

# Telepsychiatry Via Videoconferencing RESOURCE DOCUMENT

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The widening scope and role of telepsychiatry as a product of the Digital revolution, technologic advance and market forces, and the need for guidelines

## I. INTRODUCTION

Telemedicine is an enabling technology, originally conceived to enhance access to health care for the geographically hard-to-reach and the underserved. Widening experience with the technology, in combination with the Digital Revolution and market forces, demonstrates that the thrust of telemedicine is much broader and that it will become the way we are all served -whether underserved or not - with greater efficiency, continuity and timeliness.

Telemedicine -and, by extension, telepsychiatry -is becoming more widespread, less costly, and new applications are emerging. Over the last decade the technology has moved from expensive room-sized systems to the desktop personal computer, now extending to the Internet as well. In recent years telemedicine programs have increased in number as hospitals, academic departments, managed care organizations, home health care, schools, prisons and individual providers are migrating the technology to where the patient happens to be electronically. The widening scope of applications now includes hospice care, cancer support groups, substance abuse and depression screening, teleconsultation to maintain military troops at the front, remote consultation to obviate language or cultural barriers at the local site, and telepsychiatric care of deaf mentally ill via American sign language. Economies of scale can be achieved by providing telehealth care to capitated populations, such as in correctional and managed care, with the potential for cost containment and quality management as well as for increasing competition for patients nationally and internationally. Widening "internetization" of health care implies that the computerized patient record, patient access to vast amounts of health information, and provider access to patients anywhere on the World Wide Web will be commingled in ways that will likely modify the practice of psychiatry and the doctor-patient relation as we have known it. Psychiatry is now confronted with new opportunities and challenges; how will it respond in the "information era"?

Clinical guidelines are urgently needed to assist physicians in using the technology and to safeguard quality of care, confidentiality, ethical practices and risk management. At this time, when communications technology is changing rapidly and when data from ongoing demonstration projects to determine cost, quality and effectiveness are incomplete, it is too early to establish clear standards. Nevertheless American psychiatry must begin to address the issues. While we await more data (e.g., validation studies using telepsychiatry in differing diagnostic conditions, age groups and treatment situations), the following practices are proposed, mindful that this work in progress will be modified by the telepsychiatry of the future.

## II. DEFINITION

Telemedicine has been variously defined. To paraphrase the National Library of Medicine definition of telemedicine as it applies to psychiatry, telepsychiatry is the use of electronic communication and information technologies to provide or support clinical psychiatric care at a distance. This definition includes many communication modalities such as phone, Fax, email, the Internet, still imaging and live interactive 2-way audio-video communication.



The American Psychiatric Association is a national medical specialty society, founded in 1844, whose 37,000 physician members specialize in the diagnosis and treatment of mental and emotional illnesses and substance use disorders.

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Live interactive 2-way audio-video communication - videoconferencing -is the modality addressed in the following report. Videoconferencing has become synonymous with telemedicine involving patient care, distant education, and administration.

### III. APPLICATIONS

The technology supports clinical, educational, administrative and research applications. These will be discussed in turn.

#### A. CLINICAL APPLICATIONS USING VIDEOCONFERENCING

##### 1. Scope

Clinical applications encompass diagnostic, therapeutic, and forensic modalities across the age span. The technology appears applicable to a broad range of diagnoses, although suitability for a specific patient may depend on the needs of the patient at hand. Points of delivery may include hospitals and their emergency rooms, clinics, offices, homes, nursing homes, schools and prisons. Common applications include pre-hospitalization assessment and post-hospital follow-up care, medication management and consultation. Psychotherapy, including supportive, cognitive-behavioral, brief interpersonal, psychodynamically-oriented, psychoanalytic, group and family therapy, is feasible. Commitment hearings, evaluation of competence and forensic evaluations are feasible.

##### 2. Clinical Interviews

Telepsychiatry may be conducted between physicians in consultation, between a physician and another health care provider (e.g., a case manager, clinical nurse practitioner or physician assistant), or between mental health professionals and a patient. Other persons, such as another health care provider or family member, may also be present in a patient interview. The telepsychiatric interview may be an adjunct to periodic face-to-face contact or it may be the only contact; it may be supported by additional communications technologies such as Faxed consultation information or transmission of a computerized patient record. The consulting physician should request face-to-face consultation if the patient's condition does not lend itself to a telemedical consultation or if visual or sound quality is inadequate. Referring and consulting physicians should clarify who will be responsible for communicating results to the patient.

The consulting clinician's role must be clearly defined, and the patient needs to be clear as to who is responsible for his/her care. If the psychiatrist is to be the treating clinician for a patient at a distance it is helpful for the psychiatrist to have a working relationship with local mental health professionals and psychiatric services; in this way the patient then has available a full continuum of care which can be directed by the psychiatrist even though the patient may reside a substantial distance away. When a patient is in ongoing treatment via telepsychiatry, availability of the physician at times other than those scheduled should be addressed as in any practice setting. Physician availability should be clearly understood by all parties involved, and documented.

There is little information concerning the human factors in telepsychiatry: in what ways it may differ experientially from face-to-face contacts, how distance and telecommunications equipment influence interactional and dynamic issues such as transference and countertransference. Anecdotally it has been observed that, given good technical quality, people tend to accommodate to communicating via television equipment "as if I were in the same room as the doctor." Physicians report that consultation tends to be more focused and briefer than when conducted face-to-face, with less time devoted to the usual social rituals of opening and closing a face-to-face interview. There is an impression that the interposition of telemedical equipment places the patient and provider on a more equal footing, thereby altering the power differential that can arise in office interviews. It is likely that telecommunications technology in general, with its potential for greater patient empowerment, can influence the doctor-patient relationship (Alessi, Huang and Quinlan). This is an area vitally in need of more information.

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### **3. Emergency Evaluations**

While the presence of another person raises issues of confidentiality, certain psychiatric emergencies may require it if, for instance, a patient is suicidal, homicidal, dissociated, demented or acutely psychotic. In general such patients should not be managed via telepsychiatry without support staff or responsible family members present at the remote site unless there are no adequate alternatives and immediate intervention is deemed essential for patient safety. In such instances telepsychiatric assessment and intervention can be considered while other options are aggressively pursued. The possibility of equipment failure (see below) further dictates availability of responsible individuals at the remote site. A psychiatrist who provides direct patient care through telepsychiatry is responsible for considering options if acute hospitalization of the patient is indicated; at a minimum, resources available in the patient's immediate area should be identified and documented and the patient so informed.

### **4. Case Management**

In large distributed systems where multiprovider case management is needed, teleconferencing allows collaboration between all the involved clinical participants regardless of distance. Clinical treatment plans can be developed with input by experts not otherwise available. These plans can be recorded and shared with other clinicians who might care for the patient, or with the patient himself.

### **5. Forensic Psychiatry**

Telepsychiatry is appropriate for a variety of forensic uses, including patient assessment for involuntary commitment (Bear) and for conducting commitment hearings. Indeed, in the latter case it may enable family members to give testimony and emotional support who might be unable to attend otherwise. The physician should determine if a state's commitment laws will allow a telepsychiatric evaluation for the purpose of involuntary commitment. Similarly, if evaluating a patient who is physically located in another state and who is deemed to need involuntary commitment, the physician must determine that state's legal code and its policy for accepting out-of-state evaluations. The physician or psychologist doing the involuntary commitment evaluation may require a license in the state where the involuntary commitment will occur.

### **6. Procedures**

Telepsychiatry-assisted psychiatric procedures (hypnosis, electroconvulsive therapy, and amytal interviews) may be considered appropriate if there is direct physician-to-physician consultation, and if the physician attending the patient has appropriate credentialing, licensure, and malpractice coverage to perform the procedure in a given state. Physician-to-other health care provider consultation for the performance of these procedures is not appropriate.

### **7. Clinical Supervision**

Supervision of a psychiatry resident at a distant site can facilitate both training and patient care. It may be done either in real time with the supervisor present via videoconferencing, or, when appropriate, by store and forward technology. Licensure (particularly if services are across state lines), liability coverage and financial factors must be considered in determining the feasibility of such an application.

Physician extenders are helpful and appropriate in the use of telepsychiatry. Adequate supervision must be maintained, and credentialing, licensure and malpractice must be appropriate for the services rendered for the extenders as well as the physicians involved.

## **B. OTHER APPLICATIONS IN TELEPSYCHIATRY**

### **1. Distance Learning**

Teleconferencing technologies for education encompass a broad range of applications including but not limited to point to point applications, such as a physician to physician teaching session, or physician to patient session, or point-to-multipoint sessions such as would occur in a classroom setting where the teacher is at one site and the "pupils" at the others. The latter represents a more traditional model of broadcasting as we know it except that it can be interactive in real time, allowing the establishment of a real time dialogue and teaching experience unlike traditional broadcasting. Distance learning supports patient education about medications, off-site mentoring to teach

new techniques, and multi-site transmission of "Grand Rounds" conferences and Continuing Medical Education (CME). The debut of "cybercourses," already a reality on the World Wide Web, promise further alterations in education as we have known it.

## **2. Research**

Telepsychiatry appears promising as an effective and reliable means of gathering research data from certain clinical populations (Baer, Jones, Zarate). It enables multisite acquisition of information for large clinical databases (Stamm). Validation studies are needed, however, to address the use of telepsychiatry in specific populations designated by diagnosis, age, sex and other variables; it is too early to generalize findings from one diagnosis to another. Studies on cost, efficacy and patient satisfaction are just now appearing.

Patients who refuse participation in research studies via telepsychiatry should be made aware that refusal to do so will in no way jeopardize their right to appropriate care (although this may be the only vehicle for care in some instances).

## **3. Administration**

Interactive 2-way audio-visual communication between distant hospitals, clinics, schools, and justice centers is effective for administrative services and support. It may achieve cost savings in large systems. It is inappropriate for nonclinical administrators of health care systems to use the technology to make clinical decisions.

## **IV. PRIVACY, CONFIDENTIALITY AND INFORMED CONSENT**

Patients have a right to privacy and confidentiality of communication, and many states recognize a higher confidentiality standard for psychiatric records. Evaluation or treatment must be performed in an environment where there is a reasonable expectation of absence from intrusion by individuals not involved in the patient's direct care. However, strict privacy may be difficult to maintain in all circumstances (Gilbert). Hospital or clinic staff involved in the patient's care, family members and telemedical technical staff may at times be present in interviews. Patients should be informed about others present in the room at a distant site if such persons are off camera. On occasion telepsychiatric interviews will be audio-or video-taped, although this practice is often avoided to prevent lapses of confidentiality. Informed consent involving these issues should be obtained either verbally or in writing from the patient, next of kin or guardian. If a consent form is used, it should adequately reflect that it may not always be possible to assure privacy.

As with any procedure, the patient must be made aware of the potential risks and consequences as well as the likely benefits of telemedical consultation, and must be given the option of not participating. Patients should be informed that care will not be withheld if the telepsychiatric encounter is refused, although such care could depend on availability of alternative resources.

Assuring the integrity of the analog/digital stream may warrant the use of encryption and of confidentiality clauses in service agreements, supplemented by monitoring and quality control.

## **V. MEDICAL RECORDS**

Medical records of telepsychiatric interventions are to be maintained as with psychiatric interventions in general. If the quality of a transmission was poor, this should be documented in the patient record. Telepsychiatric care is subject to Quality Assurance monitoring as with other forms of medical care; procedures should be systematically monitored and evaluated as part of overall quality improvement of a facility.

The progress note for an interview by videoconference may include the following information:

1. The location of the clinician providing the service (this may be different from the clinician's office);
2. The location of the patient (town, facility where seen);
3. Type of equipment used and any malfunction that may affect clinical care;
4. Who was present during the office visit, and what their role was.

Who owns the medical record and where the original record is to be kept should be clear. If the record is kept at the site where the patient is being seen, arrangements should be made to have a copy of the record as well at the site of the treating clinician not only for routine care but in case of emergencies.

## **VI. TRAINING, LICENSURE AND LIABILITY**

Training for clinical applications should include familiarity with the equipment, its operation and limitations, and means of safeguarding confidentiality and security. Psychiatrists have an obligation to stay current with the technology and its uses through continuing education.

Physician licensing requirements vary from state to state. If a physician is providing consultation to another physician, supervising a health care professional, or providing direct patient care across state lines, the physician must establish with the state medical board in that patient's state whether a medical license from that state is required in order to provide telepsychiatric services. Interstate use of telepsychiatry may require multi-state licensing unless a national telemedical license is developed.

The physician should establish with his malpractice carrier whether coverage is provided for interstate use of telepsychiatry. As yet there are few guidelines for jurisdictional liabilities of physicians providing or receiving consultation in another state; nor has jurisdictional liability been established for a vendor of telemedical equipment which fails while in use across state lines. When equipment failure prevents adequate diagnosis or treatment, this should be documented in the patient record.

## **VII. EQUIPMENT FOR VIDEOCONFERENCING**

Selection should be based on ease of use, image and sound quality, cost, and suitability to given applications. For instance, simple cognitive screening is not likely to require the resolution needed to detect extrapyramidal signs; an interview with an active youngster is likely to require more sophisticated equipment than one with a demented geriatric patient who moves and speaks little.

The major components include monitors, cameras, CODEC, a desktop computer, microphones, speakers and other audiovisual interactive technologies such as videophones.

### **Monitor**

The monitor, or screen, shows the image of the people at the distant site(s); it may show a picture of the local site too. Room-based units are often 33" or larger. Desk top screens are usually 17" and are adequate for routine interviews where no more than 3 or 4 persons are at the distant site. Monitor size only allows for a bigger picture. Clarity of picture and motion handling are primarily a function of bandwidth.

### **Camera**

The camera captures images at the local site to send to other sites. There is a wide range of cameras available. There is little difference in the quality of the picture from camera to camera as the clarity of the image and the motion handling is primarily a function of the bandwidth and the algorithm used to compress the image prior to transmission to another site. Factors to weigh include lens quality, whether the lens is fixed or can "pan" about a room, and whether it can "zoom" in (for closeup) or out (for distant) views; a wide angle lens is useful if more than 1 or 2 people are to be viewed. It is helpful but not mandatory for the provider to have control over remote camera zoom and scan. A document camera for transmission of graphic material is helpful but not essential.

### **CODEC**

The CODEC (coder -decoder ) is the heart of the teleconferencing device. It transforms the analog signal (the picture) picked up by a video camera to a digital signal and compresses it for transmission to the distant site; there, another CODEC transforms the digital signal back to an analog one for viewing on the video monitor. The

compression algorithms used are responsible for the quality of the signal ultimately received. There are industry standards for video and sound compression and for inter-network compatibility with other teleconferencing systems.

### **Bandwidth**

Bandwidth refers to the amount of data that can be transmitted electronically. To put this in perspective, regular analog phone lines operate at 56-64 Kbps. This is enough bandwidth to handle voice communication, though if one is also transmitting video signals then more bandwidth is needed to avoid motion and image distortion. For this reason digital ISDN lines (128 Kbps) are commonly used. Only a few years ago it was thought that high bandwidths (T1-384 Kbs) were essential for adequate resolution to assure clinical accuracy. With subsequent technologic advances it now appears that a bandwidth of 384 -128 Kbs is acceptable in most situations. The lower bandwidth (128 Kbps) appears suitable for many clinical applications and for administering questionnaires and rating scales (Baer, Bear, Jones, Ermer, Zaylor, Zarate). The higher bandwidth (384 Kbps) enhances recognition of negative symptoms of schizophrenia (Zarate), recognition of manual tremors and pupillary reflexes, and it may enhance patient and provider satisfaction. However, experimentation with very low bandwidth transmissions over ordinary telephone lines suggests that, with improvements in compression algorithms, consultation with certain patient populations such as demented nursing home patients who move little may be feasible. Indeed, future technologic advances may render bandwidth a non-issue.

### **PC**

A desktop computer can be used in conjunction with hardware and software packages to provide interactive videoconferencing. Currently a microprocessor with a speed of at least 166 Mhz is recommended for optimal performance.

### **Videophones**

These are self-contained units which run off analog telephone lines and allow interactive videoconferencing at a low bandwidth.

### **Other equipment**

High quality microphones and speakers assure aural communication.

The capacity to store audio and video information, such as VHS cassettes, optical or hard discs, may be useful for medicolegal, teaching or research purposes, though for most clinical situations it is unnecessary and only increases the burden of securing information.

### **When Equipment Fails**

Procedures for dealing with equipment failure should be anticipated. If the physician initiates the conference, s/he is responsible for attempting to reestablish an adequate 2-way audio-video link, or else for phoning the patient. In emergency situations it is essential that there be adequate personnel at the remote site in the event of equipment failure.

## **VIII. REIMBURSEMENT**

Reimbursement for telepsychiatry services should follow customary charges for the delivery of the appropriate CPT code(s). A structure for reimbursement of collateral charges, e.g. technician and line time, should be identified. At present, reimbursement is obtained either from individual contracts, from managed care, from third party payors in a few states, and from Medicaid and Medicare in limited situations; reimbursement possibilities will likely broaden in the future.

## **IX. SUMMARY**

Not only is telepsychiatry a potentially appropriate technology for the delivery of clinical psychiatric services, distant learning, administration and research; it is likely to change psychiatry as it has been practiced. Much

information is still needed, particularly in psychiatry where questions for the future include: how is telepsychiatric health care delivery the same as or different from that delivered face-to-face; are there certain conditions or treatments best handled telemedically; does the technology alter the patient-provider relationship? However, given the many clinical, ethical, legal and liability issues in its use, minimum standards for care are critical. To quote Hoover, this is not an occasion for panic but a time for speed.

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## GLOSSARY

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### **Analog signal**

A continuous electrical signal in the form of waves that vary as the source of the information varies (e.g., as the contrast in an image varies from light to dark).

### **Asynchronous communication**

Two-way communication in which there can be a time delay between when a message is sent and when it is received.

### **Bandwidth**

A measure of the information carrying capacity of a communications channel; a practical limit to the size, cost, and capability of a telemedicine service, It is usually described in Bps.

### **Baud**

A unit of digital transmission signaling speed of information transmission; the highest number of single information elements (bits) transferred between two devices (such as modems or fax machines) in one second.

### **Bit**

Binary digit, the smallest possible unit of information making up a character or a word in digital code processed by computers.

### **Bps**

The number of binary digits transmitted per second in a data communication system.

### **Codec**

A "code/decode" electrical device that converts an analog electrical signal into a digital form for transmission purposes and then converts it back at the other end.

### **Compatibility**

The ability for computer programs and computer readable data to be transferred from one hardware system to another without losses, changes, or extra programming.

### **Compressed video**

Video images that have been processed to reduce the amount of bandwidth needed to capture the necessary information so that the information can be sent over a telephone network.

### **Computer conferencing**

Group communications through computers, or the use of shared computer files, remote terminal equipment, and telecommunications channels for two-way, real-time communication.

### **Data compression**

Processing data to reduce storage and bandwidth requirements. Some compression methods result in the loss of some information, which may or may not be clinically important,

### **Dedicated line**

Permanent connection between two telephones or PBXs (see private branch exchange, below); the signal does not need to be switched.

### **Digital**

Discrete signals such as those represented by bits as opposed to continuously variable analog signals. Digital technology allows communications signals to be compressed for more efficient transmission.

### **Digitizing**

Conversion of analog into digital information.

### **DSI**

A digital carrier capable of transmitting 1.544 Mbps of electronic information. Also known as T1; the general term for a digital carrier available for high-value voice, data, or compressed video traffic.

**Encryption**

The rearrangement of the 'bit' stream of a previously digitally encoded signal in a systematic fashion to make it unrecognizable until restored by the necessary authorization key. This technique is used for securing information transmitted over a communication channel with the intent of excluding all other than the authorized receivers from interpreting the message.

**Firewall**

Computer hardware and software that block unauthorized communications between an institution's computer network and external networks.

**Hardware**

Physical equipment used in data processing, as opposed to computer programs and associated documentation.

**Integrated Services Digital Network (ISDN)**

A digital telecommunications technology that allows for the integrated transmission of voice, data, and video; a protocol for high-speed digital transmission.

**Leased lines (Dedicated lines)**

Lines rented from a telephone company for the exclusive use of a customer.

**Local Access Transport Area (LATA)**

Local telephone service areas created by the divestiture of the Regional Bell Operating Companies formerly associated with AT&T.

**Modem**

A modulator/demodulator, this device converts digital information into analog form for transmission over a telecommunications channel and reconverts it to digital form at the point of reception.

**Peripheral equipment**

In a data processing unit, that may provide the system with outside channel communication or additional facilities.

**Store-and-forward**

Transmission of static images or audio-video clips to a remote data storage device, from which they can be retrieved by a medical practitioner for review and consultation at any time, obviating the need for the simultaneous availability of the consulting parties and reducing transmission costs due to low bandwidth requirements.

**Telemedicine**

The use of audio, video, and other telecommunications and electronic information processing technologies to provide health services or assist health care personnel at distant sites.

**Transmission speed**

The speed at which information passes over the line; defined in either bits per second (bps) or baud. Plain old telephone service (POTS) runs at 56Kbps. An ISDN line can run at between 128-384Kbps,

**Video conferencing**

Real-time, usually two-way transmission of digitized video images between two or more locations.