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Telepsychiatry in the Emergency Department:
Overview and Case Studies

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by

Mike Williams, M.P.A.
Michael Pfeffer, M.P.H.
Juliana Boyle, M.B.A.
THE ABARIS GROUP

Donald M. Hilty, M.D.
UNIVERSITY OF CALIFORNIA, DAVIS

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About the Authors

Mike Williams, M.P.A., Michael Pfeffer, M.P.H., and Juliana Boyle, M.B.A., are all with **The Abaris Group,** a health care consulting firm specializing in community health assessments, hospital and emergency department process improvement, trauma services, and emergency medical services. Donald M. Hilty, M.D., is a professor of clinical psychiatry at the Department of Psychiatry and Behavioral Sciences, University of California, Davis Health System; he helped launch the UC Davis Telehealth Program.

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Contents

I. Executive Summary

ED telepsychiatry programs appear to provide quick and specialized care to patients with the risk of psychiatric emergencies and have the potential to assist in reducing crowding in EDs and lowering costs.

Telemedicine and telepsychiatry have existed in some form since the 1950s, though telepsychiatry was introduced into emergency departments (EDs) fairly recently. This report examines the extent to which these services have been offered and identifies effective practices for sustainable ED telepsychiatry programs.

A comprehensive literature review and contact with 43 telemedicine programs identified only three published articles on ED telepsychiatry and eight ED telepsychiatry programs. Representatives from seven of these programs participated in a telephone survey that covered program structure, patient characteristics, operational and financial sustainability, and patient/provider feedback.

The survey showed that only two of these programs—both of them for-profit—were financially supported internally, and one program was partially supported internally and thus potentially financially sustainable. The remainder relied significantly on grant funds.

Most of the programs do not gather data regarding patient outcomes, hospital admissions, length of stay, or hospital throughput. However, the survey respondents stated that they felt improvements had been made in all of these areas after program implementation.

The programs varied in operational structure and technological advancement. All reported positive patient and provider satisfaction with an average of four on a scale of 1 to 5 using this study's nominal ranking scale—1 being extremely dissatisfied and 5 being extremely satisfied. However, four had administered their own formal satisfaction surveys.

Despite the small number of participants and lack of data, the study's findings imply that the programs provide a much-needed service that is received positively by patients and providers. ED telepsychiatry programs appear to provide quick and specialized care to patients with the risk of psychiatric emergencies and have the potential to assist in reducing crowding in EDs and lowering costs. However, because so few ED telepsychiatry programs exist and since those in operation have internal financial support issues and a shortage of data, it is difficult to determine whether their full potential is being realized.

II Introduction

THE PRACTICE OF TELEHEALTH AND telemedicine has been steadily growing in rural and underserved areas, and occasionally in urban communities. In addition to increasing access to care, telehealth and telemedicine reduce costs, hospital admissions, and ED wait times and crowding.[1–3]

The term telehealth is distinguished from telemedicine in that it encompasses nonclinical health services, such as education or data management related to clinical care.

One of the first recorded uses of telemedicine was the provision of psychiatric services in what is now referred to as telepsychiatry. Although telepsychiatry in clinics and correctional facilities is common, its use in EDs is far less so.[4,5]

This report examines the extent and use of telemedicine for mental health-related assessments in the ED. It also looks at the potential value that telepsychiatry could bring to efficient operation of the ED, to improved patient care, and to the effective utilization of staff.

Study Methods

For this study, searches were conducted online through the American Telemedicine Association (ATA), the Telemedicine Information Exchange, the Center for Telehealth and E-Health Law (CTEL), and Google searches. In addition, the ATA, CTEL, and seven regional telehealth resource centers were contacted via phone or email.

Telemedicine programs that potentially offered ED telepsychiatry services were identified. These programs were asked whether they offered ED telepsychiatry services and whether they had contact information for other programs that might offer ED telepsychiatry services. Altogether, 43 telemedicine programs were contacted, of which eight programs were identified as offering ED telepsychiatry services.

Table 1. ED Telepsychiatry Programs

Carolinas HealthCare System
The DMH Telepsychiatry Consultation Program
InSight Telepsychiatry
JSA Health
Maine Telemedicine Services*
Midwest Telehealth Network
University of California, Davis
University of Mississippi TelEmergency

*Program did not participate in the survey.

Each of the eight programs was asked to participate in a telephone survey, and seven agreed to take part. One of these, JSA Health, provides emergency telepsychiatry for freestanding clinics and a psychiatric hospital, rather than in a hospital ED. Two individuals from Carolinas HealthCare agreed to participate in the survey. One participant was from the spoke site (the medical hospital) and the other was from the hub site (the behavioral hospital). The telephone survey lasted for approximately one hour and consisted of eight sections: demographics, telemedicine, general ED, ED telepsychiatry, ED telepsychiatry patient characteristics, financial aspects and sustainability, patient and provider feedback, and useful insights.

III. Results

Five of the programs have provided both telemedicine and ED telepsychiatric services for at least ten years. The programs vary in the number of locations that they serve and the services offered. For example, the Carolinas HealthCare program offers three services to two EDs and one clinic, whereas the Midwest Telehealth Network offers 11 services to 21 hospitals. They also differ in the number of hub and spoke sites and the manner in which the network is connected. However, they are similar in that ED telepsychiatry services at all the spoke facilities occur in the ED (except at JSA Health).

Only one program was involved in a larger telemedicine network and only two were not affiliated with a university or larger health system. One program was developed to place telepsychiatry in every hospital operating an ED throughout the state, and three programs were specifically designed to assist rural communities and critical access hospitals.

The motivations behind the initiation of each of the programs ranged from "saw that there was a need," to a sentinel event having occurred, to the need to address state regulatory constraints. Five of the programs performed initial studies and/or a needs assessment prior to implementing the program. The remaining programs stated that their organization simply recognized a need for ED telepsychiatry services and implemented the program without formal assessment. One program studied how many mental health patients were waiting for treatment or access to a mental health professional in all EDs across the state. Three programs reported using other telemedicine programs as models. Four of the programs reported having a business plan and the goal of providing 24/7 ED psychiatric care.

There was great variation in the number of ED telepsychiatry encounters in the programs. The volume reported ranged from only six visits per year for the Carolinas program to almost 6,700 visits per year for InSight Telepsychiatry. The Carolinas survey respondents noted that much of their low volume is due to poor acceptance of the telepsychiatry program and does not necessarily correlate to a low demand for such services.

The ED telepsychiatry encounters typically occur as soon as the request for services has been made, though in some programs the wait can be up to an hour. The ED telepsychiatry visit itself is typically only five to ten minutes long.

Survey respondents reported that the most common diagnoses for ED telepsychiatry were:

- Major depression;
- Bipolar disorder; and
- Schizophrenia or schizoaffective.

When asked about the disposition of the patients after the telepsychiatry visit, all programs stated that the patient is discharged home with a scheduled future appointment, admitted, or transferred to a specialty facility. In most cases, the patient is not transferred. Only the University of Mississippi was able to provide estimates of patient disposition: About 65 percent were discharged, 16 percent were admitted, and 19 percent were transferred.

When asked about their procedure for involuntary admission to a secured facility, four respondents stated that the spoke hospitals do

not have "involuntary hold" authority. This is usually because involuntary admission requires the authorization of a psychiatrist or other mental health professional, which most spoke hospitals do not have onsite. In these cases, the psychiatrist in the hub location would fill out the appropriate forms, then sign, fax, or mail them to the spoke facility. The University of Mississippi program said that two of their providers, one of which is a physician, have the authority to put a patient on a 24-hour hold. All respondents stated that involuntary admission was a rare occurrence.

Financial Aspects

Five out of the seven programs receive grant funds, four of which (the DMH Telepsychiatry Consultation Program, Midwest Telehealth, South Carolina, and UC Davis) rely heavily on the grants. The fifth program, the University of Mississippi, only uses the grants for new equipment purchases. Grant sources have included: United States Department of Agriculture, appropriations grants, Nebraska Public Service, various foundations, and the Rural Utility Service. The programs that do not use grants receive their funding from their parent organization.

Despite some of the programs' dependence on grants, five of them stated that the ED telepsychiatry program was sustainable. One program that said they were not sustainable cited their reliance on grant funds as the primary cause. Another said that they needed three more years of grant funding and then plan to move to private pay and Medicaid as their funding base. It was pointed out that a key to sustainability would be a state regulation requiring that telemedicine be covered by insurance providers.

Most programs were only able to respond anecdotally regarding their initial and ongoing costs in providing ED telepsychiatry services. Since most of the organizations began ten years ago, the initial costs that were reported were much higher than they are currently. Most of the programs reported between $200,000 and $400,000 in initial costs to set up the telemedicine service. One program responded that in 1994 it cost $65,000 to set up a new site with telemedicine, but today the cost has dropped to $7,000. Another said that their start-up grant for two years was $3.4 million.

Purchase and installation of the technological infrastructure and equipment ten years ago may have cost $15,000, whereas today it reportedly costs $10,000 or less. The same applies to the transmission lines that are used for the telecommunications, which currently cost approximately $1,000 per month for a T1 line, which can carry about 192,000 bytes per second—or about 60 times more data than a normal residential modem.

Technology/Infrastructure

All but one of the programs primarily use video-conferencing above other telemedicine mediums. UC Davis reported primarily using telephone and email communications, and, if necessary, videoconferencing. Programs surveyed installed separate T1 lines designated for telemedicine in both hub and spoke sites. Almost all of the sites reported using either Polycom®, Lifesize®, or Tandberg brand telemedicine equipment, ranging from basic Webcams and monitors, to mobile units, to built-in systems. Each program also varied in the accessibility of the equipment. In some programs, the psychiatrists have the videoconferencing equipment at home as well as at a designated hub site, whereas others only have the equipment at one hub site. In addition, the spoke sites differ in their use of mobile vs. stationary equipment.

The University of Mississippi's TelEmergency program is very technologically advanced. With this program, each spoke site has built-in

videoconferencing in every ED patient room along with two buttons on the wall (for "regular" or "stat" visits) with which to call the hub site. The hub site, in turn, has one videoconference room with multiple monitors and Webcams. This room is staffed 24/7 by two ED physicians who can view the ED rooms at each spoke site and engage in emergency telemedicine and telepsychiatry.

Programs' Perceived Success

The telemedicine programs were asked to evaluate the success of their program overall and as it related to patient care and hospital efficiency. Using the study's nominal ranking, two programs felt that they were "somewhat successful," three felt they were "successful," and two claimed that they were "very successful." All of the respondents stated that their progress regarding the medical benefits for mental health patients and access for these patients were either "successful" or "very successful." Three of the respondents were unaware of the impact of their program on the reduction of admissions, length of stay, or throughput times. Those that had knowledge of those items claimed that their programs were either "successful" or "very successful" in accomplishing those goals. In addition, most felt that they had been successful regarding financial or other benefits.

Satisfaction Surveys

Six of the programs had administered some form of satisfaction survey. However, one program did not yet have the results and another only had network-wide results that were not specific to ED telepsychiatry. Some surveys were only administered to patients, while others were given to participating staff as well.

As part of The Abaris Group's telephone survey, respondents were asked to comment on patient and provider satisfaction. If they had administered their own survey, their response was based on those results; otherwise they commented based on their perception of the level of satisfaction. The program's average scores are shown in Table 2. On average, all of the programs rated their patient and provider satisfaction as four out of five.

Challenges

When asked if there were any difficulties with buy-in at the start of the telemedicine program, each program reported issues with various stakeholder groups. One program mentioned that buy-in difficulties originated with nurses and physicians at the spoke site, while another program reported that their own psychiatrists were hesitant to use the service. The UC Davis program stated that there was no issue with buy-in from stakeholders and that there was definite interest in the program. However, some of the spoke sites felt that they had neither the time nor the energy to devote to telemedicine efforts.

Table 2. ED Telepsychiatry Satisfaction Survey Averages

QUESTION	VALUE*
Patient satisfaction	4.4
ED physician satisfaction	4.4
Primary care physician satisfaction	4.1
Psychiatrist satisfaction	4.3
Medical nurse satisfaction	4.4
Medical technician satisfaction	4.4
Psychiatric nurse satisfaction	4.6
Psychiatric technician satisfaction	4.2
Telemedicine support staff satisfaction	4.6

*Survey respondents were asked to rate these from 1 to 5 (5 = extremely satisfied, 4 = very satisfied, 3 = satisfied, 2 = somewhat dissatisfied, and 1 = very dissatisfied).

Source: The Abaris Group Telephone Survey.

Some of the roadblocks identified:

- Start-up costs;

- Physician buy-in;
- Concerns regarding quality of care in telemedicine;
- Coordinating a vast network; and
- Purchasing equipment

Almost all of the programs reported issues with licensing and credentialing. For programs in which the psychiatrist is not part of the hospital system, they must become credentialed at each facility at which they are providing ED telepsychiatry services. Physicians providing services across state lines must be licensed in both states, which costs time and money.

The majority of programs responded that the facilities in which they provide telepsychiatry services are Joint Commission accredited. One respondent (JSA Health) said that the facilities had alternate accreditation using the "Behavioral Health Center Accreditation and Commission on Accreditation of Rehabilitation Facilities Certification Process." Another program stated that most of the facilities in their network are not accredited.

Finally, when the respondents were asked what the most significant challenges/complaints of the program have been, one commented on technology issues, another mentioned complaints of high charges, and one commented that the service was not being used enough. The technology issues mostly referred to operator error and physician comfort levels with using the technology, both of which have improved with training and experience.

Historical Program Wisdom

Each of the programs were asked what key points regarding ED telepsychiatry that they would communicate to others attempting to initiate a program. The most common response was that clinician support was the most important factor in a successful program. Respondents stated that the psychiatrists must be comfortable with the remote visits and have an understanding of any inherent limitations. In addition, the ED physicians at the remote locations must be comfortable with the technology and know when to use the service.

Another key point was that the technology in place must be as user-friendly and fool-proof as possible and that there are regular training sessions for employees. This will increase user comfort with the system and also reduce delays in patient care due to technology issues. In addition, a fully automated electronic medical record with electronic signatures can help provide consistent care for patients.

One participant said that it was crucial to involve one's state Medicaid agency early in the process as it's very important to have approved Medicaid billable codes. They also said that involving private insurance providers in the design of the initial program is important.

Lastly, respondents stated that there needed to be a specific set of protocols regarding when and how to use the ED telepsychiatry service.

Additional Comments

Two of the programs reported increased psychiatric knowledge among the ED physicians after implementation of the ED telepsychiatry program. After continual contact with the psychiatrists, the ED physicians emerged with a greater understanding of mental health issues and in turn actually reduced their use of the ED telepsychiatry services. The respondents from both of the programs viewed this as progress and a success. One of the program respondents stated that increased knowledge of mental health issues by rural providers was one of their program goals.

IV. Discussion

Scarcity of ED Telepsychiatry Service

Although telepsychiatry is one of the most common uses of telemedicine, the use of ED telepsychiatry is rare. Most of these programs do not solely provide mental health services, but also an array of other services.

This could be due in part to the rarity of the service; few of the telemedicine programs and networks that were contacted were aware of other ED telepsychiatry programs. Most of the surveyed ED telepsychiatry programs were also equally unaware of other programs that provided similar services.

Internal Financial Support

Interviews with two ED telepsychiatry experts, Dr. Don Hilty and Dr. Richard Dorsey, yielded similar commentary regarding the sustainability and feasibility of ED telepsychiatry programs. Both of them stated that none of the ED telepsychiatry programs that they knew of were financially sustainable and that when the grant money for a program disappears, the program usually dissolves.

There is historical data to back up their assertions, since many of the early telemedicine programs from the 1950s to 1970s were closed by the 1980s.[6,7] One recent example in California is that of the Riverside County ED telepsychiatry program, which Dr. Dorsey managed. The program provided services to two rural hospitals from 1996 to 2006. When the grant money was exhausted in 2006, the program did not have the revenue to continue the service.

Nevertheless, half of the survey respondents claimed to be self-sustainable. Two were for-profit organizations and one still receives grant money for equipment acquisitions and upgrades. The not-for-profit, partially-supported program at the University of Mississippi charges each facility a per-hour fee for their services. This has reportedly generated enough revenue so that the program has been financially independent from an operational standpoint, but not enough to cover new equipment costs.

Data Issues

Most programs do not gather data regarding patient volumes, admissions, and transfers, and most did not seek such data from their cooperating facilities. In addition, there appeared to be limited knowledge of the financial aspects for some of the programs, including start-up and ongoing costs. Some respondents provided estimates of these financial items, but did not appear to have concrete data. The most commonly reported financial item was the technological cost, which has reportedly been greatly reduced over the past decade. During the interviews, a few respondents commented on the questions pertaining to data points and evaluations by saying, "no, we have not done that, but that is a good idea."

V. Background

EDs across the country have been struggling over the past decade to keep up with steadily increasing use. In 2006, EDs in the U.S. provided care for an estimated 119.2 million patients, a 3.4 percent increase from the previous year.[8] ED use has continued to grow by 2.3 percent annually over the past decade. Along with the steady increase in ED use, there has been a corresponding decrease in hospitals and their EDs, and an increasing use of ambulance diversion by hospitals.[9]

Table 3. U.S. ED Visits and ED Psychiatric Visits (in millions), **1996–2006**

	ED VISITS		ED PSYCH VISITS		
	NUMBER	CHANGE (previous year)	NUMBER	CHANGE (previous year)	SHARE OF TOTAL
1996	93.1	–1.7%			
1997	92.8	–0.3%			
1998	94.8	2.2%	3.1		3.3%
1999	99.5	5.0%	2.9	–6.5%	2.9%
2000	103.1	3.6%	3.1	6.9%	3.0%
2001	106.0	2.8%	3.6	16.1%	3.4%
2002	110.2	4.0%	3.5	–2.8%	3.2%
2003	113.0	2.5%	3.7	5.7%	3.3%
2004	110.2	–2.5%	3.7	0.0%	3.4%
2005	115.3	4.6%	4.0	8.1%	3.5%
2006	119.2	3.4%	4.3	7.5%	3.6%
ANNUAL GROWTH RATE		2.3%		3.7%	

Source: Centers for Disease Control and Prevention, National Hospital Ambulatory Medical Care Surveys, 1996–2006.

Corresponding to the increase in ED visits has been an overall increase in ED patients with mental health complaints. The average annual growth rate of ED mental health visits over the past nine years was 3.7 percent. In 2006, U.S. hospitals reported approximately 3.6 percent (4,279,000) of ED visits were from patients with a mental health diagnosis.[10]

California ED Visits

In California, from 2001 to 2007, ED visits oscillated between 25.3 and 29 per 100 population for an annualized growth rate of 0.2 percent.[11,12]

Table 4. California ED Utilization Rates, 2001–2007

	TOTAL	ED VISITS		
	POPULATION (in millions)	NUMBER (in millions)	PER 100 POPULATION	CHANGE (previous year)
2001	34.4	10.0	29.0	
2002	35.1	9.2	26.1	–10.0%
2003	35.7	9.8	27.4	5.1%
2004	36.2	9.2	25.3	–7.7%
2005	36.7	9.9	26.9	6.3%
2006	37.1	10.1	27.2	1.0%
2007	37.6	10.1	27.0	–0.7%
ANNUALIZED GROWTH RATE				0.2%

Source: California Department of Finance; California Office of Statewide Health Planning and Development.

By 2007, there were 10.1 million ED visits, 3.2 percent of which were mental health-related.[13] (Only years 2005 through 2007 were available for statewide ED mental health visits data.)

Table 5. California ED Visits and ED Psychiatric* Visits, 2005–2007

	ED VISITS	ED PSYCH VISITS	
	(in millions)	NUMBER	SHARE OF TOTAL
2005	9.9	314,035	3.2%
2006	10.1	313,420	3.1%
2007	10.1	324,541	3.2%

*Includes mental disorders, ICD-9-CM codes 290-319

Source: California Department of Finance; California Office of Statewide Health Planning and Development, 2005–2007.

According to the Office of Statewide Health Planning and Development (OSHPD), of the 324,541 patients that visited EDs in California for whom a mental health issue was their primary complaint, 80.5 percent were discharged home. An additional 9 percent were transferred to a psychiatric hospital or admitted to a psychiatric unit. The remaining 10.5 percent were discharged or transferred to alternate facilities. The most frequently reported diagnosis for these patients, at 18.3 percent, was "anxiety state, not otherwise specified."

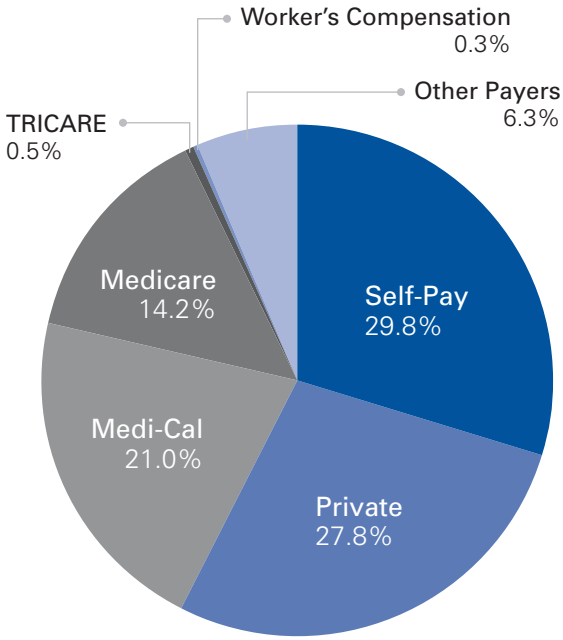
Table 6. California Statewide and Emergency Department Summary, 2007

CHARACTERISTIC	VALUE
California Population	37,559,440
ED Volume	10,132,293
ED Psychiatric Patient Volume	324,541
ED Psychiatric Visits, Share of Total	3.2%
ED Psychiatric Patients Discharged Home	80.5%
Top ED Psychiatric Diagnosis: Anxiety State, NOS (300.00)	18.3%
Primary Payer Source: Self-Pay	29.8%

Source: U.S. Census Bureau, OSHPD Emergency Department Public Data Set, 2007.

The primary payer source for mental health-related visits to the ED in 2007 was self-paying patients (29.8 percent), followed by private payers (27.8 percent), Medi-Cal (21 percent) and Medicare (14.2 percent).[14]

Figure 1. California ED Psychiatric Visits by Payer, 2007



Notes: Medicare includes: Part A, Part B, and HMO Medicare Risk. Private includes: Blue Cross/Blue Shield, Automobile Medical, Commercial Insurance, Disability, Exclusive Provider Organization, Health Maintenance Organization, Point of Service, and Preferred Provider Organization. Other includes: Veterans Affairs Plan, Title V, Invalid Code, Blank/Not Reported, Other Federal, and Other Non-Federal.

Source: OSHPD Emergency Department Public Data Set, 2007.

In 2007, the majority of the patients with mental health complaints visiting EDs were male (52.3 percent), between 40 and 50 years old (22.4 percent), and White (51.5 percent). There were between 28,655 and 36,813 visits in each age group between 15 and 54, with the highest-volume age group being 45 to 49 with 36,813 visits. The second-highest volume of patients with mental health complaints to the ED were Hispanics at 26.7 percent.[15]

There are 21 counties in California that have been designated by the Health Resource Services Administration as Mental Health Shortage Areas (MHSAs). Each of these counties is also designated by the state as a "frontier" or "non-metropolitan" region.[16] In 2007, 19,326 visits or 6.4 percent of the ED mental health-related visits were from MHSAs. When comparing the percent of ED mental health encounters with the county population, seven of the ten highest rates were in MHSAs.[17]

Impact of Mental Health Patients in the ED

While the ratio of mental health-related ED visits to total ED visits in the U.S. has remained relatively unchanged, the overall increase in visits will continue to add strain to EDs. In addition, many hospitals have reported that the presentation of mental health-related patients in the ED disproportionately affects the operation of the ED for other patients in terms of space, staffing, and resources. Safety issues arise for these patients, other patients, and staff. To further complicate matters, many EDs are not properly equipped to handle most mental health emergency patients, which has led to improper diagnoses, prolonged ED stays, and misuse of physical restraints.[18,19]

In hospitals across the nation, ED patients are routinely boarded for hours or even days, while awaiting admission to an inpatient bed.[20] Boarding is the practice of holding patients in beds (in rooms or hallways) until an inpatient bed becomes available. In recent years, the boarding of mental health patients in the ED has become an important issue for hospitals. A 2008 survey by the American College of Emergency Surgeons (ACEP) found that 79 percent of mental health patients in an ED are boarded. In addition, over 60 percent of the mental health patients that require admission will stay in the ED at least four hours after the decision to admit has been made. An estimated 33 percent of those patients are boarded for longer than eight hours and 6 percent are boarded for longer than 24 hours.[21]

A 2006 study of California ED management of suicidal patients revealed that they accounted for only 1.7 percent of ED visits. However, 50 percent of the evaluations were not performed by mental health professionals (MHPs) and 23 percent of EDs reported sending patients with suicidal ideation home without an evaluation by an MHP. In addition, when these patients required transfer, the estimated mean wait time for transferring was seven hours.[22]

The boarding of ED patients is a result of a reduction in available ED and inpatient beds, which can cause longer ED throughput times and in some cases hospital ambulance diversion. In addition, the patients can receive delayed medical treatment, increasing the potential for poor outcomes.

The boarding of patients has been widely reported and is becoming more prominent in hospitals struggling to manage increasing patient volumes while simultaneously providing quality care. Some advocates of telemedicine have stated that the use of remote technology will provide higher quality care through better access to specialists and also assist in reducing the number of boarders and thus ease overcrowding.[23]

VI. Telemedicine Overview

Telemedicine refers to the use of telecommunications to provide medical support and services. The services can be provided through a range of mediums, including videoconferences, store-and-forward technology, email, and telephone communication. (Store-and-forward technology refers to the transfer of digital images stored at one location to another. This is typically used for non-emergent situations in teleradiology, teledermatology, teleretinopathy, and telepathology.) Phone and email communication typically occurs between psychiatrist and ED physician rather than between psychiatrist and patient.

In telemedicine networks, multiple facilities communicate with one another, referred to as "hub" and "spoke" sites. The hub site is where the specialist is located, while the spoke (distant) site refers to the site where the patient is physically located. Telemedicine networks can have multiple "hub-and-spoke" sites that communicate with each other independently or cohesively.

Since its inception, telemedicine has expanded to cover a broad span of services, including:

- Specialist/Primary Care Consults — Psychiatry, Dermatology, Ophthalmology, Cardiology, Pathology;
- Imaging — Radiology, Pathology, Cardiology; and
- Remote Patient Monitoring

The ATA has reported that nearly 60 different medical subspecialties have successfully used telemedicine. In addition, an estimated 400 hospitals outsource their medical imaging services using telemedicine.[24]

Over the past 50 years, telemedicine has met with skepticism from providers, patients, and public officials regarding its efficacy and whether it provides an appropriate level of care. However, in the past two decades a number of studies have emerged that have provided some evidence that patient outcomes from telemedicine were equal to those from face-to-face interactions.[25] In addition, there has been some evidence indicating that telemedicine reduces costs for both the patient and the provider, although further research is needed.[26,27]

A more recent telemedicine development is emergency telemedicine, which covers both critical care and surgery. The Institute of Medicine expressed their support for the expansion of emergency telemedicine services in their 2006 report on the future of emergency care.[28] Recent studies have shown that by providing access to specialists, these programs can reduce ED volume, mortality, and length of stay.[29,30]

Regulatory History and Current Issues

Federal. The first Federal legislation that opened the door for telehealth and telemedicine was the Telecommunications Act of 1996, which removed economic and legal barriers for the telecommunications business and also provided $400 million per year for the Rural Health Care Program.[31] Until recently, there had not been major changes in the regulation and funding of telemedicine except through Medicare reimbursement. As a part of the American Recovery and Reinvestment Act of 2009 (ARRA), however, more than $7 billion will be injected into state funds for broadband and telehealth expansion.[32] The combination of increased funding

and the current administration's push to expand the role of technology in health care will likely lead to expanded implementation of telemedicine in coming years.

California. The same year that the federal government passed the Telecommunications Act, California passed the Telemedicine Development Act (SB1665), which set requirements for the provision of and payment for telemedicine services in the state.[33] In 1997, telephone and email messages were excluded from the definition of telemedicine as defined in the Telemedicine Development Act.[34] In 2003, the act was broadened to include dentists, podiatrists, psychologists, marriage and family therapists, and clinical social workers.[35] In 2006, the state agreed to provide $240 million for "full information exchange" in ten years, which includes telemedicine programs.[36] ("Full information exchange" refers to implementing electronic health records and telemedicine networks and linking these to health facilities across the state.) Depending on how the $7 billion telehealth funds from the ARRA are divided among the states, California could see a significant injection of funds with which to expand telemedicine programs.

Licensing Barriers

Most states currently require medical providers to be licensed in the state in which they are practicing medicine, except in medical emergencies. This has posed a significant barrier for many telemedicine programs that wish to provide specialty or other services across state lines. In most cases, the telemedicine program will either abandon the effort or assist their providers in gaining a license in an additional state. However, becoming licensed can be both time-consuming and expensive.

Accreditation

The Joint Commission began setting accreditation criteria for telemedicine programs in 2003, stating that practitioners who diagnose or treat patients via telemedicine are subject to the credentialing and privileging processes of the organization/facility that receives the telemedicine services. Interpretive services and consultations were deemed outside the scope of the accreditation standards. During 2006, the Joint Commission modified its standards to require that telemedicine programs have a performance measurement process for granting, renewing, or revising setting-specific clinical privileges.[37,38]

Reimbursement

Medicare. The Centers for Medicare and Medicaid Services (CMS) began reimbursing telemedicine under Medicare in 1997 as a provision of the Balanced Budget Act. The Medicare provisions were expanded in 2000 under the Benefits Improvement and Protection Act (BIPA), which provided that Medicare would reimburse for telehealth services that include consultation, office visits, individual psychotherapy, and pharmacy management. The policy also stipulated that for reimbursement of telemedicine, the services must occur in Rural Health Professional Shortage Areas or counties not classified as metropolitan statistical areas. Reimbursement for telehealth services include only real-time interactive audio and video telecommunications (e.g., videoconferencing) in which the patient must be present and participating in the visit.[39]

Also included in the BIPA was a facility site fee, which permits the originating/hub site (where the patient is located) to be reimbursed by Medicare $20 per telemedicine visit. This fee increased to $23.72 in 2009. In 2008, the Medicare Improvements for Patients and Providers Act

expanded the eligible originating sites to include skilled nursing facilities, hospital-based dialysis centers, and community mental health centers. Physician offices, hospitals, rural health clinics, and Federally Qualified Health Centers were already permitted to operate as telemedicine originating sites.[40]

In addition, CMS has defined eligible providers for reimbursement, which include: physicians, nurse practitioners, physician assistants, nurse midwives, clinical nurse specialists, clinical psychologists, clinical social workers, and dietitian/nutritional professionals.

Medicaid. While CMS has not defined telemedicine for Medicaid, at least 27 states have implemented their own definition and included some form of reimbursement for telemedicine services. A study of state Medicaid telemedicine reimbursement in 2005 revealed 24 states to be reimbursing for telemedicine services.

Table 7 shows the number of states that reimburse for certain telemedicine services.

Table 7. Telemedicine Services Reimbursed by Medicaid, 2005

SERVICES	STATES
Medical consultations/treatment	22
Psychological consultations/treatment	12
Pharmacological management	2
Home health	2
Radiology/pathology	2
Case management	1
ER consults	1
Patient education (diabetes)	1

Source: Telemedicine for Children with Special Health Care Needs (CSHCN), Institute for Child Policy, University of Florida, 2005.

Regarding who receives reimbursement, all of the 24 states reimbursed physicians and most reimbursed nurse practitioners. Reimbursement for hub and spoke sites varied by state in terms of both physician payment and facility fees. (An updated list of states that provide Medicaid telemedicine reimbursement can be found in Appendix 8.)

Private Payers. Not all private payers have agreed to provide reimbursement for telemedicine services; however a number of them do so. In 2003, and updated in 2006, the ATA and American Medical Development Global Telemedicine Inc. administered a survey of U.S. telemedicine programs. This survey found that 57 percent of the respondents received some form of reimbursement from commercial insurance payers, and that 40 percent of their telehealth payments came from private insurers. The survey also indicated that 81 percent of respondents received telemedicine visit reimbursements that were comparable to face-to-face visit reimbursements.[41]

At least five states, including California, have chosen to enact legislation that requires private payers to reimburse for telemedicine services. The specifics of these laws vary by state, but they each essentially prevent private payers from denying reimbursement for telehealth services. See Table 8 for two examples.

Table 8. Examples of State Telemedicine Reimbursement Policies for Medicaid and Private Payers

STATE	POLICY
Kentucky	Prohibits exclusion of coverage by Medicaid and private payers for telehealth
California	Prohibits health insurers from requiring face-to-face contact for services

Source: AMD Telemedicine, ATA.

VII. Telepsychiatry

Telepsychiatry was one of the first clinical uses of telemedicine and refers to the use of telemedicine to provide medical or other care to patients with mental health complaints. The practice of telepsychiatry began as a service to rural regions in which it is difficult for patients to receive specialty and/or psychiatric care.[42] Like other telemedicine services, telepsychiatry has been received with skepticism regarding the reliability of the clinical assessments. Similarly to telemedicine, recent studies have provided evidence that the assessments are reliable and provide at least equal quality of care.[43–46] The majority of the telepsychiatric networks in the U.S. provide assessments and consultations in a clinic setting and rarely offer emergency services.

ED Telepsychiatry

Despite the increased use of telemedicine and telepsychiatry across the country, the use of telepsychiatry in the ED is still uncommon. Currently, the vast majority of telemedicine used in the ED is for stroke, burn, ICU, and other medical/surgical services. An in-depth literature review revealed only three published articles discussing ED telepsychiatry. (The citations for these articles—Shore 2007, Yellowlees 2008, and Meltzer 1997—can be found in the references section.)

VIII. Conclusion

There appear to be very few ED telepsychiatry programs in the U.S., and those that exist have greatly varying degrees of organization and service delivery. Despite the longevity of the surveyed programs, most report that they are not financially self-sustainable and rely upon grants and other public funding to remain operational. However, two for-profit programs and two public programs have found ways to earn revenue and avoid overburdening the spoke sites.

There have been few published studies that prove telemedicine's effectiveness in outcomes or cost, and no studies that provide guidance in operating a sustainable ED telepsychiatry program. Further research into these areas is necessary in order to ensure quality patient care and maximize the effectiveness of telemedicine.

National and statewide studies of EDs and mental health patients have shown that boarding, diversion, and quality-of-care gaps continue to challenge the health care industry. At the same time, there is a shortage of specialists — especially psychiatrists — serving rural and underserved populations.

The absence of mental health care in EDs leads to the potential for delayed care, misdiagnosis, and/or transfer of many mental health patients to urban/suburban hospitals, or all three. The lack of resources, the delay in treatment, the costs, and the increased utilization at the receiving hospitals are burdensome on patients, providers, and the health care system.

Proponents of telemedicine argue that its use in these cases can provide a solution to each of these issues. The promptness of care becomes even more important in situations of inadequate transportation and limited treatment options. Telemedicine has the potential to provide appropriate care quickly and at a low cost. As healthcare access and quality of care problems persist, and as technology costs decrease, perhaps there is a gap that can be at least partially filled by the expansion of ED telepsychiatry.

IX. Case Studies

This section summarizes details of the surveyed programs, including their operational structure, financial support, and challenges when operating an ED telepsychiatry program.

Carolinas HealthCare Telemedicine

ITEM	DESCRIPTION
Location	Charlotte, NC
Affiliation	Carolinas HealthCare System
Web Site	www.carolinas.org/services/behavioral/psyed.cfm
Contact	Don Hambridge, manager
Email	don.hambridge@carolinashealthcare.org
Opening Date/Telemedicine	1997
Opening Date/ED Telepsychiatry	1998
Other Services	Orthopedic and infectious disease
Joint Commission Accredited	All facilities
Telemedicine Medium	Videoconference
Technological Infrastructure	Local Area Network, one room at each ED has a Webcam and TV.
Activation of Service	The nurse/physician calls the desired location to notify of the need for a consult. The nurse/physician then goes to the videoconference room, clicks on the location they want to call, makes the connection, and begins the consultation between the psychiatrist, the patient, and the nurse/physician.
Number of Hospitals/Clinics Served	2 EDs, 1 clinic
Part of a Telemedicine Network	No
Monthly ED Telepsychiatry Encounters	5
Telemedicine Visits for ED Telepsychiatry	1.7 percent
Source of Start-up Capital	Parent organization
Psychiatrist Coverage	Psychiatrists are employees with an on-call schedule. There is at least one on-call psychiatrist at all times.
Program Charge/Payment Process	The hospital system has supported the costs of the program. The hospital bills the patient's insurance for telemedicine services.

The DMH Telepsychiatry Consultation Program

ITEM	DESCRIPTION
Location	Columbia, SC
Affiliation	South Carolina Department of Mental Health
Web Site	www.state.sc.us/dmh/telepsychiatry
Contact	Ed Spencer, M.Ed., M.S.W.
Email	ces64@scdmh.org
Opening Date/Telemedicine	1995
Opening Date/ED Telepsychiatry	November 2007
Other Services	Hard of hearing services to the deaf
Joint Commission Accredited	No
Telemedicine Medium	Videoconferencing, telephone, email, and electronic medical record distribution.
Technological Infrastructure	All facilities have T1 lines. In addition, the telephsych cart was also configured/ designed to address the needs of stroke patients.
Activation of Service	Patient walks into ED, they are triaged and then registered. Once determined that patient needs telepsychiatry, the cart is wheeled to their room and contact is made with the "hub" facility to begin consult with a psychiatrist.
Number of Hospitals/Clinics Served	As of October 2009 there are 10 participating hospitals. Expecting another 15 participants by January 2010. One value added component to the study is that participants are encouraged to contact each other for specialty consults.
Part of a Telemedicine Network	No
Monthly ED Telepsychiatry Encounters	Average is 143
Telemedicine Visits for ED Telepsychiatry	100 percent
Source of Start-up Capital	The Duke Endowment
Psychiatrist Coverage	Full-time psychiatrists are employed by our program and provide 24/7 coverage.
Program Charge/Payment Process	Bill the insurance companies for the services their psychiatrists provide.

InSight Telepsychiatry

ITEM	DESCRIPTION
Location	Marlton, NJ
Affiliation	Private, for-profit company
Web Site	www.in-sight.net
Contact	Brian Levin, executive vice president
Email	blevin@in-sight.net
Opening Date/Telemedicine	1999
Opening Date/ED Telepsychiatry	1999
Other Services	Corrections: emergent, scheduled, management Military: evaluation, management Pediatric offices (rural): care management Psychiatric consults: non-ED hospital consult
Joint Commission Accredited	All facilities
Telemedicine Medium	Videoconference, telephonic (small proportion)
Technological Infrastructure	Separate cable line and modem that is dedicated to telemedicine services. All facilities have mobile units equipped with a monitor and camera.
Activation of Service	The spoke facility calls the InSight call center. The call center takes down information such as which facility is calling, the phone number, patient name, date of birth, and the call center requests that any clinical data be faxed to the call center. The call center will then page the next on-call psychiatrist in the queue. The psychiatrist will call the facility and discuss clinical issues. The equipment is then wheeled to the patient, the psychiatrist performs the evaluation, has a post-evaluation discussion with the ED physician, and discusses the appropriate disposition. Once decision for disposition is made, the psychiatrist sends all necessary paperwork to the call center which then faxes the paperwork to the spoke facility.
Number of Hospitals/Clinics Served	16 EDs, 2 clinics
Part of a Telemedicine Network	No
Monthly ED Telepsychiatry Encounters	625
Telemedicine Visits for ED Telepsychiatry	90 percent
Source of Start-up Capital	Company Owner
Psychiatrist Coverage	There are 12 psychiatrists who have the technology to work at home. The coverage involves 24/7 service with overlapping shifts. Typically, three psychiatrists are on-call between 5:00 pm and 1:00 am and there is at least one psychiatrist on-call the remaining hours, with back-up psychiatrists as needed. Two nurse practitioners (NPs) are also on-call 24/7 to cover calls from corrections facilities.
Program Charge/Payment Process	InSight has a contract with each facility that covers the service charges. The hospitals bill the insurance companies.

JSA Health

ITEM	DESCRIPTION
Location	Houston, TX
Affiliation	Private, for-profit organization
Web Site	www.jsahealthmd.com/welcome.html
Contact	Avrim Fishkind, M.D., president and CMO
Email	afishkind@jsahealthmd.com
Opening Date/Telemedicine	2007
Opening Date/ED Telepsychiatry	2008
Other Services	Routine clinic services, urgent same-day and next-day visits, consultation/liaison services, and locum tenens services.
Joint Commission Accredited	None of the facilities. However, some are BHC (Behavioral Health Care) accredited (a JCAHO community accreditation) or CARF (Commission on Accreditation of Rehabilitation Facilities) certified.
Telemedicine Medium	Videoconference
Technological Infrastructure	Mixture of dedicated T1 lines and business class cable/DSL with firewall and security structure. AES (advanced encryption standard) encryption over the Internet. Some facilities have mobile units and others have dedicated rooms with built-in equipment.
Activation of Service	The spoke facility will call the telemedicine number. The call is redirected through the automated internet call forwarding system. During the day the call is forwarded to the office staff psychiatrists and at night it is forwarded to the on-call staff psychiatrists.
Number of Hospitals/Clinics Served	JSA Health does psychiatric emergency evaluations at primarily free standing clinics and dedicated psychiatric emergency rooms (about 20 locations). They do not serve any hospital EDs.
Part of a Telemedicine Network	No
Monthly ED Telepsychiatry Encounters	1,200
Telemedicine Visits for ED Telepsychiatry	33 percent
Source of Start-up Capital	Owner
Psychiatrist Coverage	There is a staff of 5 full-time psychiatrists, 2 full-time advanced practitioners, 3 part-time psychiatrists, and 3.5 FTEs of on-call psychiatrists. The telemedicine service has 24/7 coverage, with multiple psychiatrists taking calls during the day and after hours.
Program Charge/Payment Process	There is a fixed fee schedule for each contracted facility. JSA bills the facility the fixed fee per psychiatric visit.

Midwest Telehealth Network

ITEM	DESCRIPTION
Location	Kearny, NE
Affiliation	Good Samaritan Hospital
Web Site	www.gshs.org
Contact	Wanda Kjar-Hunt, program manager
Email	wandakjar@catholichealth.net
Opening Date/Telemedicine	1995
Opening Date/ED Telepsychiatry	2000
Other Services	Diabetes care, wound care, neurology, oncology, behavioral psychiatry (mostly children), mental health counseling, follow-up visits, home care, radiology, education for staff, administrative use.
Joint Commission Accredited	Most sites are accredited. Others are critical access hospitals surveyed by CHS.
Telemedicine Medium	Videoconferencing
Technological Infrastructure	All facilities have T1 lines with either Polycom® or Lifesize® telemedicine equipment.
Activation of Service	After the patient is seen by the ED physician, they will call the hub (Richard Young Psychiatric Hospital) and speak with a mental health practitioner to determine whether a telepsychiatry visit is necessary. Prior to starting the visit, the spoke site must send forms to the psychiatrist to sign and fax back to approve the visit. To start the visit, the patient is transferred to the telemedicine equipped room in the ED (at the spoke site) and the access center clinician (LMHP) notifies the psychiatrist to determine the next step.
Number of Hospitals/Clinics Served	There are 21 hospitals in the Midwest Telehealth Network, but as part of the Nebraska State Telehealth Network there are also 107 hospitals and public health departments that are served in various ways. At the time of the survey, the network had seven hub sites.
Part of a Telemedicine Network	Yes. Midwest Telehealth Network, Nebraska Telehealth Network
Monthly ED Telepsychiatry Encounters	2 to 4
Telemedicine Visits for ED Telepsychiatry	1 percent
Source of Start-up Capital	Good Samaritan Hospital funds plus numerous grants.
Psychiatrist Coverage	Psychiatrists are employed by Good Samaritan Hospital and provide 24/7 service.
Program Charge/Payment Process	Psychiatrists at the hub sites use the hospital billing system to bill all encounters.

University of California, Davis Telemedicine

ITEM	DESCRIPTION
Location	Davis, CA
Affiliation	University of California at Davis
Web Site	www.ucdmc.ucdavis.edu/cht/services/telemedicine
Contact	Dr. Don Hilty
Email	don.hilty@ucdmc.ucdavis.edu
Opening Date/Telemedicine	1996
Opening Date/ED Telepsychiatry	1997
Other Services	30 other specialties including both medical and psychiatric services.
Joint Commission Accredited	All facilities
Telemedicine Medium	Mainly ED and PCP consults by phone; some videoconferencing with patients and store-and-forward consults with patients.
Technological Infrastructure	Secured email system. Video consists of monitor, camera, and an internet speed of 514kb/s or higher.
Activation of Service	The patient will enter the rural facility and be triaged. If it is an emergency, the physician will do a quick assessment of the patient. The patient is then put in an appropriate room, usually a private room. The ED physician will make the determination to do telemedicine. The physician then pages the on-call psychiatrist at UC Davis. The psychiatrist and rural physician will usually have a telephone call first, and then initiate a videoconference visit if necessary. Sometimes, either due to the schedule or the type of emergency, they may go directly to video.
Number of Hospitals/Clinics Served	Primary program: 5 hospitals and 40 clinics Newly added 5 EDs in Sacramento County and a store-and-forward program for Tulare County and Walter Reed Hospital.
Part of a Telemedicine Network	No
Monthly ED Telepsychiatry Encounters	Unknown
Telemedicine Visits for ED Telepsychiatry	Approximately 10 percent
Source of Start-up Capital	UC Davis donation and grants from the Rural Utility Service and Office of Advancing Technology. 25 percent of grants are federal, 40 percent are from the California endowment, and the rest is from clinical service revenue.
Psychiatrist Coverage	3 to 4 psychiatrists provide the services. All of them have pagers, and try to be available when they can. There is no on-call schedule.
Program Charge/Payment Process	The psychiatrists are paid university salary and benefits.

University of Mississippi TelEmergency

ITEM	DESCRIPTION
Location	Jackson, MS
Affiliation	University of Mississippi
Web Site	telemergency.umc.edu
Contact	Kristi Henderson, CFNP, CACNP
Email	khenderson@nursing.umsmed.edu
Opening Date/Telemedicine	2003
Opening Date/ED Telepsychiatry	2003
Other Services	Emergency services, radiology, cardiology, cardiovascular surgery.
Joint Commission Accredited	The hub site and one rural site are accredited.
Telemedicine Medium	Videoconference
Technological Infrastructure	All treatment rooms at the rural sites have a flat panel TV and T1 line connection for audio and visual communication. They use Polycom® and Tanderg equipment. There are also headsets and a Picture Archiving and Collection (PAC) system for radiology.
Activation of Service	There are two ways to activate the telepsychiatry visit: (1) The rural (spoke) site provider pushes a designated telemedicine "stat" or "regular" button in the ED room that sends a message to the hub. The physicians at the hub will see this message and begin the visit. (2) The hub site has cameras to view the hospital treatment rooms and see whether their intervention is necessary, and if so, they begin communicating with providers in the room at the rural site. The hub site has a large room with screens that view into each treatment room of each rural facility. They have a queue for the hospitals that are waiting to initiate a telemedicine visit. The hub is set up to allow two providers to work at the same time.
Number of Hospitals/Clinics Served	12 EDs, 2 psychiatric clinics, 1 radiology clinic, and 1 cardiovascular surgery facility
Part of a Telemedicine Network	No
Monthly ED Telepsychiatry Encounters	20
Telemedicine Visits for ED Telepsychiatry	1 percent
Source of Start-up Capital	A local foundation donated $1.25 million. They are currently using USDA, Rural Services, and Telestroke grants.
Psychiatrist Coverage	Emergency physicians are stationed at the hub to cover the telemedicine services 24/7. They are employees and have scheduled shifts.
Program Charge/Payment Process	The program charges the rural (spoke) sites an hourly fee per facility. The emergency physicians are employees of the hub facility and are paid hourly. The nurse practitioners who staff the rural (spoke) site are employees of the rural hospital and are paid an hourly rate also.

Appendix 1: California Disposition of ED Mental Health Patients*, 2007

DISPOSITION	ED PSYCHIATRIC PATIENTS	SHARE OF TOTAL
Discharged to home or self care (routine discharge)	261,164	80.5%
Discharged/transferred to a psychiatric hospital or psychiatric distinct part unit of a hospital	29,144	9.0%
Discharged/transferred to a short term general hospital for inpatient care	10,061	3.1%
Discharged/transferred to another type of institution not defined elsewhere in this code list	7,478	2.3%
Left against medical advice or discontinued care	7,350	2.3%
Discharged/transferred to skilled nursing facility (SNF) with Medicare certification in anticipation of covered skilled care	836	0.3%
Discharged/transferred to an intermediate care facility (ICF)	476	0.1%
Discharged/transferred to an inpatient rehabilitation facility (IRF) including rehabilitation distinct part unit of a hospital	402	0.1%
Discharged/transferred to home under care of organized home health service organization in anticipation of covered skilled care	236	0.1%
Other†	7,394	2.3%
Total	**324,541**	**100.0%**

*Includes mental disorders, ICD-9-CM codes 290–319

†Other includes invalid codes; blank/not reported; expired; discharged/transferred to a hospital-based swing bed; discharged/transferred to a nursing facility certified under Medicaid, but not certified under Medicare; Discharged/transferred to a Medicare certified long term care hospital (LTCH); Discharged to a medical facility with hospice care; Discharged/transferred to a federal health care facility; Discharged home with hospice care; Discharged/transferred to a Critical Access Hospital (CAH)

Source: OSHPD Emergency Department Public Data Set, 2007.

Appendix 2: California ED Mental Health Visits, by Payer Mix, 2007

PAYER	NUMBER	SHARE OF TOTAL
Self Pay	96,864	29.8%
Private	90,100	27.8%
Medi-Cal	68,250	21.0%
Medicare	46,211	14.2%
TRICARE	1,503	0.5%
Worker's Compensation	1,109	0.3%
Other	20,504	6.3%
Total	**324,541**	**100.0%**

Notes: Medicare includes: Part A, Part B, and HMO Medicare Risk. Private includes: Blue Cross/Blue Shield, Automobile Medical, Commercial Insurance, Disability, Exclusive Provider Organization, Health Maintenance Organization, Point of Service, and Preferred Provider Organization. Other includes: Veterans Affairs Plan, Title V, Invalid Code, Blank/Not Reported, Other Federal, and Other Non-Federal.

Source: OSHPD Emergency Department Public Data Set, 2007.

PAYER (DETAILED)	NUMBER	SHARE OF TOTAL
Government	**118,535**	**36.6%**
Medicaid (Medi-Cal)	68,250	21.0%
Medicare Part A	24,968	7.7%
Medicare Part B	11,989	3.7%
Health Maintenance Organization (HMO) Medicare Risk	9,254	2.9%
TRICARE	1,503	0.5%
Veterans Affairs Plan	347	0.1%
Title V	171	0.1%
Other Federal Program	2,053	0.6%
Nongovernment	**100,941**	**31.0%**
Health Maintenance Organization	50,833	15.7%
Preferred Provider Organization (PPO)	14,360	4.4%
Blue Cross/Blue Shield	12,804	3.9%
Commercial Insurance Company	10,482	3.2%
Workers' Compensation Health Claim	1,109	0.3%
Point of Service (POS)	958	0.3%
Exclusive Provider Organization (EPO)	527	0.2%
Automobile Medical	135	0.0%
Disability	1	0.0%
Other Non-federal Programs	9,732	3.0%
Self Pay	**96,864**	**29.8%**
Other*	**8,201**	**2.5%**
Total	**324,541**	**100.0%**

*Other includes invalid codes and blank/not reported.

Note: May not add up to 100 percent due to rounding.

Source: OSHPD Emergency Department Public Data Set, 2007.

Appendix 3: California ED Mental Health Patient Characteristics, 2007

Psychiatric Visits, by Age Group and Gender

	MALE	FEMALE	UNKNOWN	TOTAL
0 to 4	347	266	0	613
5 to 9	1,066	572	0	1,638
10 to 14	3,987	4,768	0	8,755
15 to 19	16,203	16,014	3	32,220
20 to 24	17,821	15,006	2	32,829
25 to 29	17,188	14,439	3	31,630
30 to 34	15,368	13,281	6	28,655
35 to 39	17,080	15,506	2	32,588
40 to 44	19,264	16,654	3	35,921
45 to 49	19,640	17,168	5	36,813
50 to 54	15,676	13,044	3	28,723
55 to 59	11,077	8,463	0	19,540
60 to 64	5,607	5,222	1	10,830
65 to 69	3,135	3,516	0	6,651
70 to 74	1,968	2,769	0	4,737
75 to 79	1,485	2,610	0	4,095
80 to 84	1,286	2,594	0	3,880
85+	1,350	2,911	3	4,264
Unknown	108	43	8	159
Total	**169,656**	**154,846**	**39**	**324,541**

Source: OSHPD Emergency Department Public Data Set, 2007.

Psychiatric Visits, by Race/Ethnicity and Gender

	MALE	FEMALE	UNKNOWN	TOTAL
Asian	5,169	6,236	0	11,405
Black	18,056	15,814	2	33,872
Hispanic	46,206	40,526	9	86,741
Native American	767	688	0	1,455
Other	6,124	5,222	0	11,346
Unknown	6,696	5,874	15	12,585
White	86,638	80,486	13	167,137
Total	**169,656**	**154,846**	**39**	**324,541**

Source: OSHPD Emergency Department Public Data Set, 2007.

Appendix 4: California ED Mental Health Visits, by County, 2007

	TOTAL ED VISITS	PSYCHIATRIC VISITS NUMBER	PSYCHIATRIC VISITS SHARE OF TOTAL
Alameda	383,607	14,722	3.8%
Alpine	100	7	7.0%
Amador	12,322	360	2.9%
Butte	58,522	2,474	4.2%
Calaveras*	13,188	436	3.3%
Colusa*	5,704	148	2.6%
Contra Costa	275,953	9,544	3.5%
Del Norte*	14,635	540	3.7%
El Dorado*	44,828	1,539	3.4%
Fresno	236,667	7,750	3.3%
Glenn*	6,865	252	3.7%
Humboldt*	48,604	1,820	3.7%
Imperial*	69,675	1,619	2.3%
Inyo	6,637	152	2.3%
Kern	198,024	5,549	2.8%
Kings*	42,902	1,595	3.7%
Lake*	30,369	1,049	3.5%
Lassen*	9,679	248	2.6%
Los Angeles	2,117,805	74,840	3.5%
Madera*	45,563	1,787	3.9%
Marin	60,204	2,526	4.2%
Mariposa	5,482	174	3.2%
Mendocino	38,594	1,369	3.5%
Merced*	72,578	2,543	3.5%
Modoc*	3,181	96	3.0%
Mono*	2,741	79	2.9%
Monterey	110,147	3,912	3.6%
Napa	33,202	1,134	3.4%
Nevada*	25,246	834	3.3%
Orange	566,311	19,090	3.4%
Placer	66,877	2,961	4.4%
Plumas	8,340	213	2.6%
Riverside	493,692	15,271	3.1%
Sacramento	330,844	10,247	3.1%
San Benito	16,030	470	2.9%
San Bernadino	535,586	18,165	3.4%
San Diego	601,102	22,492	3.7%
San Francisco	162,718	9,761	6.0%
San Joaquin	178,243	4,784	2.7%
San Luis Obispo	74,945	1,920	2.6%
San Mateo	150,539	4,779	3.2%
Santa Barbara	88,254	3,800	4.3%
Santa Clara	317,432	17,160	5.4%
Santa Cruz	57,482	2,464	4.3%
Shasta*	70,131	2,619	3.7%
Sierra*	683	20	2.9%
Siksiyou*	16,621	713	4.3%
Solano	103,907	3,180	3.1%
Sonoma	113,219	4,993	4.4%
Stanislaus	171,646	4,294	2.5%
Sutter	25,414	616	2.4%
Tehama*	26,474	528	2.0%
Trinity*	4,638	155	3.3%
Tulare	137,564	4,525	3.3%
Toulumne*	21,285	706	3.3%
Ventura	171,855	6,373	3.7%
Yolo	42,035	1,703	4.1%
Yuba	27,074	611	2.3%
Invalid/Blank	1,578,328	20,830	1.3%
Statewide	10,132,293	324,541	3.2%

*County designated by the HRSA as Mental Health Shortage Areas.

Source: OSHPD Emergency Department Public Data Set, 2007.

Appendix 5: California ED Mental Health Visits, by Diagnosis, 2007

Freqency of Psychiatric Diagnoses, by ICD-9 Code

DIAGNOSIS DESCRIPTION	CODE	TOTAL FREQUENCY	PRINCIPAL DIAGNOSIS
Psychoses	290–300	556,400	185,641
Neurotic, Personality, and Other Nonpsychotic Mental Disorders	300–316	1,112,139	43,308

Source: OSHPD ICD-9 Code Frequency, 2007.

Top 25 Psychiatric Diagnoses, by ICD-9 Code*

CODE	DESCRIPTION	NUMBER OF PATIENTS	SHARE OF TOTAL
300.00	Anxiety State, NOS	59,309	18.3%
305.00	Nondependent Abuse of Drugs, NOS	54,128	16.7%
311.00	Depressive Disorder, NOS	27,764	8.6%
298.90	Psychosis Unspecified	21,726	6.7%
291.81	Alcohol Withdrawal	10,617	3.3%
300.01	Panic Disorder without Agoraphobia	10,491	3.2%
303.00	Acute Alcohol Intoxication	8,493	2.6%
300.90	Unspecified Nonpsychotic Mental Disorder	7,746	2.4%
307.81	Tension Headache	7,705	2.4%
292.00	Pathological Drug Intoxication	6,418	2.0%
296.80	Bipolar Disorder, Unspecified	6,195	1.9%
295.90	Schizophrenia, Unspecified	6,189	1.9%
305.90	Other, Mixed, or Unspecified Drug Abuse	5,635	1.7%
296.90	Episodic Mood Disorder, Unspecified	5,512	1.7%
310.20	Postconcussion Syndrome	4,817	1.5%
305.70	Amphetamine or Related Acting Sympathomimetic Abuse	4,281	1.3%
306.10	Respiratory, Psychogenic	3,869	1.2%
296.20	Major Depressive Disorder, Single Episode	3,598	1.1%
295.70	Schizoaffective Disorder	3,544	1.1%
308.00	Predominant Disturbance of Emotions	3,283	1.0%
303.01	Acute Alcohol Intoxication	3,163	1.0%
303.90	Other and Unspecified Alcohol Dependence	3,109	1.0%
300.40	Dysthymic Disorder	3,065	0.9%
294.80	Other Persistent	2,925	0.9%
295.30	Paranoid Type	2,570	0.8%
—	Other	48,389	14.9%
	Total	**324,541**	**100.0%**

*Only includes patients who had a psychiatric principal diagnosis (ICD-9 290–319).

Source: OSHPD ICD-9 Code Frequency, 2007.

Appendix 6: Telemedicine Medicare Reimbursement Rates, 2009

CPT CODE	DESCRIPTION	PHYSICIAN	NON-FACILITY PE	TRANSITIONAL NON-FACILITY PE	FACILITY PE	TRANSITIONAL FACILITY PE	MALPRACTICE
90801	Psychiatric Diagnostic Interview	$100.99	$52.30	$49.77	$22.00	$24.89	$2.16
90804	Psychotherapy, Office, 20–30 min.	$43.64	$19.48	$19.12	$8.30	$9.38	$1.08
90805	Psy Tx, Office, 20–30 min., w/ e&m	$49.41	$21.28	$20.56	$9.02	$10.46	$1.08
90806	Psy Tx, Office, 45–50 min.	$67.08	$19.12	$20.56	$12.26	$14.43	$1.44
90807	Psy Tx, Office, 45–50 min., w/ e&m	$72.85	$25.25	$25.25	$13.34	$15.51	$1.80
90808	Psy Tx, Office, 75–80 min.	$100.63	$24.89	$28.13	$18.39	$22.00	$2.16
90809	Psy Tx, Office, 75–80 min., w/ e&m	$106.40	$31.02	$32.46	$19.48	$23.08	$2.52
90862	Medication Management	$34.26	$22.00	$20.20	$9.74	$10.10	$0.72
96116	Neurobehavioral Status Exam	$67.08	$19.48	$22.00	$15.15	$16.95	$6.49
99201	Office/Outpatient Visit, New	$16.23	$19.84	$19.48	$6.13	$6.13	$1.08
99202	Office/Outpatient Visit, New	$31.74	$30.66	$29.94	$11.54	$11.54	$1.80
99203	Office/Outpatient Visit, New	$48.33	$40.39	$40.39	$16.23	$16.59	$3.25
99204	Office/Outpatient Visit, New	$82.95	$54.46	$54.10	$27.05	$26.69	$4.33
99205	Office/Outpatient Visit, New	$108.20	$6.53	$65.28	$34.62	$34.62	$5.41
99211	Office/Outpatient Visit, Established	$6.13	$11.54	$12.26	$2.16	$2.16	$0.36
99212	Office/Outpatient Visit, Established	$16.23	$19.84	$19.84	$5.77	$5.77	$1.08
99213	Office/Outpatient Visit, Established	$33.18	$27.77	$27.05	$10.82	$10.46	$1.08
99214	Office/Outpatient Visit, Established	$51.21	$39.67	$39.31	$16.59	$16.23	$1.80
99215	Office/Outpatient Visit, Established	$72.13	$50.49	$49.77	$23.44	$23.44	$2.89
99241	Office Consultation	$23.08	$23.80	$23.80	$8.66	$8.30	$1.80
99242	Office Consultation	$48.33	$39.67	$38.95	$18.39	$18.03	$3.61
99243	Office Consultation	$67.81	$52.66	$5.23	$25.61	$24.89	$4.69
99244	Office Consultation	$108.92	$70.69	$69.61	$41.12	$39.31	$5.77
99245	Office Consultation	$135.97	$82.95	$82.95	$49.77	$48.69	$7.57
99251	Inpatient Consultation	$36.07	NA	NA	$11.54	$10.82	$1.80
99252	Inpatient Consultation	$54.10	NA	NA	$18.75	$18.39	$3.25
99253	Inpatient Consultation	$81.87	NA	NA	$30.30	$28.85	$3.97
99254	Inpatient Consultation	$118.66	NA	NA	$44.36	$42.20	$4.69
99255	Inpatient Consultation	$144.27	NA	NA	$51.94	$51.21	$6.49
Q3014	Telehealth Facility Fee	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

Notes: These rates were calculated by applying the 2009 National Physician Fee Schedule Conversion Factor ($36.07) to the RVUs for each section. When telehealth services are billed they must include either the GT or GQ modifiers (e.g. 99245GT), where: GT="via interactive audio and video telecommunications system"; and GQ="via asynchronous telecommunications system," e.g., store-and-forward technology. This is an exception that currently is allowed for federal programs in Alaska and Hawaii only. The CMS regulations also specify that neither clinical psychologists nor social workers may bill for psychotherapy services that include medical evaluations and management services (CPT codes 90805, 90807, 90809). The "telehealth facility fee" has a status symbol of "X" which means "these codes represent an item or services that are not within the statutory definition of 'physicians' services' for PFS payment purposes." Despite the $0 reimbursement for facility fee on this table, Medicare does reimburse telehealth facilities. In 2009 the reimbursement rate was set as $23.72. "Psy Tx" stands for Psychotherapy and "w/ e&m" means an evaluation and management service is included.

Source: Centers for Medicare and Medicaid Services, Physician Fee Schedule, 2009.

Appendix 7: Telemedicine Medi-Cal Reimbursement Rates, as of April 15, 2009

PROCEDURE CODE*	CPT CODE	PROCEDURE DESCRIPTION	UNIT VALUE	BASIC RATE	CHILD RATE	ER RATE
N	90801	Psychiatric Diagnostic Interview	89.38	$73.29	—	$92.96
N	90802	Interactive Psychiatric Diagnostic Interview	85.78	$70.34	—	$89.21
N	90804	Psychotherapy, Office, 20–30 min.	35.59	$29.18	—	$37.01
N	90805	Psychotherapy, Office, 20–30 min. w/ e&m†	40.22	$32.98	—	$41.83
N	90806	Psychotherapy, Office, 45–50 min.	56.63	$46.44	—	$58.90
N	90807	Psychotherapy, Office, 45–50 min. w/ e&m†	60.02	$49.22	—	$62.42
N	90808	Psychotherapy, Office, 75–80 min.	90.61	$74.30	—	$94.23
N	90809	Psychotherapy, Office, 75–80 min. w/ e&m†	96.05	$78.76	—	$99.89
N	90810	Interactive Psychotherapy, Office, 20–30 min.	38.63	$31.68	—	$40.18
N	90811	Interactive Psychotherapy, Office, 20–30 min. w/ e&m†	42.83	$35.12	—	$44.54
N	90812	Interactive Psychotherapy, Office, 45–50 min.	57.94	$47.51	—	$60.26
N	90813	Interactive Psychotherapy, Office, 45–50 min. w/ e&m†	60.90	$49.94	—	$63.34
N	90814	Interactive Psychotherapy, Office, 75–80 min.	90.61	$74.30	—	$94.23
N	90815	Interactive Psychotherapy, Office, 75–80 min. w/ e&m†	96.05	$78.76	—	$99.89
N	90816	Psychotherapy, Hospital, 20–30 min.	37.90	$31.08	—	$39.42
N	90817	Psychotherapy, Hospital, 20–30 min. w/ e&m†	41.66	$34.16	—	$43.33
N	90818	Psychotherapy, Hospital, 45–50 min.	56.63	$46.44	—	$58.90
N	90819	Psychotherapy, Hospital, 45–50 min. w/ e&m†	60.02	$49.22	—	$62.42
N	90821	Psychotherapy, Hospital, 75–80 min.	90.61	$74.30	—	$94.23
N	90822	Psychotherapy, Hospital, 75–80 min. w/ e&m†	96.05	$78.76	—	$99.89
N	90823	Interactive Psychotherapy, Hospital, 20–30 min. w/ e&m†	42.27	$34.66	—	$43.96
N	90824	Interactive Psychotherapy, Hospital, 20–30 min. w/ e&m†	45.16	$37.03	—	$46.97
N	90826	Interactive Psychotherapy, Hospital, 45–50 min.	60.70	$49.77	—	$63.13
N	90827	Interactive Psychotherapy, Hospital, 45–50 min. w/ e&m†	62.95	$51.62	—	$65.47
N	90828	Interactive Psychotherapy, Hospital, 75–80 min.	90.61	$74.30	—	$94.23
N	90829	Interactive Psychotherapy, Hospital, 75–80 min w/ e&m†	96.05	$78.76	—	$99.89
N	90853	Psychotherapy, Group	4.23	$3.47	—	$4.40
N	Z0300	Psychotherapy, Individual 10–15 min.	22.65	$18.57	—	$23.56
N	99201	Office Visit, New, Level 1	2.29	$22.90	$24.98	$28.44
P	99201	Office Visit, Level 1	2.29	$22.90	$24.98	—

†Includes an evaluation and management service.

*N = Medicine, P = Podiatrist, 1 = Allied Health and other programs.

PROCEDURE CODE*	CPT CODE	PROCEDURE DESCRIPTION	UNIT VALUE	BASIC RATE	CHILD RATE	ER RATE
1	99201	Office Visit, New, Level 1	11.41	$11.41	—	$11.41
1	99202	Office Visit, Level 1	34.30	$34.30	—	$34.30
P	99202	Office Visit, New, Level 2	3.43	$34.30	$37.42	—
N	99202	Office Visit, New, Level 2	3.43	$34.30	$37.42	$42.60
N	99203	Office Visit, New, Level 3	5.72	$57.20	$62.41	$71.04
P	99203	Office Visit, New, Level 3	5.72	$57.20	$62.41	—
1	99203	Office Visit, New, Level 3	57.20	$57.20	—	$57.20
1	99204	Office Visit, New, Level 4	68.90	$68.90	—	$68.90
N	99204	Office Visit, New, Level 4	6.89	$68.90	$75.17	$85.57
N	99205	Office Visit, New, Level 5	8.27	$82.70	$90.23	$102.71
1	99205	Office Visit, New, Level 5	82.70	$82.70	—	$82.70
1	99211	Office Visit, Established, Level 1	12.00	$12.00	—	$12.00
N	99211	Office Visit, Established, Level 1	1.20	$12.00	$13.09	$14.90
P	99211	Office Visit, Established, Level 1	1.20	$12.00	$13.09	—
P	99212	Office Visit, Established, Level 2	1.81	$18.10	$19.75	—
N	99212	Office Visit, Established, Level 2	1.81	$18.10	$19.75	$22.48
1	99212	Office Visit, Established, Level 2	11.41	$11.41	—	$11.41
1	99213	Office Visit, Established, Level 3	24.00	$24.00	—	$24.00
N	99213	Office Visit, Established, Level 3	2.40	$24.00	$26.18	$29.81
P	99213	Office Visit, Established, Level 3	2.40	$24.00	$26.18	—
N	99214	Office Visit, Established, Level 4	3.75	$37.50	$40.91	$46.58
1	99214	Office Visit, Established, Level 4	37.50	$37.50	—	$37.50
1	99215	Office Visit, Established, Level 5	57.20	$57.20	—	$57.20
N	99215	Office Visit, Established, Level 5	5.72	$57.20	$62.41	$71.04
N	99217	Observation Care Discharge Day Management	4.53	$45.30	$49.42	$56.26
N	99218	Observation Care	4.40	$44.00	$48.00	$54.65
P	99218	Observation Care	3.92	$39.20	$42.77	—
P	99219	Observation Care	6.20	$62.00	$67.64	—
N	99219	Observation Care	6.96	$69.60	$75.93	$86.44
N	99220	Observation Care	8.74	$87.40	$95.35	$108.55
P	99220	Observation Care	7.78	$77.80	$84.88	—
P	99221	Hospital Care, Initial, Level 1	3.06	$30.60	$33.38	—
N	99221	Hospital Care, Initial, Level 1	3.43	$34.30	$37.42	$42.60

*N = Medicine, P = Podiatrist, 1 = Allied Health and other programs.

PROCEDURE CODE*	CPT CODE	PROCEDURE DESCRIPTION	UNIT VALUE	BASIC RATE	CHILD RATE	ER RATE
N	99222	Hospital Care, Initial, Level 2	7.32	$73.20	$79.86	$90.91
P	99222	Hospital Care, Initial, Level 2	6.52	$65.20	$71.13	—
P	99223	Hospital Care, Initial, Level 3	7.14	$71.40	$77.90	—
N	99223	Hospital Care, Initial, Level 3	8.01	$80.10	$87.39	$99.48
N	99231	Hospital Care, Subsequent, Level 1	2.75	$27.50	$30.00	$34.16
P	99231	Hospital Care, Subsequent, Level 1	2.45	$24.50	$26.73	—
P	99232	Hospital Care, Subsequent, Level 2	3.36	$33.60	$36.66	—
N	99232	Hospital Care, Subsequent, Level 2	3.78	$37.80	$41.24	$46.95
N	99233	Hospital Care, Subsequent, Level 3	4.58	$45.80	$49.97	$56.88
N	99234	Observation/Hospital Same Date	7.47	$74.70	$81.50	$92.78
N	99235	Observation/Hospital Same Date	10.35	$103.50	$112.92	$128.55
N	99236	Observation/Hospital Same Date	12.46	$124.60	$135.94	$154.75
N	99238	Hospital Discharge Day Management; 30 min. or less	3.76	$37.60	$41.02	$46.70
N	99239	Hospital Discharge Day Management; more than 30 min.	5.34	$53.40	$58.26	$66.32
N	99241	Office Consultation, Level 1	3.06	$30.60	$33.38	$38.01
P	99241	Office Consultation, Level 1	3.06	$30.60	$33.38	—
1	99241	Office Consultation, Level 1	30.60	$30.60	—	$30.60
1	99242	Office Consultation, Level 2	47.20	$47.20	—	$47.20
P	99242	Office Consultation, Level 2	4.72	$47.20	$51.50	—
N	99242	Office Consultation, Level 2	4.72	$47.20	$51.50	$58.62
N	99243	Office Consultation, Level 3	5.95	$59.50	$64.91	$73.90
P	99243	Office Consultation, Level 3	5.95	$59.50	$64.91	—
1	99243	Office Consultation, Level 3	59.50	$59.50	—	$59.50
N	99244	Office Consultation, Level 4	8.14	$81.40	$88.81	$101.10
N	99245	Office Consultation, Level 5	10.22	$102.20	$111.50	$126.93
N	99251	Inpatient Consultation	33.98	$27.86	—	—
P	99251	Inpatient Consultation	33.98	$27.86	—	—
P	99252	Inpatient Consultation	39.59	$32.46	—	—
N	99252	Inpatient Consultation	39.59	$32.46	—	—
N	99253	Inpatient Consultation	56.63	$46.44	—	—
P	99253	Inpatient Consultation	56.63	$46.44	—	—
N	99254	Inpatient Consultation	79.28	$65.01	—	—
N	99255	Inpatient Consultation	105.18	$86.25	—	—

Source: California Department of Health Care Services, Medi-Cal rates as of April 15, 2009.

*N = Medicine, P = Podiatrist, 1 = Allied Health and other programs.

Appendix 8: States that Reimburse for Telemedicine Under Medicaid, 2009

Alaska	Indiana	Nebraska	South Carolina
Arizona	Kansas	New Mexico	South Dakota
Arkansas	Kentucky	Nevada	Tennessee
California	Maine	North Carolina	Texas
Florida	Michigan	North Dakota	Vermont
Georgia	Minnesota	Ohio	Washington
Hawaii	Missouri	Oklahoma	Wyoming
Illinois	Montana	Pennsylvania	

Source: Center for Telehealth and E-Health Law, August 2009.

Appendix 9: Emergency Department Telepsychiatry Survey Results

QUESTION	CAROLINAS HEALTHCARE TELEMEDICINE	THE DMH TELEPSYCHIATRY CONSULTATION PROGRAM	INSIGHT TELE-PSYCHIATRY	JSA HEALTH	MIDWEST TELEHEALTH NETWORK	UNIVERSITY OF CALIFORNIA, DAVIS TELEHEALTH	UNIVERSITY OF MISSISSIPPI TELEMERGENCY
Satisfaction Levels*							
Patient satisfaction	4	4.5	5	4	4	5	4
ED physician satisfaction	5	4.5	4	—	4	4	5
PCP satisfaction	—	4.5	4	4	4	4	4
Psychiatrist satisfaction	3	4.5	5	5	4	4	—
Medical RN satisfaction	—	4.5	4	—	4	5	—
Medical tech satisfaction	—	4.5	4	—	4	5	—
Psychiatric RN satisfaction	5	4.5	5	—	4	—	—
Psychiatric tech satisfaction	—	4.5	4	—	4	—	—
Telemedicine support staff satisfaction	5	4.5	5	—	4	—	—
Success Levels†							
Success of the program in achieving established goals	5	4.5	4	5	3	4	5
Medical benefits for patients	4	4.5	4	5	5	5	5
Access to medical care	5	4.5	5	5	5	5	5
Reduction in admissions	—	4.5	—	4	—	4	—
Reduction in length of stay	—	4.5	5	—	—	—	4
Reduction in patient throughput time	—	4.5	—	5	—	—	4
Other financial and non-financial benefits	2	4.5	4	4	4	4	5

*Survey respondents were asked to rate these from 1 to 5 (5 = extremely satisfied, 4 = very satisfied, 3 = satisfied, 2 = somewhat dissatisfied, and 1 = very dissatisfied).
†Survey respondents were asked to rate these from 1 to 5 (5 = very successful, 4 = successful, 3 = somewhat successful, 2 = somewhat unsuccessful, and 1 = very unsuccessful).

Note: "—" signify that the respondent was unable to answer the question.

Source: The Abaris Group Telephone Survey.

Appendix 10: Guidelines for Program Viability and Delivering Quality Services

- Do a thorough needs assessment in the region that the program is planning to serve.
- Obtain overall and financial support of the program from senior leadership of the organization.
- Use clinically proven technology.
- For each consult, be certain that the technical quality equipment is appropriately matched to the service and needs of the patient and their condition.
- Evaluate options, implementation, and maintenance of telepsychiatry with a team of clinicians, technicians, and administrators in both the hub and the spoke sites.
- Adequately train all site coordinators in the technical and procedural aspects of the service, including referral guidelines and transfer of patient medical information to the specialist and back to the referral site.
- Obtain a telepsychiatric champion and provide adequate training for others with regard to the technology, adapt clinical practice to fit its use, and identify its limitations.
- Provide regular technical maintenance and prompt trouble-shooting.
- Coordinate timing of consults (i.e., patient is there at the right time, telepsychiatrist has adequate time, and/or referring providers or staff stop in if desired).
- Adequately evaluate outcomes, satisfaction, and costs (patient, referring provider, and specialist) and the program (coordinator, technical staff, and administration).

Source: Hilty, D.M., S.L. Marks SL, D. Urness, P.M. Yellowlees, and T.S. Nesbitt. January 2004. "Clinical and Educational Telepsychiatry Applications: a Review." *The Canadian Journal of Psychiatry* 49(1).

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California
HealthCare
Foundation

1438 Webster Street, Suite 400
Oakland, CA 94612
tel: 510.238.1040
fax: 510.238.1388
www.chcf.org