighting = Full spectrum. Lights that give off the equivalent of natural sunlight (in place of standard fluorescent lighting). Exam light should be available for use when needed Placement of lights: Preferable placement would be in the area above the video conferencing unit. Light should shine down diagonally towards the patient

Wall and cabinet color	White or gray is best. Yellow, tan and pink adversely affect patient skin tone
	Place a poster on the wall opposite the video camera to give it something to focus on while waiting to room the patient. Without a focal point, the camera will zoom in and out trying to search for an object. thus wearing out the camera's motor (\$220 repair/year)
Placement of X-ray light box	Wall opposite of video camera
Ambient noise elimination	Most troubling noise comes from the heating/cooling system.. noisy air vents, leaking faucets, etc.
Patient education materials and exam tools	Certain specialties require assessment tools that are not associated with the video unit, but should be stored near the unit for easy access, i.e., ruler for derm, stadiometer for peds endo, child play toys for peds neurology. Other specialties require patient education hand-outs to be given to patient after the exam, ie dermatology, nutrition, etc.
Unit storage	If you are not keeping the unit in the clinic room, you will need to store it in a locked, secure area
	If the unit is to be kept in the clinic room, it should be covered to prevent curious patients from playing with it. At the very least, there should be a cover on the camera
	Scopes that aren't attached to the unit should be stored in a locked cabinet
	Turn unit off when not in use (auto answer, camera motor wear)
Selection and placement of patient chairs	Patient chairs should be standard size, without armrests, in order to fit as many as possible in consult room to accommodate a small group. (Pediatric and Palliative care consults). Chairs should be placed as close as possible within focal range of the camera
Placement of microphone	Video units come with all sorts of microphones. For the units that have external microphones, place them on a small mobile table in front of but out of reach of patient

Specialist Site

Room size	Not too big, not too small. Large enough to accommodate equipment, specialist, desk, and have 6~ between specialist and camera. Not so small that it appears to be a broom closet or an “afterthought”, and not so large that the patient would get the impression others would be in the room “watching” the consult
Room location	Close to where specialty clinics operate
Electrical Considerations	Dedicated circuits with dedicated neutrals are desired, in order to avoid problems caused by “dirty power” which adversely affects the microphone, speakers, and other components. These problems cannot be resolved by using a UPS.
Placement of equipment	Preferably on wall next to door to allow technical support to enter the room to make a quick fix without disturbing the physician/patient interaction
Video, data and phone lines	Behind the video unit. Also place a phone on the consultant’s desk to return pages and contact other clinics
Proper lighting	Type of lights: Overhead lighting = Full spectrum. Lights that give off the equivalent of natural sunlight (in place of standard fluorescent lighting) Placement of lights: Preferable placement would be in the area above the video conferencing unit. Light should shine down diagonally towards the consultant
Carpet, wall coverings, soundproofing	Carpet and wall coverings absorb sound. If possible, apply sound soak material to walls. Colors should be blue/gray for proper contrast to skin tones. Solid colors to wall coverings without texture, so video camera will focus on consultant alone
Light box for X-ray viewing	Should be placed in room on wall next to consultant for teaching purposes
Patient Education Materials	Located in room to use as demonstrations to patients
Medical Reference and coding books	Specialty-specific medical reference books, ICD-9 coding books, and specialty charge master (with standard patient diagnosis codes)
Dictaphones and blank tapes	To use immediately after each consult / consult clinic
Telemedicine charge documents	Billing forms for the consultant to complete after each patient encounter
Fax and patient information forms	For immediate physician/patient feed-back



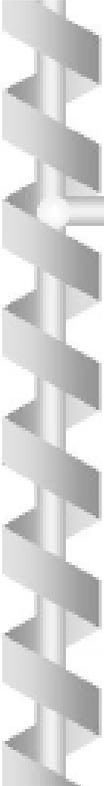
Laws and Regulations Affecting Telemedicine

Jana Katz, MPH
UC Davis Health System



Telemedicine Definition

- * Practice of health care delivery, diagnosis, consultation, treatment, transfer of medical data and education.
- * Using interactive audio, video or data communications.
- * With a patient at a location remote from the provider where the patient is directly involved in the telemedicine interaction.
- * (Business & Professions Code 2290.5)



Informed Consent

- + The health care provider must obtain verbal and written informed consent prior to consult:
 - Description of telemedicine consult
 - Associated risks, consequences and benefits (transmission interruption, access to medical data)
 - Must assure all confidentiality protections apply
 - Dissemination of images or information shall not occur without patient's consent
 - Patients may withdraw consent for telemedicine at any time without affecting the right to future care of treatment



The Health Care Provider

- + Standard of Care
 - The health care practitioner must possess the same skill and care expected of a reasonably competent physician acting in the same or similar circumstances nationwide.
 - The ACR has established teleradiology guidelines, technical specifications and procedures for equipment, personnel, licensing and quality control.
 - The AMA has urged other medical organizations to follow suit.



The Health Care Provider

- * Medical Record
 - Expressly define the scope of functions that are being undertaken.
 - Document what information was provided, what was recommended; establish system to enable follow-up.
 - Develop retention and storage policy for telemedicine encounters.
 - Code requires that all information transmitted must be part of the medical record.
- * Malpractice Insurance



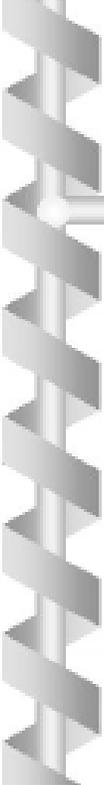
Licensure Requirements

- * Non-resident practitioners may provide services if in consultation with CA licensed practitioner and consultant is licensed in state or country in which he/she resides.
- * Consultant may not open an office, appoint a place to meet patients, receive calls from patients within CA, give orders or have ultimate authority over the care or primary diagnosis of patient.
 - (Business & Professions Code 2060)



Licensure Requirements State to State

- * In 1995, the Federation of State Medical Boards adopted a model statute and proposed that state medical boards should issue limited licenses to practitioners in other states.
- * About 20 states have adopted statutes addressing licensing requirements for out of state physicians.



Jurisdiction

- * Jurisdiction is determined by where the injury occurred or in the state that has the most issues, parties and witnesses involved.
- * Because caps on damages, statutes of limitation and standards of care may vary from state to state, incentives to forum shop may be great.
- * Greater risk and exposure when party is not a resident of the state/county where suit is litigated.



Joint Commission

- ✦ JCAHO has developed standards for telemedicine, effective January 1, 2001.
 - Practitioners who treat patients via telemedicine must be credentialed with the organization that receives the telemedicine service.
 - Medical staff of the receiving facility determines which services are appropriately delivered through this medium.
- ✦ It is unclear if an organization may use credentialing information from another Joint Commission accredited facility. If deemed acceptable, the decision to delineate privileges is made by the receiving facility.



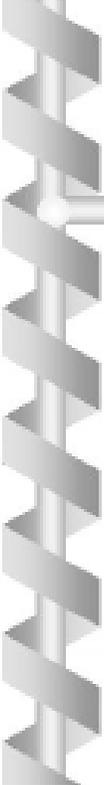
HIPAA

- ✦ The Health Insurance Portability Accountability Act of 1996
 - Standards for electronic transfer of information
 - Must maintain privacy of individually identifiable health data (IIHD)
 - Expected implementation--fourth quarter 2002



Anti-Kickback Statutes

- * Federal and state law prohibits the offer, solicitation, payment or receipt of any remuneration intended to induce, or is in return for, the referral of patients or the ordering of items or services.
- * Recent OIG opinion regarding ophthalmology telemedicine consultation to optometrist in remote location: sublease of equipment, advertising prohibition, no requirement to refer or use equipment solely with one ophthalmologist, no billing.
 - OIG Advisory Opinion 98-18



Anti-Kickback Statutes (cont.)

- * OIG opinion: whether the use of Federal grant funds and continued operation of a telemedicine network after expiration of the grant period violates Federal law.
- * Organizations not participating in federal grants should be cognizant of the financial arrangements between project participants.
 - OIG Advisory Opinion 99-14



Fee Splitting

- * Violation of state law to split patient revenues with any health care practitioner unless both are members of the same partnership, medical corporation, or professional services association.



Contracting

- * Review your written agreements:
 - Equipment maintenance, upgrades, staff training and insurance
 - Medical records management and access
 - Credentialing
 - Responsibility for informed consent
 - Jurisdiction where controversies will be resolved
 - Payment arrangements
 - **Fair Market Value** for anything of value, i.e. equipment leases



Reimbursement



Private Payers

- + Many state statutes, including California's, require payers to develop payment policy for telemedicine services
- + Only a few specific procedures have been formalized by any payer, i.e. Blue Cross Healthy Families in CA; Blue Cross Blue Shield in ND, KS, MT, IA
- + Work with private payers to establish guidelines



Medicaid Reimbursement

- ✦ Medicaid reimbursement for services furnished through telemedicine is available, at each state's option.
- ✦ Allows states flexibility in determining what may be reimbursed.
- ✦ Medicaid reimbursement (fee for service) for services provided via telemedicine are now available in the following 17 states: AK, CA, GA, IA, IL, KS, LA, MT, NE, NC, ND, OK, SD, TX, UT, VA, WV.
- ✦ Most states allow for both PCP and specialist to be reimbursed.
- ✦ Few states allow for traditional home health reimbursement (KS).
- ✦ Few states allow non-interactive video to be reimbursable (Kansas, South Dakota).
- ✦ Few states allow for other costs to be billed (Iowa)



MediCal Reimbursement

- ✦ As of July, 1997 MediCal began reimbursing for telemedicine visits.
- ✦ MediCal reimburses both PCP and specialist if it is "medically necessary" for both physicians to participate in the encounter.
- ✦ Services must be in real time or near real time.
- ✦ Statute originally had sunset provision, 1/1/2001, but if not renewed. Thomson Bill- AB 2877 makes MediCal reimbursement permanent.



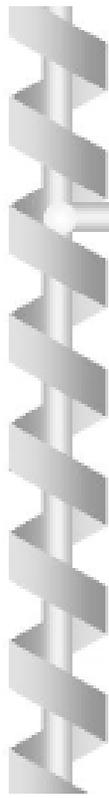
MediCal Requirements for Reimbursement

- * Must comply with B&P 2290.5 (definition of telemedicine and appropriate consent).
- * PCP must be MediCal provider.
- * All telemedicine information transmitted during the visit must become part of the patient's medical record.
- * Claims or TARs must include documentation of medical necessity and statement explaining the barrier (geographic or otherwise) to a face to face visit.



MediCal's Reimbursement "yes" and "no's"

- ⊗ Yes:
 - Interactive consultations for PCP and specialist
 - Store and forward services? Yes for radiology, EKG, electroencephalogram, and other imaging studies (MRI, ultrasound). Others services to be determined...
- ⊗ No:
 - Equipment or telecommunications costs
 - Home health care
 - Consultations via e-mail or facsimile



Medicare Benefits Improvement and Protection Act (§223). Effective October 1, 2001

- + Rural HPSAs **AND** non metropolitan statistical areas (MSA)
- + Accepted services: consultation, office visits, psychotherapy and pharmacological management
- + Fee split becomes "optional"
- + Medical professional not required to be a presenter.



BIPA Effective October 1, 2001

- + \$20 facility fee is allowed by PCP site.
- + Facility fee available only for rural areas including: PCP office, rural health clinic, FQHC clinic, hospital, and "critical access hospital."
 - Originating site fee is the "lesser" of the \$20 or the actual charge.
 - Does not appear that the remote site can bill both the \$20 fee and a PCP visit. Clarification has been requested.
 - Statutory requirement that patient pays 20% (\$4)



BIPA

Effective October 1, 2001

- * Technology must be interactive, allowing real-time communication
- * Practitioners at distant [hub] site who can bill: MD, NP, PA, Nurse midwife, Clin Nurse Spec, Clin psychologist, and clin social worker [for such services routinely covered by Mcare]
- * Store and forward (only for Alaska and Hawaii)
- * Bill may direct the Comptroller General to conduct a report in 3 years.



Home Health Payment

- * Home telemedicine acceptable under Prospective Payment System



Pending Legislation--2001

- ⊗ Over 20 bills have been introduced in the current session that touch on telemedicine.
- ⊗ Rep. Doug Ose (R- Yolo, Colusa) has introduced the Medicare Validation Act of 2001 (HR 2706)
 - Expands originating sites
 - Provides for store and forward reimbursement
 - Eliminates geographical limitations (e.g. includes urban)
 - Encourages intrastate licensure agreements
 - Continues OAT grant program



Future policy discussion

- ⊗ Originating site fee
- ⊗ Credentialing
- ⊗ Telepsychiatry (in California)
- ⊗ Telecommunications infrastructure
- ⊗ Move of OAT to HIV/AIDS Bureau



Final Thought

- “E-Health” is receiving a great deal of attention.
- As policy makers attempt to keep pace with technology opportunities, telehealth programs will need to stay involved to ensure language enhances, not disables, the field.



Questions?

<i>THIS SEARCH</i>	<i>THIS DOCUMENT</i>	<i>GO TO</i>
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H.R.5661

Medicare, Medicaid, and SCHIP Benefits Improvement and Protection Act of 2000 (Introduced in House)

SEC. 223. REVISION OF MEDICARE REIMBURSEMENT FOR TELEHEALTH SERVICES.

(a) TIME LIMIT FOR BBA PROVISION- Section 4206(a) of BBA (42 U.S.C. 1395l note) is amended by striking 'Not later than January 1, 1999' and inserting 'For services furnished on and after January 1, 1999, and before October 1, 2001'.

(b) EXPANSION OF MEDICARE PAYMENT FOR TELEHEALTH SERVICES- Section 1834 (42 U.S.C. 1395m) is amended by adding at the end the following new subsection:

(m) PAYMENT FOR TELEHEALTH SERVICES-

(1) IN GENERAL- The Secretary shall pay for telehealth services that are furnished via a telecommunications system by a physician (as defined in section 1861(r)) or a practitioner (described in section 1842(b)(18)(C)) to an eligible telehealth individual enrolled under this part notwithstanding that the individual physician or practitioner providing the telehealth service is not at the same location as the beneficiary. For purposes of the preceding sentence, in the case of any Federal telemedicine demonstration program conducted in Alaska or Hawaii, the term 'telecommunications system' includes store-and-forward technologies that provide for the asynchronous transmission of health care information in single or multimedia formats.

(2) PAYMENT AMOUNT-

(A) DISTANT SITE- The Secretary shall pay to a physician or practitioner located at a distant site that furnishes a telehealth service to an eligible telehealth individual an amount equal to the amount that such physician or practitioner would have been paid under this title had such service been furnished without the use of a telecommunications system.

(B) FACILITY FEE FOR ORIGINATING SITE- With respect to a telehealth service, subject to section 1833(a)(1)(U), there shall be paid to the originating site a facility fee equal to--

`(i) for the period beginning on October 1, 2001, and ending on December 31, 2001, and for 2002, \$20; and

`(ii) for a subsequent year, the facility fee specified in clause (i) or this clause for the preceding year increased by the percentage increase in the MEI (as defined in section 1842(i)(3)) for such subsequent year.

`(C) TELEPRESENTER NOT REQUIRED- Nothing in this subsection shall be construed as requiring an eligible telehealth individual to be presented by a physician or practitioner at the originating site for the furnishing of a service via a telecommunications system, unless it is medically necessary (as determined by the physician or practitioner at the distant site).

`(3) LIMITATION ON BENEFICIARY CHARGES-

`(A) PHYSICIAN AND PRACTITIONER- The provisions of section 1848(g) and subparagraphs (A) and (B) of section 1842(b)(18) shall apply to a physician or practitioner receiving payment under this subsection in the same manner as they apply to physicians or practitioners under such sections.

`(B) ORIGINATING SITE- The provisions of section 1842(b)(18) shall apply to originating sites receiving a facility fee in the same manner as they apply to practitioners under such section.

`(4) DEFINITIONS- For purposes of this subsection:

`(A) DISTANT SITE- The term 'distant site' means the site at which the physician or practitioner is located at the time the service is provided via a telecommunications system.

`(B) ELIGIBLE TELEHEALTH INDIVIDUAL- The term 'eligible telehealth individual' means an individual enrolled under this part who receives a telehealth service furnished at an originating site.

`(C) ORIGINATING SITE-

`(i) IN GENERAL- The term 'originating site' means only those sites described in clause (ii) at which the eligible telehealth individual is located at the time the service is furnished via a telecommunications system and only if such site is located--

`(I) in an area that is designated as a rural health professional shortage area under section 332(a)(1)(A) of the Public Health Service Act (42 U.S.C. 254e(a)(1)(A));

`(II) in a county that is not included in a Metropolitan Statistical Area; or

`(III) from an entity that participates in a Federal telemedicine demonstration project that has been approved by (or receives funding from) the Secretary of Health and Human Services as of December 31,

2000.

`(ii) SITES DESCRIBED- The sites referred to in clause (i) are the following sites:

`(I) The office of a physician or practitioner.

`(II) A critical access hospital (as defined in section 1861(mm)(1)).

`(III) A rural health clinic (as defined in section 1861(aa)(s)).

`(IV) A Federally qualified health center (as defined in section 1861(aa)(4)).

`(V) A hospital (as defined in section 1861(e)).

`(D) PHYSICIAN- The term 'physician' has the meaning given that term in section 1861(r).

`(E) PRACTITIONER- The term 'practitioner' has the meaning given that term in section 1842(b)(18)(C).

`(F) TELEHEALTH SERVICE-

`(i) IN GENERAL- The term 'telehealth service' means professional consultations, office visits, and office psychiatry services (identified as of July 1, 2000, by HCPCS codes 99241-99275, 99201-99215, 90804-90809, and 90862 (and as subsequently modified by the Secretary)), and any additional service specified by the Secretary.

`(ii) YEARLY UPDATE- The Secretary shall establish a process that provides, on an annual basis, for the addition or deletion of services (and HCPCS codes), as appropriate, to those specified in clause (i) for authorized payment under paragraph (1).'

(c) CONFORMING AMENDMENT- Section 1833(a)(1) (42 U.S.C. 1395l(1)), as amended by section 105(c), is further amended--

(1) by striking 'and (T)' and inserting '(T)'; and

(2) by inserting before the semicolon at the end the following: ', and (U) with respect to facility fees described in section 1834(m)(2)(B), the amounts paid shall be 80 percent of the lesser of the actual charge or the amounts specified in such section'.

(d) STUDY AND REPORT ON ADDITIONAL COVERAGE-

(1) STUDY- The Secretary of Health and Human Services shall conduct a study to identify-

(A) settings and sites for the provision of telehealth services that are in addition to

those permitted under section 1834(m) of the Social Security Act, as added by subsection (b);

(B) practitioners that may be reimbursed under such section for furnishing telehealth services that are in addition to the practitioners that may be reimbursed for such services under such section; and

(C) geographic areas in which telehealth services may be reimbursed that are in addition to the geographic areas where such services may be reimbursed under such section.

(2) REPORT- Not later than 2 years after the date of the enactment of this Act, the Secretary shall submit to Congress a report on the study conducted under paragraph (1) together with such recommendations for legislation that the Secretary determines are appropriate.

(e) EFFECTIVE DATE- The amendments made by subsections (b) and (c) shall be effective for services furnished on or after October 1, 2001.

SEC. 224. EXPANDING ACCESS TO RURAL HEALTH CLINICS.

(a) IN GENERAL- The matter in section 1833(f) (42 U.S.C. 1395l(f)) preceding paragraph (1) is amended by striking 'rural hospitals' and inserting 'hospitals'.

(b) EFFECTIVE DATE- The amendment made by subsection (a) shall apply to services furnished on or after July 1, 2001.

SEC. 225. MEDPAC STUDY ON LOW-VOLUME, ISOLATED RURAL HEALTH CARE PROVIDERS.

(a) STUDY- The Medicare Payment Advisory Commission shall conduct a study on the effect of low patient and procedure volume on the financial status of low-volume, isolated rural health care providers participating in the medicare program under title XVIII of the Social Security Act.

(b) REPORT- Not later than 18 months after the date of the enactment of this Act, the Commission shall submit to Congress a report on the study conducted under subsection (a) indicating--

(1) whether low-volume, isolated rural health care providers are having, or may have, significantly decreased medicare margins or other financial difficulties resulting from any of the payment methodologies described in subsection (c);

(2) whether the status as a low-volume, isolated rural health care provider should be designated under the medicare program and any criteria that should be used to qualify for such a status; and

(3) any changes in the payment methodologies described in subsection (c) that are necessary to provide appropriate reimbursement under the medicare program to low-volume, isolated rural health care providers (as designated pursuant to paragraph (2)).

Troubleshooting:

Common Problems & Solutions

Below you will find a list of common problems faced during troubleshooting of a video conferencing system. Systems (codecs) from different vendors operate very differently. Some are all-in one units with simple remote controls, others are full-blown computer systems with the codec on a PC card. You should always read the operating instructions for the codec before you set-up and use it.

Audio / Video Peripherals

Echo in Audio

1. Move microphone away from speakers
2. Adjust microphone / Speaker volume

Microphone / Camera muted

1. Check power / line cabling
2. Check codec settings for mute options

Monitor / speakers muted

1. Check monitor inputs and volume settings
2. Check speaker settings

Camera not focused

1. Check auto focus settings
2. Subject too close or too far from camera / move them
3. Large object in foreground or background distracting camera / move

Microphone / Camera Failure

1. Check video input setting in codec
2. Check power cable
3. Check line cabling
4. Defective unit

Cabling

Cabling bad (broken cables)

1. Replace cable

Cables not plugged in correctly (wrong port)

1. Follow cables from origin to destination
2. Unplug and re-plug cables to ensure proper seating

Wrong cable adapter used

1. Replace adapter or order new cable with adapter built-in

Black and white video

1. Check for loose or bad cables
2. Plug in PC, camera, or monitor might be going bad
3. Switchbox (if used) might be failing, try another input

Codec / Computer

Codec Failure

1. Restart Codec (turn off and on)
2. Check power and cabling
3. Check switches and dials
4. Swap-out / Replace codec

Codec incompatible with network

1. Add new protocol/equipment to network
2. Check for codec software updates
3. Replace codec with different model

Codec incompatible with remote codec

1. Try lower bandwidth calls
2. Try different audio compression settings
3. Use different codec

Codec "frozen" or "crashed"

1. Restart Codec
2. Look for cause of freeze or crash
3. Try and reproduce problem
4. Contact manufacturer / report problem

Network / ISDN

No Network / ISDN service

1. Try reseating plugs in jacks
2. Check network hardware
3. Test network with different system
4. Check internal building wiring
5. Contact Telco to test lines

ISDN lines connected in wrong order

1. Unplug and reconnect
2. Verify wall plate labeling is correct

No Network termination

1. Check NT-1 for proper power / cabling
2. Replace NT-1

ISDN calls won't complete on one or more lines

1. Check cabling / wiring
2. Check with telco to see if ISDN service has been changed or turned off
3. Check SPID settings
4. Call telco to verify long distance ISDN service is active
5. Lines spliced – use patch panel instead
6. Service disconnected or moved without notice, contact telco
7. Centrex dialing issues

Frequent call drops during a consult

1. Lines spliced – use patch panel instead
2. Check to see if call is being routed incorrectly (call telco)
3. Too much traffic on long distance data backbone
4. Video passed through busy hub instead of switch

Common Codec Software Configuration Issues

Incorrect local numbers and SPIDS entered

1. Re-enter numbers into codec software

Incorrect camera identified to codec

1. Enter proper camera settings per codec manual

Speaker / Microphone volume not properly set

1. Increase or decrease volume as necessary
2. Account for quiet / shy participants
3. Offer headphones for the hearing impaired
4. Move microphone / speakers for better hearing

Incorrect numbers in phonebook

1. Correct invalid numbers
2. Check for Centrex dialing codes for outside lines

Video capture / freeze feature accidentally turned on

1. Check camera for freeze-frame setting
2. Check codec software for freeze frame setting

Common Power Issues

Power turned off

1. Turn on, check cables
2. Look for GFI tripped plugs, contact electrical contractor

Dirty power

1. Causes image to jitter or wave on-screen
2. Causes equipment to crash or freeze
3. Creates popping sound in audio

High voltage spikes / brownouts

1. Can damage codec and other hardware – use a UPS

Various devices not working

1. Check power cables
2. Check power switches

This list is by no means exhaustive as there are potentially hundreds of things that can possibly go wrong. The key is the methodology to locating and diagnosing the problem. Here's an example:

Evaluate all the things that interact with whatever is experiencing the problem, for example:

No sound can be heard from the far-end

These items are related to hearing sound:

Speakers, speaker wires, volume control, volume muting, microphone muting, microphone wiring, microphone power, speaker power, monitor power, codec audio decoder

So you would logically go through those items doing the easiest or most obvious things first and then working your way down the list. Taking a few minutes to contemplate your problem before you attack it can really save a lot of time in the long run. It also makes you appear much more collected and professional to the medical assistant and possibly patient who are watching you.

Here are some things to keep in mind while diagnosing your problem:

1. Stay relaxed, if you get upset with your problem, walk away and take a 2 minute breather
2. Don't be afraid to ask for help. Often times someone might have experienced your problem already.
3. Keep all your technical support numbers handy (in your wallet or purse).
4. Have a list of all your ISDN phone numbers, IP addresses, and POTS lines handy. You'll need to access them often.
5. Keep PC based systems locked with a password and disable all other applications with a security program.

Index of Abbreviations and Acronyms

Numeralals

3WC: 3-Way Calling

A

AAD: Analog Alignment Diskette

AAL: ATM Adaption Layer

ABC: Atanasoff-Berry Computer

ABE: Agent Building Environment

ABIOS: Advanced Basic Input / Output System

ABR: Available Bit Rate

AC: Alternating Current

ACF: Advanced Communications Function

ACK: Acknowledgement

ACL: Access Control List

ACPI: Advanced Configuration and Power Interface

ACS: Automatic Class Selection

ADC: Analog Digital Converter

ADCCP: Advanced Data Communications Control Procedures

ADM: Add / Drop Multiplexers

ADP: Automated Data Processing

ADPCM: Adaptive Differential Pulse Code Modulation

ADSC: Adobe Document Structuring Conventions

ADSI: Active Directory Services Interface

ADSL: Asymmetric Digital Subscriber Line

AF: Auxiliary-carry Flag

AFC: Automatic Frequency Control

AFP: AppleTalk File Protocol

AGC: Automatic Gain Control

AGIS: Apex Global Information Services

AGP: Accelerated Graphics Port

AI: Artificial Intelligence

AIMUX: ATM Inverse Multiplexing

AIN: Advanced Intelligent Network

AIS: Alarm Indication Signal

AIX: Advanced Interactive Executive

AKM: Apogee Kick Motor

ALI: Acer Laboratories, Inc.

ALIVE: Artificial Life Interactive Video Environment

AM: Amplitude Modulation

AMD: Advanced Micro Devices

AMI: Alternative Mark Inversion

AMI: American Megatrends, Inc.

AMON: ATM Monitoring

AMS: Access Method Services

ANA: Automatic Number Announcement

ANI: Automatic Number Identification

ANSI: American National Standards Institute

AOL: America On-Line

APA: All Points Addressable

APC: American Power Conversion

API: Application Program Interface

APM: Advanced Power Management

APPC: Advanced Program-to-Program Communications

ARC: Attached Resources Computing

ARIES: ATM Research & Industrial Enterprise Study

ARLL: Advanced Run Length Limited

ARP: Address Resolution Protocol

ARPA: Advanced Research Projects Agency

ARPANET: Advanced Research Projects Agency Network

ARQ: Automatic Repeat Request

AS: Autonomous Systems

ASAP: Any Service / Any Port

ASCII: American Standard Code for Information Interchange

ASG: Advanced Systems Group

ASIC: Application Specific Integrated Circuit

ASME: American Society of Mechanical Engineers

ASP: Association Of Shareware Professionals

ASPI: Advanced SCSI Programming Interface

ASR: Automatic Send / Receive

AST: Asynchronous System Trap

AT: Advanced Technology

AT: Attention

ATA: Advanced Technology Attachment

ATAPI: Advanced Technology Attachment Packet Interface

AT&T: American Telephone & Telegraph

ATM: Adobe Type Manager

ATM: Asynchronous Transfer Mode

ATM: Automated Teller Machine

AUI: Attachment Unit Interface
AVI: Audio / Video Interleaved
AVN: Ameritech Virtual Network
AWB: Aglets Workbench
AXP: Almost Exactly Prism

B

B8ZS: Binary 8-Zero Substitution
BALUN: Balanced / Unbalanced
BANCS: Bell Application Network Control System
BANM: Bell Atlantic Nynex Mobil
BARRNET: Bay Area Research Network
BASIC: Beginners all-purpose Symbolic Instruction Code
BBS: Bulletin Board System
BCC: Blind Carbon Copy
BCD: Binary Coded Decimal
B-CDMA: Broadband Code Division Multiple Access
BCR: Business Communications Review
BDC: Backup Domain Controller
BECN: Backward Explicit Congestion Notation
BellCoRe: Bell Communications Research
BEZS: Bandwidth Efficient Zero Suppression
BFT: Binary File Transfer
BGA: Ball Grid Array
BGP: Border Gateway Protocol
B-ICI: Broadband: ISDN Inter-Carrier Interface
BIL: Band Interleaved by Line
BIOS: Basic Input / Output System
BIP: Band Interleaved by Pixel
B-ISDN: Broadband: Integrated Services Digital Network
BitBLT: BitBlock Transfer
BITNET: Because It's Time Network
BIU: Bus Interface Unit
BL: Blue Lightning (Chip)
BMP: Bitmap
BNC: British National Connector
BOOTP: Boot Protocol
BPB: BIOS Parameter Block
BPF: Berkeley Packet Filter
BPS: Bits Per Second
BRB: Be Right Back
BRI: Basic Rate Interface
BSC: Bi-Synchronous Communication
BSD: Berkeley Software Distribution
BSP: Bell Systems Practice
BSQ: Band Sequential

BT: British Telecom
BTB: Branch Target Buffer
BTS: Base Transceiver Station
BUS: Broadcast and Unknown Server

C

C: Country
CA: Computer Animation
CAC: Connection Admission Control
CACP: Central Arbitration Control Point
CAD: Computer Aided Design
CAM: Common Access Method
CAM: Computer Aided Machining
CAN: Campus Area Network
CAP: Competitive Access Provider
CAP: Carrierless Amplitude and Phase
CAS: Column-Address Select
CASE: Computer Aided Software Engineering
CATANET: Concatenated Network
CATV: Cable Television
CAV: Constant Angular Velocity
CB: Citizens Band
CB: Component Broker
CBR: Constant Bit Rate
CBT: Computer Based Training
CC: Carbon Copy
CCB: Command Control Block
CCITT: Comite Consultatif International
Telephonique et Telegraphique (International Telephone and Telegraph Consultative Committee)
CCS: Common Channel Signaling
CCS: Common Command Set
CCTV: Closed Circuit Television
CD: Carrier Detect
CD: Compact Disc
CDC: Control Data Corporation
CD-DA: Compact Disc: Digital Audio
CDDI: Copper Distributed Data Interface
CDFS: CD-ROM File System
CDI: Compact Disc Interactive
CDIA: Certified Document Imaging Architect
CDMA: Code Division Multiple Access
CDPD: Cellular Digital Packet Data
CD-R: Compact Disc: Recordable
CD-RW: Compact Disc: Re-Writable
CD-ROM: Compact Disc: Read Only Memory
CDV: Cell Delay Variation
CDVT: Cell Delay Variation Tolerance
CE: Consumer Electronics

CERFNET: California Educational Research Network
 CERT: Computer Emergency Response Team
 CES: Circuit Emulation Services
 CF: Carry Flag
 CFP: Computers, Freedom and Privacy
 CGA: Color Graphics Adapter
 CGI: Common Gateway Interface
 CGM: Computer Graphics MetaFile
 CHAP: Challenge-Handshake Authentication Protocol
 CHS: Cylinders / Heads / Sectors
 CICS: Customer Information Control System
 CIDR: Classless Inter-Domain Routing
 CIF: Cells In Frame
 CIM: Common Information Model
 CIO: Chief Information Officer
 CIR: Committed Information Rate
 CIS: CompuServe Information Services
 CISC: Complex Instruction Set Computing
 CLE: Customer Located Equipment
 CLEC: Competitive Local Exchange Carrier
 CLP: Cell Loss Priority
 CLR: Cell Loss Ratio
 CLV: Constant Linear Velocity
 CMI: Cable Microcell Integrator
 CMI/HIC: Cable Microcell Integrator / Headend Interface Converter
 CMIP: Common Management Information Protocol
 CMOS: Complimentary Metal Oxide Semiconductor
 CMP: Communications Plenum Cable
 CMR: Communications Riser Cable
 CMS: Code Management System
 CMYK: Cyan, Magenta, Yellow Key
 CN: Common Name
 CNA: Certified Network Administrator
 CNC: Computer Numeric Control
 CNE: Certified Network Engineer
 CNS: Certified Novell Salesperson
 CO: Central Office
 COA: Certificate Of Authenticity
 COAST: Cache On A Stick
 COBOL: Common Business Oriented Language
 CODEC: Coder / Decoder
 CODEC: Compression / Decompression
 COMDEX: Communications Development Exposition
 COPS: Concept Oriented Programming System
 CORBA: Common Object Request Broker Architecture
 COS: Class Of Service
 COSMOS: Computer System for Mainframe Operations
 CoSysOp: Co-Systems Operator
 COW: Character-Oriented Windows Interface
 CPE: Customer Premises Equipment
 CP/M: Control Program / Microcomputer
 CPS: Characters Per Second
 CPU: Central Processing Unit
 CR: Carriage Return
 CRC: Cyclical Redundancy Checking
 CRN: Computer Reseller News
 CRT: Cathode Ray Tube
 C-SCANS: Client-Systems Computer Access Networks
 CSD: Corrective Service Diskettes
 CSID: Calling Station Identification
 CSLIP: Compressed Serial Line Internet Protocol
 CSMA: Carrier Sense Multiple Access
 CSMA/CD: Carrier Sense Multiple Access: Collision Detection
 CSNET: Computer Science Network
 CSP: CompuCom Speed Protocol
 CSS: Cascading Style Sheets
 CSU: Channel Service Unit
 CT: Computer Telephony
 CTD: Cell Transfer Delay
 CTI: Computer-Telephony Integration
 CTS: Clear To Send Signal
 CTTC: Copper To The Curb
 CTTH: Copper To The Home
 CTTY: Console Teletype
 CUI: Centre Universitaire d'Informatique
 CUT: Control Unit Terminal
 CVF: Compressed Volume File
 CW: Continuous Wave
 CWT: Call Waiting
 CYBORG: Cybernetic Organism

D

D2T2: Dye Diffusion Thermal Transfer
 DAC: Digital Analog Converter
 DAMA: Demand Assigned Multiple Access
 DARPA: Defense Advanced Research Projects Agency
 DASD: Direct Access Storage Device
 DAT: Digital Audio Tap
 DAT: Digital Audio Tape
 DATU: Direct Access Testing Unit
 DAVID: Digital Audio/Video Interactive Decoder
 DB: Decibels
 dBm: Decibels per Milliwatt

DBMS: DataBase Management System
 DBR: DOS Boot Record
 DBS: Demand Broadcast System
 DBS: Direct Broadcast Satellite
 DC: Direct Current
 DCB: Data Control Block
 DCC: Direct Cable Connection
 DCE: Data Communications Equipment
 DCE: Distributed Computing Environment
 DCS: Digital Communication System
 DD: Data Definition
 DD: Definition Description (HTML)
 DD: Double Density
 DDCMP: Digital Data Communications Message Protocol
 DDD: Digital Diagnostic Diskette
 DDD: Direct Distance Dial
 DDE: Dynamic Data Exchange
 DDial: Diversi-Dial
 DDN: Defense Data Network
 DDT: Don't Do That
 DDT: Dynamic Debugging Tool
 DE: Discard Eligible
 DEC: Digital Equipment Corporation
 DECNET: Digital Equipment Corporation Network
 DES: Defense Encryption Standard
 DES: Digital Encryption Standard
 DFDSS: Data Facility Dataset Services
 DFHSM: Data Facility Hierarchical Storage Manager
 DFSMS: Data Facility Storage Management Subsystem
 DG-UX: Data General Unix
 DHCP: Dynamic Host Configuration Protocol
 DI: Destination Index
 DIIG: Digital Information Infrastructure Guide
 DIMM: Dual In-Line Memory Module
 DIN: Deutsche Industrie Norm
 DIP: Dual In-Line Package
 DIS: Dynamic Impedance Stabilization
 DISOSS: Distributed Office Support System
 DL: Definition List
 DLC: Digital Loop Carrier
 DLCI: Data Link Connection Identifier
 DLL: Dynamic Link Library
 DLSw: Data Link Switching
 DLT: Digital Linear Tape
 DLVA: Detector Logarithmic Video Amplifier
 DMA: Direct Memory Access
 DMF: Distribution Media Floppy
 DMI: Desktop Management Interface
 DMM: Digital Multi-Meter
 DMS: Digital Multiplex Switch
 DMS: Digital Multiplex System
 DMT: Discrete Multi-Tone
 DMTF: Desktop Management Task Force
 DN: Domain Name
 DNA: DEC Network Architecture
 DNIS: Dialed Number Identification Service
 DNR: Digital Number Recorder
 DNS: Domain Name System
 DOS: Disk Operating System
 DOW: Direct Over-Write
 DPAM: Demand Priority Access Method
 DPI: Dot Pitch Integer
 DPMI: DOS Protected Mode Interface
 DPMS: Display Power Management Signaling
 DPMS: DOS Protected Mode Services
 DPT: Distributed Processing Technology
 DQDB: Distributed Queue Dial Bus
 DRAM: Dynamic Random Access Memory
 DS0: Digital Signal level 0
 DSA: Distributed Systems Architecture
 DSI: Digital Speech Interpolation
 DSL: Digital Subscriber Line
 DSLAM: Digital Subscriber Line Access Multiplexer
 DSP: Digital Signal Processor
 DSR: Date Set Ready
 DSU: Data Service Unit
 DT: Definition Term
 DTA: Disk Transfer Area
 DTE: Data Terminal Equipment
 DTMF: Dual Tone Modulated Frequency
 DTP: Desktop Publishing
 DTR: Data Terminal Ready
 DTV: Desktop Video
 DUN: Dial-Up Networking
 DV: Digital Video
 DVB: Digital Video Broadcasting
 DVC: Digital Video Conference
 DVD: Digital Video Disc
 DVI: Digital Video Interactive
 DXI: Data Exchange Interface
 DYLAN: Dynamic Language

E

E1: European 1
 E3: European 3
 EBCDIC: Extended Binary Code: Decimal Interchange Code
 EBR: Extended-Partition Boot Record

ECC: Error Correction Code
ECD: Electronic Cash Disbursements
ECM: Error Correction Mode
ECMA: European Computer Manufacturers Association
ECP: Extended Capabilities Port
ED: Extra-High Density
EDI: Electronic Data Interchange
EDO: Extended Data-Out
EDP: Electronic Data Processing
EEPROM: Electronic Erasable Programmable Read-Only Memory
EEST: Enhanced Ethernet Serial Transceiver
EFCI: Explicit Forward Congestion Indication
EFF: Electronic Frontier Foundation
EGA: Enhanced Graphics Adapter
EGP: Exterior Gateway Protocol
EIA: Electronic Industries Association
EIDE: Enhanced Integrated Drive Electronics
EIRP: Effective Isotropic Radiated Power
EISA: Enhanced/Extended Industry Standard Architecture
ELAN: Emulated Local Area Network
ELF: Extremely Low Frequency
EMA: Electronic Messaging Association
EMA: Enterprise Management Architecture
EMF: Electro Motive Force
EMF: Enhanced Metafile Format
EMM: Extended Memory Manager
EMR: Electromagnetic Radiation
EMS: Expanded Memory Specification
ENIAC: Electronic Numerical Integrator And Calculator
EOF: End Of File
EOT: End Of Transfer
EPIC: Electronic Privacy Information Center
EPP: Enhanced Parallel Port
EPROM: Erasable Programmable Read-Only Memory
EPS: Encapsulated Post-Script
ERU: Emergency Recovery Utility
ESA: Enterprise Systems Architecture
ESC: Engineering Service Circuit
ESD: Electronic Software Distribution
ESD: Electro-Static Discharge
ESDI: Enhanced Small Device Interface
ESN: Electronic Serial Number
ESO: Entry Server Offering
ESP: Enhanced Serial Port
ESP: Enhanced Service Provider
ESRI: Environmental Systems Research Institute

ETO: Electronic Trading Opportunity
EULA: End User Licensing Agreement

F

FAQ: Frequently Asked Question
FAT: File Allocation Table
FAX: Facsimile
FCB: File Control Block
FCC: Federal Communications Commission
FCS: First Customer Release
FDC: Floppy Disk Controller
FDDI: Fiber Distributed Data Interface
FDMA: Frequency Division Multiple Access
FEC: Foreign Exchange Carrier
FEC: Forward Error Correction
FECN: Forward Explicit Congestion Notification
FEP: Front End Processor
FERF: Far End Reporting Failure
FIFO: First In / First Out
FITS: Flexible Image Transport System
FM: Frequency Modulation
FOIM: Field Office Information Management
FORTRAN: Formula Translator
FPS: Floating Point System
FPS: Frames Per Second
FPT: Forced Perfect Termination
FPU: Floating Point Unit
FQDN: Fully Qualified Domain Name
FRAD: Frame Relay Access Device
FSK: Frequency Shift Keying
FSN: Full Service Network
FTAM: File Transfer Access Management
FTC: Federal Trade Commission
FTP: File Transfer Protocol
FTPD: File Transfer Protocol Daemon
FTS: Federal Telecommunications System
FTTC: Fiber To The Curb
FTTH: Fiber To The Home
FUNI: Frame User Network Interface
FVIPS: First Virtual Internet Payment System
FYI: For Your Information

G

G: Gigabyte
Gb: Gigabit
Gbps: Gigabits Per Second
GB: Gigabyte

GCRA: Generic Cell Rate Algorithm
GDG: Generation Data Group
GDS: Generation Dataset
GEIS: General Electric Information Systems
GES: Global Enterprise Services
GFC: Generic Flow Control
GGP: Gateway-to-Gateway Protocol
GIF: Graphical Interchange Format
GIG: Gigabyte
GIS: Geographic Information System
GOES: Geosynchronous Orbital Earth Satellite
GOSIP: Government Open Systems Interconnection Profile
GPF: General Protection Fault
GPS: Global Positioning System
GSO: Geostationary Orbit
GTPNet: Global Trade Point Network
GUI: Graphical User Interface

H

HAM: Home Amateur Mechanic
HAN: Home Area Network
HBA: Host Bus Adapter
HCL: Hardware Compatibility List
HCSS: High-Capacity Storage System
HD: Hard Drive
HD: High-Density
HDA: Head Disk Assembly
HDLC: High-Level Data Link Control
HDR: Host Data Replicator
HDSL: High-bit-rate Digital Subscriber Line
HDT: Host Digital Terminal
HDTV: High-Definition Television
HEC: Header Error Control
HEPNET: High Energy Physics Network
HFC: Hybrid Fiber-Coaxial
HGC: Hercules Graphics Card
HIC: Headend Interface Converter
HLF: High-Level Formatting
HLLAPI: High-Level-Language Application Program Interface
HMA: High Memory Area
HMMP: HyperMedia Management Protocol
HMMS: HyperMedia Management Schema
HMP: Host Monitoring Protocol
HP: Hewlett-Packard
HPC: Handheld Personal Computer
HPFS: High Performance File System
HPT: High-Pressure Tin

HR: Horizontal Rule
HRD: High Resolution Diagnostic Diskette
HRSC: High Resolution Stereo Camera
HSSI: High Speed Serial Interface
HST: High-Speed Technology
HTML: Hypertext Markup Language
http: Hypertext Transfer Protocol
HW: HRSC / WAOSS
Hz: Hertz

I

IA: Intel Architecture
IAB: Internet Activities Board
IAD: Integrated Access Device
IAM: Inverse ATM Mux
IBM: International Business Machines
IBS: IntelSat Business Service
IC: Integrated Circuit
ICD: International Code Designation
ICE: Intrusion Countermeasure Electronics
ICMP: Internet Control Message Protocol
ICR: Intelligent Character Recognition
ICRIS: Integrated Customer Record Information System
IDE: Integrated Drive Electronics
IDSL: ISDN Digital Subscriber Line
IEEE: Institute of Electronic and Electrical Engineers
IEN: Integrated Enterprise Network
IESG: Internet Engineering Steering Group
IETF: Internet Engineering Task Force
IFM: Intelligent Flow Management
IGMP: Internet Group Multicast Protocol
IGP: Interior Gateway Protocol
IIOP: Internet Inter-ORB Protocol
IIS: Internet Information Services
IISP: Interim Inter-Switch Protocol
ILMI: Integrated Layer Management Interface
IMAP: Internet Messaging Access Protocol
IMC: Initial Microcode Load
IMP: Interface Message Processor
IMUX: Inverse Multiplexing
IN: Intelligent Network
INTELSAT: International Telecommunications Satellite Organization
InterNIC: Internet Network Information Center
INWG: International Network Working Group
I/O: Input / Output
IOS: Inter-Network Operating System
IP: Internet Protocol

IPC: Internet Proxy Cache
IPL: Initial Program Load
IPMI: Internet Provider Multicast Initiative
IPN: Internet Protocol Number
IPNG: Internet Protocol: Next Generation
IPv4: Internet Protocol version 4
IPv6: Internet Protocol version 6
IPX: Internetwork Packet Exchange
IRC: Internet Relay Chat
IRF: Inherited Rights Filter
IRL: In Real Life
IRQ: Interrupt: Request Line
IRTF: Internet Research Task Force
RTOS: I2O Real-Time Operating System
ISA: Industry Standard Architecture
ISA: Interactive Services Association
ISDN: Integrated Services Digital Network
ISIS: Internally Switched Interface System
ISIS: Investigative Support Information System
ISM: Internet Service Manager
ISMF: Interactive Storage Management Facility
ISO: International Standards Organization
ISP: Internet Service Provider
ISPA: Inverted Socket Process Architecture
ISPF/PDF: Interactive System Productivity Facility /
Program Development Facility
IT: Information Technology
ITS: Internet Telephony Server
ITT: International Telephone & Telegraph
ITTA: Information Technology Training Association
ITU: International Telecommunications Union
ITV: Interactive Television
IWM: Integrated Woz Machine
IXC: InterExchange Carrier

J

JCL: Job Control Language
JDBC: Java DataBase Connectivity
JDK: Java Development Kit
JEDEC: Joint Electron Devices Engineering Council
JES: Job Entry Subsystem
JIT: Just In Time
JMAPI: Java Management Application Interface
JNDI: Java Naming Directory Interface
JNET: Japanese Network
JOVIAL: Jules' Own Version of the International
Algorithmic Language
JPEG: Joint Photographic Experts Group
JTS: Java Transaction Services

K

K: Kilobyte
kb: Kilobit
kbps: Kilobits Per Second
kB: Kilobyte
kHz: KiloHertz
KIF: Knowledge Interchange Format
KnU: Knowledge Utility

L

LAN: Local Area Network
LANE: Local Area Network Emulation
LAP-B: Link Access Procedure: Balanced
LAPM: Link Access Procedure: Modems
LAT: Local Area Transport
LATA: Local Access and Transport Area
LAV: Load Average
LBA: Logical Block Addressing
LCC: Leadless Chip Carrier
LCD: Liquid Crystal Display
LDAP: Lightweight Directory Access Protocol
LD-CELP: Low-Delay Code Excited Linear Prediction
LEC: LAN Emulation Client
LEC: Local Exchange Carrier
LECS: LAN Emulation Configuration Server
LED: Light Emitting Diode
LEN: Line Equipment Number
LES: LAN Emulation Server
LF: Line Feed
LHB: Line History Block
LI: List Item
LibOp: Libraries Operator
LIF: Low Insertion Force
LIFO: Last In / First Out
LILO: Linux Loader
LIM: Lotus-Intel-Microsoft
LIS: Lithium Ion Storage
LISP: List Processing
LLC: Logical Link Control
LLF: Low-Level Formatting
LMDS: Local Multipoint Distribution Service
LNA: Low Noise Amplifier
LNB: Low Noise Block Deconverter
LNNI: LAN Emulation Network-to-Network Interface
LoD: Legion of Doom
LOD: Level Of Detail
LPC: Local Procedure Call
LPT: Local Printer Terminal

LT: Line Termination
LU: Logical Unit
LUN: Logical Unit Number
LUNI: LAN User-to-Network Interface
LZW: Lempel-Ziv-Walsh (Compression)

M

M: Megabyte
MAC: Macintosh
MAC: Media Access Control
MAN: Metropolitan Area Network
MAP: Manufacturing Automation Protocol
MAPI: Messaging Application Programming Interface
MAPS: Multiservice Access Platforms
MARS: Multicast Address Resolution Server
MATV: Master Antenna Television
MAU: Medium Attachment Unit
MAU: Multi-Station Access Unit
Mb: Megabit
MB: Megabyte
MBS: Master Boot Sector
MBS: Maximum Burst Size
MBT: Maximum Burst Tolerance
MC: Mini-Cartridge
MCA: MicroChannel Architecture
MCGA: MultiColor Graphics Array
MCI: Media Control Interface
MCI: Microwave Communications, Inc.
MCR: Minimum Cell Rate
MDA: Monochrome Display Adapter
MDC: McAfee Development Center
MDI: Multiple Document Interface
MDRAM: Multibank Dynamic Random Access Memory
MEG: Megabyte
MF: Modulated Frequency
MFM: Modified Frequency Modulation
MFTP: Multi-Cast File Transfer Protocol
MGA: Monochrome Graphics Adapter
MHS: Message Handling Service
MHz: Megahertz
MI: Mode Indicate
MIB: Management Information Bases
MIC: Microsoft Internet Chat
MIC: Mode Indicate: Common
MICA: Modem ISDN Channel Aggregation
MICROTEL: Microsoft / Intel
MIDI: Musical Instrument Digital Interface
MIDR: Mosaicked Image Data Record

MIG: Metal-In-Gap
MILES: Merisel's Information and Logistical Efficiency System
MILNET: Military Network
MIME: Multipurpose Internet Mail Extension
MIN: Mobile Identification Number
MIPL: Multimission Image Processing Laboratory
MIPS: Millions Of Instructions Per Second
MIPS: Multimission Image Processing Subsystem
MMDS: Multipoint Multichannel Distribution Service
MMX: Multimedia Extension
MNP: Microcom Networking Protocol
MO: Magneto-Optical
MOCA: Merisel Open Computing Alliance
MoD: Masters of Deception
MODEM: Modulator / Demodulator
MOL: Microsoft Open License
MOM: Microsoft Office Manager
MOS: Metal Oxide Semiconductor
MPC: Multimedia Personal Computer
MPD: Mini Port Driver
MPEG: Motion Picture Experts Group
MPOA: Multi-Protocol Over ATM
MPS: Multi-Processor Specification
MR: Magneto-Resistive
MS: Microsoft System(s)
MSD: Microsoft Diagnostic
MS-DOS: Microsoft Disk Operating System
MSN: Microsoft Network
MSO: Multiple Systems Operators
MSTP: Multimission Software Transmission Project
MTA: Major Trading Area
MTA: Mail Transfer Agent
MTA: Message Transfer Agent
MTBF: Mean Time Before Failure
MTTR: Mean Time To Repair
MUA: Mail User Agent
MUD: Multi-User Dungeon
MULTICS: Multiplexed Information and Computing Service
MUX: Multiplexer
MVP: Modular Voice Processor
MVS: Multiple Virtual Storage
MVS/ESA: Multiple Virtual Storage / Enterprise Systems Architecture
MVS/SP: Multiple Virtual Storage / System Product
MVS/TSO: Multiple Virtual Storage / Time Sharing Option
MVS/XA: Multiple Virtual Storage / Extended Architecture

MWI: Message Waiting Indicator
MWN: Message Waiting Notification

N

NACK: Negative Acknowledgement
NAP: Network Access Point
NAU: Network Addressable Unit
NBB: Number of Bytes of Binary
NC: Network Computer
NCA: Network Computing Architecture
NCC: Network Control Center
NCF: Netware Command File
NCIC: National Crime Information Computer
NCM: Node Controller Module
NCP: Network Control Program
NCP: Network Core Protocol
NCPS: Netware Cross-Platform Services
NCSA: National Center for Supercomputing Applications
NCSA: National Computer Security Association
NCSC: National Computer Security Center
NDIAG: Norton Diagnostics
NDIS: Network Driver Interface Specification
NDMP: Network Data Management Protocol
NDS: Novell Directory Service
NEARNET: New England Academic and Research Network
NEAT: Novell Easy Administration Tool
NetBEUI: NetBIOS Extended User Interface
NetBIOS: Network Basic Input / Output System
NEWS: Novell Electronic Webcasting Service
NFS: Network File System
NHRP: Next Hop Resolution Protocol
NHRP: Non-Hierarchical Routing Protocol
NIC: Network Information Center
NIC: Network Interface Card
NiCD: Nickel Cadmium
NII: National Information Infrastructure
NiMH: Nickel Metal Hydride
NIMS: Near Infrared Mapping Spectrometer
NIS: Network Information Service
NLB: Number of Lines of Binary
NLM: NetWare Loadable Module
NLP: Natural Language Processing
NLS: Online System
NMI: Non-Maskable Interrupt
NNI: Network Node Interface
NNI: Network-To-Network Interface
NNTP: Network News Transport Protocol

NOC: Network Operations Center
NOF: Not On File
NORAD: North American Defense Command
NOS: Network Operating System
NPA: Numbering Plan Area
NPC: Network Parameter Control
NPN: Notes Public Network
NPR: Network Process Engineering
NRN: Novell Remote Network
NRT: Non-Real-Time
NSA: National Security Agency
NSFNET: National Science Foundation Network
NSI: Network Solutions, Inc.
NSM: Network / Systems Management
NSP: National Service Provider
NT: New Technology
NTFS: NT File System
NTP: Network Time Protocol
NTSC: National Television Standards Committee
NTT: Numbered Test Trunk
NUI: Network User Identification
NUMA: Non-Uniform Memory Access
NVRAM: Non-Volatile Random Access Memory
NWG: Network Working Group
NYNEX: New York: New England Exchange
NYSERNET: New York State Education Research Network

O

O: Organization
OA&M: Operations Administration & Maintenance
OAG: Open Applications Group
OCE: Open Collaboration Environment
OCIS: Organized Crime Information System
OCR: Optical Character Recognition
ODBC: Open Database Compliant
ODI: Open Data-Link Interface
ODN: OutDial Notification
ODSI: Open Directory Service Interface
OEM: Original Equipment Manufacturer
OFDM: Orthogonal Frequency Division Multiplexing
OL: Ordered List
OLAP: Online Analytical Processing
OLE: Object Linking and Embedding
OMR: Optical Mark Recognition
ONE: Open Network Environment
ONMS: Open Network Management System
ONU: Optical Networking Unit
OPC: Organic Photoconducting Cartridge

OPT: Open Protocol Technology
ORMS: Operating Resource Management System
OS: Operating System
OS/2: Operating System / 2
OSF: Open Software Foundation
OSI: Open Systems Interconnection
OSI: Open Standards Interconnection
OSPF: Open Shortest Path First
OSR: OEM System Release
OT: Open Transport
OU: Organizational Unit
OURS: Open User-Recommended Solutions

P

PABX: Private Automatic Branch Exchange
PAD: Packet Assembler / Disassembler
PAL: Phase Alteration Standard
PAL: Phase Alternating Line
PAL: Programmable Array Logic
PAM: Peachtree Accounting; Macintosh
PAP: Password Authentication Protocol
PARC: Palo Alto Research Center (Xerox PARC)
PAS: Publicly Available Submitter
PAW: Peachtree Accounting for Windows
PAX: Private Automatic Exchange
PBIS: Peachtree Business Internet Suite
PBMS: Pacific Bell Mobile Services
PBS: Portable Base Station
PBX: Private Branch Exchange
PC: Personal Computer
PCA: Peachtree Complete Accounting
PCA: Performance and Coverage Analyzer
PCDOS: Personal Computer Disk Operating System
PCI: Personal Computer Interconnect
PCM: Pulse Code Modulation
PCMCIA: Personal Computer Memory Card International Association
PCR: Peak Cell Rate
PCS: Personal Communication System
PCS: Proxy Cache Server
PD: Phase-Change: Dual
PDA: Personal Digital Assistant
PDC: Primary Domain Controller
PDN: Public Data Network
PDP: Program Data Processor
PDQ: Peachtree Data Query
PDS: Partitioned Dataset
PDS: Planetary Data System
PDS: Premise Distribution System

PDU: Protocol Data Unit
PEM: Product Error Message
PF: Program Function
PFA: Peachtree First Accounting
PGA: Pin-Grid Array
PGA: Professional Graphics Adapter
PGP: Pretty Good Privacy
PIC: Preferred InterExchange Carrier
PIC: Primary InterExchange Carrier
PIC: Programmable Interrupt Controller
PIF: Program Information File
PIG: Product Information Guide
PIM: Personal Information Manager
PIN: Personal Identification Number
PING: Packet Internet Groper
PIO: Programmed Input / Output
PIXEL: Picture Element
PLCC: Plastic Leaded-Chip Carrier
PLCP: Physical Layer Convergence Protocol
PLE: Public Local Exchange
PLL: Phase Locked Loop
PLP: Packet Level Procedure
PMS: Pantone Matching System
PNNI: Private Network-to-Network Interface
PnP: Plug and Play
POA: PowerOpen Association
POH: Power On Hours
POP: Point Of Presence
POP: Post Office Protocol
POS: Programmable Option Select
POST: Power On: Self Test
POTS: Plain Old Telephone Service
PPD: Post-Script Printer Description
PPI: Programmable Peripheral Interface
PPN: Project-Programmer Number
PPP: Point-To-Point Protocol
PPS: Pulses Per Second
PQFP: Plastic Quad Flat Pack
PRI: Primary Rate Interface
PRIMOS: Prime Operating System
PRML: Partial Response: Maximum Likelihood
PROFS: Professional Office System
PROM: Programmable Read-Only Memory
PRW: Peachtree Report Writer
PS/2: Personal System / 2
PS: Physical Sequential
PS: Programmed Symbols
PSC: Peachtree Support Center
PSDN: Packet Switched Data Network
PSTN: Public Switched Telephone Network

PU: Physical Unit
PUN: Physical Unit Number
PUP: PARC Universal Packet
PVC: Permanent Virtual Circuit
PVC: Permanent Virtual Connections
PWS: Peer Web Services

Q

QAM: Quadrature Amplitude Modulation
QBE: Query By Example
QBP: QuickBooks Pro
QDN: Query Direct Number
QEMM: Quarterdeck Extended Memory Manager
QIC: Quarter Inch Cartridge
QIC: Quarter Inch Committee
QIO: Queue Input / Output
QoS: Quality of Service
QPSK: Quadrature Phase Shift Keying
QTW: Quick-Time for Windows

R

RAD: Rapid Application Development
RAD: Remote Antenna Driver
RADAR: Radio Detection And Ranging
RAD/RASP: Remote Antenna Driver / Remote Antenna Signal Processor
RADSL: Rate Adaptive Digital Subscriber Line
RAID: Redundant Array of Inexpensive Drives
RAM: Random Access Memory
RAM: Remote Access Modem
RARP: Reverse Address Resolution Protocol
RAS: Remote Access Server
RASP: Remote Antenna Signal Processor
RBB: Residential Broadband
RBOC: Regional Bell Operating Companies
RCF: Remote Call Forwarding
RDF: Radio Direction Finding
RDM: Report Display Manager
RDN: Relative Distinguished Name
RDP: Reliable Datagram Protocol
RECS: Reseller Electronic Communication System
REMOB: Remote Observation
REXEC: Remote Executable
REXX: Restructured Extended Executor
RF: Radio Frequency
RFC: Request For Comments
RFI: Radio Frequency Interface

RFI: Request For Information
RFNM: Request For Next Message
RFS: Remote File Service
RFS: Remote File System
RGB: Red-Green-Blue
RIP: Routing Information Protocol
RISC: Reduced Instruction Set Computing
RJE: Remote Job Entry
RLE: Run Length Encoding
RLL: Run Length Limited
RLOGIN: Remote Login
RM: Resource Management
RMA: Return Merchandise Authorization
RMS: Record Management Services
RO: Receive Only
ROM: Read Only Memory
RPC: Remote Procedure Call
RPG: Role Playing Game
RPM: Revolutions Per Minute
RSA: Rivest, Shamir and Adleman (Encryption)
RSEEXEC: Resource Sharing Executive
RSH: Remote Shell
RSH: Restricted Shell
RSVP: Resource Reservation Protocol
RT: Real-Time
RTC: Real-Time Clock
RTCP: Real-Time Transport Control Protocol
RTF: Rich Text Format
RTL: Run-Time Library
RTP: Real-Time Transport Protocol
RTS: Request To Send
RTSP: Real-Time Streaming Protocol
RTTY: Radio Teletype
RU: Request Unit
RU: Response Unit
RVD: Remote Virtual Disk

S

SAA: Service Aspects and Applications
SAA: Systems Application Architecture
SAFE: Security And Freedom through Encryption
SAP: Service Advertising Protocol
SAR: Segmentation And Reassembly
SARC: Symantec Antivirus Research Center
SASI: Shugart Associates System Interface
SATAN: Security Administrator Tool for Analyzing Networks
SATNET: Satellite Network
SCC: Switching Control Center

SCCS: Switching Control Center System
 SCE: Service Creation Environment
 SCLM: Software Configuration and Library Manager
 SCO: Santa Cruz Operation
 SCP: Service Control Point
 SCPC: Single-Channel Per Carrier
 SCR: Sustained Cell Rate
 SCSI: Small Computer System Interface
 SDH: Synchronous Digital Hierarchy
 SDL: Shielded Data Link
 SDLC: Synchronous Data Link Control
 SDSC: San Diego Supercomputer Center
 SDSF: System (Spool) Display and Search Facility
 SEAL: Secure Electronic Authorization Laboratory
 SEAL: Simple and Efficient Adaption Layer
 SECAM: Sequential And Memory
 SEM: System Error Message
 SET: Secure Electronic Transactions
 SFA: Sales Force Automation
 SFT: System Fault Tolerance
 SGI: Silicon Graphics, Inc.
 SGML: Standardized General Markup Language
 S-HDSL: Single-Line: High-bit-rate Digital Subscriber Line
 SI: Source Index
 SIF: Standard Input Format
 SIG: Special Interest Group
 SIM: Subscriber Identity Module
 SIMM: Single In-Line Memory Module
 SIP: Single In-Line Package
 SIPP: Single In-Line Pin Package
 SKIP: Simple Key management for Internet Protocol
 SLED: Single Large Expensive Disk
 SLIP: Serial Line Internet Protocol
 SLMR: Silly Little Mail Reader
 SMB: Server Message Block
 SMCC: Sun Microsystems Computer Company
 SMDS: Switched Multi-Megabit Data Services
 SMI: System Management Interrupt
 SMM: System Management Mode
 SMP: Symmetrical Multi-Processing
 SMPTE: Society of Motion Picture and Television Engineers
 SMS: Service Management Systems
 SMS: Storage Management Subsystem
 SMTP: Simple Mail Transfer Protocol
 SNA: Systems Network Architecture
 SNADS: Systems Network Architecture Distribution Services
 SNAP: Sub-Network Access Protocol
 SNMP: Simple Network Management Protocol
 SOHO: Small Office / Home Office
 SO-J: Small Outline J-lead
 SONET: Synchronous Optical Network
 SP: Stack Pointer
 SPARC: Scalable Processor Architecture
 SPID: Service Profile Identification
 SPP: Standard Parallel Port
 SPS: Standby Power Supply
 SPX: Sequenced Packet Exchange
 SQL: Structured Query Language
 SRAM: Static Random Access Memory
 SS6: Signaling System 6
 SS7: Signaling System 7
 SSA: Serial Storage Architecture
 SSB: Single Side Band
 SSCOP: Service Specified Convergence Protocol
 SSD: Solid State Disk
 SSFD: Solid State Floppy Disk
 SSPA: Solid State Power Amplifier
 STA: Spanning Tree Algorithm
 STD: Standard
 STM: Synchronous Transfer Mode
 STP: Shielded Twisted Pair
 STP: Signal Transfer Protocol
 SUBLIB: Subroutine Library
 SUE: Stupid User Error
 SUN: Stanford University Networks
 SVC: Switched Virtual Circuit
 SVGA: Super Video Graphics Array
 SWIM: Super Woz Integrated machine
 SysOp: Systems Operator

T

T: Terabyte
 TA: Terminal Adapter
 TAE: Transportable Applications Environment
 TAG: Technical Advisory Group
 TAP: Technological Assistance Program
 TAPI: Telephony Applications Program Interface
 TAR: Tape Archive
 Tb: Terabit
 Tbps: Terabits Per Second
 TB: Terabyte
 TBD: To Be Determined
 TCAM: Telecommunications Access Method
 TCG: Teleport Communications Group
 TCL: TAE Command Language
 TCM: Trellis Coded Modulation

TCP: Tape Carrier Package
TCP: Transmission Control Protocol
TCP/IP: Transmission Control Protocol / Internet Protocol
TCQAM: Trellis Coded Quadrature Amplitude Modulation
TD: Table Data
TDM: Time-Division Multiplexing
TDMA: Time Division Multiple Access
TDR: Time Domain Reflectometry
TelOp: Teleconference Operator
TEMPEST: Transient Electromagnetic Emanations Standard
TFT: Thin Film Transistor
TFTP: Trivial File Transfer Protocol
TG: Technical Guide
TGID: Trunk Group Identification Number
TH: Table Header
THD: Total Harmonic Distortion
THENET: Texas Higher Education Network
TIA: The Internet Adapter
TIC: Token-Ring Interface Coupler
TIFF: Tagged Image File Format
TIGA: Texas Instruments Graphics Architecture
TII: Technology Independent Interface
TIP: Terminal IMP
TLA: Three Letter Acronym
TLB: Translation Lookaside Buffer
TLD: Top Level Domain
TMN: Time Management Networking
TOP: Technical & Office Protocol
TP: Twisted Pair
TP-4: Transport Protocol 4
TPA: Third Party Application
TPD: Third Party Developer
TPI: Tracks Per Inch
TPPD: Twisted Pair: Physical-Media Dependent
TR: Table Row
TRPC: Transaction Remote Procedure Call
TRS: Tandy Radio Shack
TSAPI: Telephony Services Applications Program Interface
TSO: Time Sharing Option
TSO/E: Time Sharing Option / Extensions
TSPS: Traffic Service Position System
TSR: Terminate: Stay Resident
TSU: Time Sharing User
TTF: True-Type Font
TTL: Time To Live
TTL: Transistor-to-Transistor Logic

TTS: Transaction Tracking System
TTT: Trunk-to-Trunk Transfer
TTY: Teletype
TV: Television
TVRO: Television: Receive Only
TWAIN: Technology Without An Interesting Name
TWTA: Traveling Wave Tube Amplifier

U

UAE: Unrecoverable Application Error
UART: Universal Asynchronous Receiver-Transmitter
UBR: Unspecified Bit Rate
UCM: Universal Cable Module
UDF: Universal Disk Format
UDP: User Datagram Protocol
UIC: User Identification Code
UL: Underwriters Laboratories
UL: Unordered List
UMA: Upper Memory Area
UMB: Upper Memory Block
UNC: Universal Naming Convention
UNI: User-To-Network Interface
UNIVAC: Universal Automatic Computer
UNMA: Unified Network Management Architecture
UPC: Universal Product Code
UPC: Usage Parameter Control
UPS: Uninterruptable Power Supply
URL: Uniform Resource Locator
USB: Universal Serial Bus
USENET: User Network
USL: Unix System Laboratory
USR: U.S. Robotics
UTP: Unshielded Twisted Pair
UUCP: Unix-to-Unix Copy Program

V

VAC: Volts: A/C Current
VAN: Value-Added Network
VAP: Value-Added Process
VAR: Value-Added Reseller
VAX: Virtual Address Extension
VB: Visual Basic
VBI: Vertical Blanking Interface
VBR: Variable Bit Rate
VC: Virtual Channel
VC: Virtual Circuit

VCC: Virtual Channel Connection
 VCI: Virtual Channel Identifier
 VCPI: Virtual Control Program Interface
 VCR: Video Cassette Recorder
 VDC: Volts: Direct Current
 VDSL: Very-high-bit-rate Digital Subscriber Line
 VDT: Video Dial Tone
 VDU: Video Display Unit
 VERONICA: Very Easy Rodent-Oriented
 Networkwide Index to Computerized Archives
 VESA: Video Electronics Standard Association
 VFAT: Virtual File Allocation Table
 VFC: Vector Function Chainer
 VFC: Video Feature Connector
 VFW: Video For Windows
 VGA: Video Graphics Array
 VICAR: Video Image Communication And Retrieval
 VIDS: VICAR Interactive Display Subsystem
 VINES: Virtual Networking Software
 VL: VESA Local
 VLA: Volume License Agreement
 VLAN: Virtual Local Area Network
 VLB: VESA Local Bus
 VLF: Very Low Frequency
 VLM: Virtual Loadable Module
 VLSI: Very Large Scale Integration
 VM: Virtual Machine
 VMB: Voice Mail Box
 VMC: VESA Media Channel
 VMM: Virtual Memory Manager
 VMS: Virtual Memory System
 VOIP: Voice Over IP
 VP: Virtual Path
 VPC: Virtual Path Connection
 VPI: Virtual Path Identifier
 VPN: Virtual Private Network
 VQ: Vector Quantification
 VR: Virtual Reality
 VRAM: Video Random Access Memory
 VRDI: Virtual Raster Display Interface
 VRML: Virtual Reality Modeling Language
 VSAM: Virtual Storage Access Method
 VSAT: Very Small Aperture Terminal
 VS/VD: Virtual Source / Virtual Destination
 VSWR: Voltage Standing Wave Ratio
 VT: Virtual Tributary
 VTAM: Virtual Telecommunications Access Method
 VTOA: Voice and Telephony Over ATM
 VxD: Virtual Device Driver

W

W3C: World Wide Web Consortium
 W4WG: Windows For Workgroups
 WAIS: Wide Area Information Search
 WAITS: Wide Area Information Transfer Systems
 WAN: Wide Area Network
 WAOSS: Wide Angle Optoelectronic Stereo Scanner
 WATS: Wide Area Telephone Service
 WATS: Website Activity Tracking Statistics
 WCS: Wireless Communication Service(s)
 WDM: Wave Division Multiplexing
 WELL: Whole Earth 'Lectronic Link
 WFW: Windows For Workgroups
 WinHEC: Windows Hardware Engineering Conference
 WINS: Windows Internet Name Service
 WINSOCK: Windows Socket
 WINTEL: Windows / Intel
 WMF: Windows MetaFile
 WORM: Write Once-Read Many
 WTOR: Write To Operator with Reply
 WWAN: Wireless Wide Area Network
 WWW: World Wide Web
 WYSIWYG: What You See Is What You Get

X

XGA: Extended Graphics Array
 XMM: Extended Memory Manager
 XMS: Extended Memory Specification
 XNS: Xerox Network Services
 XT: Extended

Y

YAHOO: Yet Another Hierarchical Official Oracle
 YMS: Young Micro Systems
 YP: Yellow Pages

Z

ZAI: Zero Administrative Initiative
 ZD: Ziff-Davis
 ZF: Zero Flag
 ZIF: Zero Insertion Force
 ZIP: Zig-Zag In-Line Package

Further reference: Bibliography & Internet Links

Selected Bibliography

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- Abstract:** chapter one of the earliest telemedicine experiments involved "long distance" telecommunication for neurological and other consultations from a university department of psychiatry to a state mental hospital; psychiatry continues to have a strong interest in the potential of telemedicine in general and telepsychiatry in particular for improving the delivery of a wide range of mental health services to isolated providers and populations; discusses the current situation and problems in mental health care delivery that prompt psychiatry's continued interest; examines the rationale for the use of telecommunications in psychiatry; describes some telepsychiatry projects; speculates about the future of telepsychiatry; an appendix discusses the specific role of telephone technology in the provision of psychiatric care (PsycINFO Database Record (c) 2000 APA, all rights reserved)
- "California Telemedicine Development Act of 1996" (SB 1665, 1995-1996 Session) http://www.leginfo.ca.gov/pub/95-96/bill/sen/sb_1651-1700/sb_1665_bill_960925_chaptered.pdf
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- Abstract:** A service was developed to treat acute psychiatric inpatients in their local hospitals using telemedicine. This reduced the need for these patients to be transferred to a psychiatric facility in Adelaide. An evaluation of outcomes showed that it was possible to manage acute psychiatric patients in this manner, reducing costs of transport. In addition, patients were treated close to their homes. Patients rated their satisfaction with the service and the use of telemedicine very highly.
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- Abstract:** OBJECTIVE: The authors reviewed the literature related to telepsychiatry-applications of videoconferencing technology for mental health care-which offers hope for an affordable means of solving long-standing workforce problems, particularly in geographical areas where specialist providers are not readily available. METHODS: To conduct a comprehensive review of the telepsychiatry literature, the authors searched the MEDLINE database (1970 to February 2000), using the keywords telepsychiatry, telemedicine, and videoconferencing. Studies were selected that included the use of videoconferencing technology for the provision of any form of mental health care services.

RESULTS AND CONCLUSIONS: Psychiatric interviews conducted by telepsychiatry appear to be generally reliable, and patients and clinicians generally report high levels of satisfaction with telepsychiatry. A significant limitation of the literature is the lack of empirical research on telepsychiatry, especially cost analyses and clinical outcome studies. The authors outline a research agenda addressing the procedural and methodological issues that should shape future research: study design, outcome measurement, consideration of patient characteristics, and program design.

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Abstract: Examined the use of digital technology to provide health care services to underserved communities. The APPAL-LINK telepsychiatry project is described beginning with its inception as a response to a critical shortage of psychiatric manpower in the public mental health system. The methods used in the project and a preliminary 6-mo assessment of chronically mentally ill patients, providers, and community satisfaction are described. The article concludes with a discussion of the obstacles to the wider implementation of telepsychiatry/telemedicine projects in rural areas. (PsycINFO Database Record (c) 2000 APA, all rights reserved).

Hilty, D. M., Servis, M. E., Nesbitt, T. S., & Hales, R. E. (1999). The use of telemedicine to provide consultation-liaison service to the primary care setting. *Psychiatric Annals*, 29(7), 421-427.

Abstract: Telemedicine is one strategy to improve the accessibility of mental health care in the primary care setting, including primary care clinics linked to academic medical centers. Successful applications of telemedicine will be facilitated by an awareness of consultation models, as well as of patient, physician, and system factors that affect psychiatric consultation-liaison services to the primary care setting. In preliminary studies, patient satisfaction with telepsychiatric care is comparable to patient satisfaction with in-person psychiatric care and other specialty care via telemedicine. ((c) 1999 APA/PsycINFO, all rights reserved).

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telemedicine, in which the psychiatrist reviewed the pediatrician's chart and the Subject and his mother described his symptoms. The psychiatrist corroborated the diagnosis, and discussed behavioral strategies, medication options, and the pros and cons of using a stimulant, which was his recommendation. All parties were satisfied with the consultation. The mother appreciated not having to miss a day of work, and the pediatrician appreciated the 2nd opinion. (PsycINFO Database Record (c) 2000 APA, all rights reserved)

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Abstract: OBJECTIVE: To examine the financial and organizational characteristics, demand for services, and satisfaction outcomes of a growing telemedicine program serving both urban or suburban and rural populations. DESIGN: Retrospective review of 1,000 consecutive telemedicine consultations in the University of California (UC) Davis Telemedicine Program.

SETTING: Telemedicine videoconferencing units, used to integrate care in the UC Davis Health System among the UC Davis Medical Center and several urban or suburban primary care clinics, rural hospitals, and clinic affiliates.

SUBJECTS: A total of 657 consecutive patients who consented to a telemedicine consultation. Main outcome measures Demographic information about the patient population, the rural and urban or suburban clinics, the types of specialty consultations, and telemedicine equipment used in the UC Davis Health System. Patient and physician satisfaction were measured on a 5-point Likert scale.

RESULTS: Patients and primary care physicians reported high levels of satisfaction. Rural clinics requested more and a greater variety of specialist consultations than urban or suburban clinics.

CONCLUSION: Although referring physicians and patients indicate a high level of satisfaction with telemedicine services and insurers are negotiating reimbursement policies, additional research must investigate the reasons why some payers, patients, and providers resist participation in these services.

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impersonal. Medicare enrollees and older survey respondents were less willing than younger respondents to endorse the use of telemedicine. (PsycINFO Database Record (c) 2000 APA, all rights reserved).

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Abstract: Comments on the article by A. Werner and L. Anderson (see record 1998-12581-001), disagreeing with their pessimism expressed on telepsychiatry. Szeftel lists several things that differentiate his telemedicine financially viable program from others. (PsycINFO Database Record (c) 2000 APA, all rights reserved).

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in Schizophrenia was assessed in 3 conditions: in person, by videoconferencing at low bandwidth, and by videoconferencing at high bandwidth. 45 patients and 2 interviewers rated aspects of the study interviews vs previous live psychiatric interviews. Global severity of schizophrenia and overall severity of positive symptoms were reliably assessed by videoconferencing. Higher bandwidth resulted in more reliable assessment of negative symptoms and was preferred over low bandwidth, although patients' and raters' acceptance of video was good in both conditions. Videoconsultation proved to be a reliable method of assessing schizophrenic patients with limited access to consultation. (PsycINFO Database Record (c) 2000 APA, all rights reserved).

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Useful Websites

Telemedicine Information Exchange (TIE)

The Telemedicine Information Exchange was created and is maintained by the Telemedicine Research Center with major support from the National Library of Medicine. The site contains information on TM programs, research, conferences, and funding.

<http://tie.telemed.org/>

California Telehealth and Telemedicine Center (CTTC)

The CTTC is affiliated with the California Healthcare Association's Rural Healthcare Center. CTTC provides funding (primarily from foundation grants) for pilot programs, infrastructure development, and training. CTTC provides the majority of funding for the U.C. Davis Telemedicine Learning Center. The CTTC web site provides a wealth of information on policy issues and funding.

<http://www.cttconline.org/>



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