TELEMEDICINE JOURNAL AND e-HEALTH
Volume 10, Supplement 2, 2004
© Mary Ann Liebert, Inc.

Prison Telemedicine and Telehealth Utilization in the United States: State and Federal Perceptions of Benefits and Barriers

DEBRA LARSEN, Ph.D.,[1] B. HUDNALL STAMM, Ph.D.,[1] KELLY DAVIS, B.S.,[1] and PHILLIP R. MAGALETTA, Ph.D.[2]

ABSTRACT

Although national justice and technology associations have endorsed the utilization of telemedicine and telehealth, little is known about the current utilization of this technology across our nation's correctional facilities. Several voluntary registries and state Web sites exist, but only limited information on telemedicine utilization may be gleaned from these. The purpose of the present study was to fill this void by reporting the utilization patterns in telemedicine programs in state and federal correctional facilities throughout the United States. Using telephone-administered interviews, data were collected from all 50 states. Respondents were asked about utilization, benefits, and barriers to the use of technology in healthcare in state and federal correctional facilities. Slightly over half of state correctional institutions and 39% of federal institutions are using some sort of telehealth or telemedicine applications. The most common benefits cited were improved security, personnel safety, costs savings, and access to specialists. The most common barriers cited were costs of technology, resistance from medical personnel, lack of staff technical expertise, and difficulties coordinating services.

INTRODUCTION

THE USE OF TELEMEDICINE as a source of support for long-distance clinical health-related education, public health, and health administration appears to be a promising way to extend healthcare services to a variety of underserved populations, including correctional populations.

As correctional systems are not typically known for embracing technology or encouraging change, the fact that correctional facilities have successfully sought to apply telemedicine in the service of those who are incarcerated is notable. A growing literature by a number of larger, well-known prison telemedicine programs[1–8] provides results that encourage the use of telemedicine. Beyond these proscribed studies that deal with one or a few locations, the overall status of prison telemedicine in the United States is unclear. National health services utilization data on telemedicine programs within correctional facilities are available on a piecemeal basis (e.g., http://tie.telemed.org/,

[1]Institute of Rural Health at Idaho State University, Pocatello, Idaho.
[2]Federal Bureau of Prisons, Washington, D.C.
The contents of this article are the sole responsibility of the authors and do not necessarily represent the official views or policies of the Department of Health and Human Services, the Federal Bureau of Prisons, or the Department of Justice.

http://www.corrections.com/links/viewlinks), and very few national reviews or statistics are available. The current project was designed to bridge this gap. Data were gathered from state and federal prison systems in an attempt to describe the current utilization level of telemedicine in correctional facilities as well as reported or perceived barriers and benefits that state officials may have observed in their attempts to implement prison telemedicine programs.

There are constellations of unique factors such as geographic remoteness, the volume of significant healthcare needs, high prevalence rates of mental illness, etc., that increase the utility of telemedicine in prisons compared to other settings.[9] As telemedicine technology and applications have developed over the past 4 decades, it has become clear that telemedicine is most useful when physical barriers (i.e., geographic distance, terrain, climate difficulties) make transportation and/or direct contact between patient and clinician difficult.[10] Numerous prisons are subject to these physical barriers because of their remote location, and access to specialist medical care is frequently restricted in terms of timeliness of care and the number of professionals available.[2]

The opportunity to use telehealth as a method to contain healthcare expenses provides another rationale for using it in prison settings. Cost containment for medical consultations is an obvious administrative concern since the medical domain is reported to constitute as much as 15% of state correctional budgets,[2] which translates into an average state corrections medical budget exceeding 74 million dollars annually.[11] A recent National Institute of Justice (NIJ)[7] report indicated that a conventional, face-to-face healthcare consultation for the correctional population has an average cost of $173 in comparison to telemedicine consultations estimated at $71 each.

Beyond the sheer volume of offenders (1,076,343 in state facilities and 124,540 in federal facilities)—who, compared to community estimates, have an above average number of chronic and serious healthcare and mental health needs[9,12–14]—a significant portion of medical expenses results from staffing associated with transporting prisoners into the community for medical consultations. Telemedicine consultations in prison settings would reduce the number of incidents requiring transportation of inmates to tertiary-care sites because of the ability of the consulting physician to screen patients remotely.[6,15] In addition, telemedicine can reduce travel costs by decreasing the need for specialists travel to remote prison locations in order to provide face-to-face consultations.[15]

Beyond the financial advantages, perhaps the most obvious benefits are increased security and safety for the community.[16] Security is increased as transportation of prisoners outside the prison facility's secure perimeter is obviated in telemedicine.[16]

Although barriers to prison telemedicine exist, they are similar to those found in implementing telemedicine in other settings. The obvious initial barrier is the cost of equipment, but this cost has decreased significantly during the past several years.[3,17,18] Many programs have addressed this barrier by seeking grant funding for initial start-up costs.[15] Other barriers include training of staff in the use of this technology, the availability of infrastructure (i.e., line capabilities available in the region), and the availability of physical space for a private consultation area within the prison where telemedicine is practiced.[7,19]

The NIJ report[7] supporting telemedicine as a viable option for many correctional facilities appears to represent the norm for this decade; telemedicine may be the delivery method of choice in correctional facilities.[7] It remains unclear, however, how this enthusiasm in the literature would translate into operational programs.

A 1997 survey reported that of the 50 state correctional systems 18 had active telemedicine programs.[2] That survey also indicated that 15 additional states planned to implement telemedicine programs.[2] Several years later a survey reported by Lowes[20] estimated that prison telemedicine accounted for 20% of all telehealth activities.

MATERIALS AND METHODS

Telephone structured interviews were completed with personnel in U.S. federal and state departments of correction regarding the status

of telemedicine in adult prison systems. Because the information sought was related to program administration, funding sources, and cost-benefit issues on the state or federal level (e.g., not at individual correction facility sites), the administrative representatives for each state or federal program served as target respondents for the interview. Depending on what each department self-identified as appropriate, one or two employees were interviewed for each program. The respondents were identified by their respective departments as responsible for telecommunications, telemedicine, and/or medical service programs in their state or federal department of corrections. One hundred percent of states and the federal Bureau of Prisons were interviewed.

An eight-question structured interview was developed to assess current utilization of telemedicine, sources of funding, and perceived benefits and barriers (see Appendix). The interviewers, a postdoctoral fellow and a graduate research assistant, were trained to use a standardized procedure in conducting the interviews. This included face-to-face reviews of the specified ordering and wording (as scripted) of the interview and planned strategies for addressing respondents' questions or unsolicited information.

RESULTS

Locations

The data indicate that 52% of state department of corrections (26 states) are currently operating 34 telemedicine programs. The programs in these 26 states reach 415 facilities out of the total 1,384 existing adult state correctional facilities in the United States. Table 1 shows the number of facilities currently using telemedicine in each state, based in rural and urban locations. Urban locations are defined according to the U.S. Census Bureau's criterion of 50,000 or more inhabitants for urban/metropolitan designation. Any location with inhabitants of a lesser number was considered rural for the purposes of this interview.

Table 1. Locations of State Prisons with Telehealth Programs (n = 26)

States with prison telehealth programs (n = *26*)	*Number of facilities in urban locations*	*Number of facilities in rural locations*
Alaska	2	5
Arizona	3	5
California	6	19
Colorado	2	5
Georgia	2	9
Illinois	0	1
Iowa	1	7
Kansas	1	5
Kentucky	1	11
Louisiana	0	2
Maine	1	4
Maryland	2	3
Massachusetts	0	1
Michigan	4	12
Mississippi	0	1
New York	3	47
North Carolina	1	5
North Dakota	0	2
Ohio	21	12
Oregon	0	2
Pennsylvania	8	19
Texas	14	79
Utah	0	1
Virginia	0	8
West Virginia	0	1
National totals	73	268

Urban = population over 50,000; rural = population of less than 50,000.

Table 2. Percentage of the 26 Existing State Telemedicine Programs Serving Various Correctional Custody Levels

Correctional custody level	*Percentage of 26 state telemedicine programs*
Maximum security	88.5
Medium security	76.9
Minimum security	69.2
Treatment program	36.0
Work release	32.0
Hospital	32.0
Jail	30.8

Correctional custody level

There were many correctional custody levels represented across the facilities interviewed. As noted in Table 2, "maximum security" populations are the most frequently targeted correctional custody level for telemedicine use by correctional programs.

Financial support

Ninety-two percent of the state telemedicine programs are funded through regular, allocated state budgets. One program supplements state budget funding with billed services, and five programs are currently funded through grants. In terms of financial arrangements for technical services, 80.8% ($n = 21$) of state telemedicine programs use in-house services with all the equipment and services operated and maintained by state employees. The remaining 19.2% ($n = 5$) of telemedicine programs rely on private, contracted companies for equipment maintenance and technical services.

Utilization data

As noted in Figure 1, the 26 states using telemedicine are distributed throughout the nation. Of the remaining 24 states, 20 of these are doing at least one type of non-medical videoconferencing. These videoconferencing data do not include any county level use. Hence, correctional videoconferencing applications may be happening on the county level but not captured by this state and federal interview if these activities are not in connection with state correction facilities. For example, in Idaho, several counties complete judicial proceedings by videoconferencing between jails and county courthouses. However, this current interview identified Idaho as one of the few states with

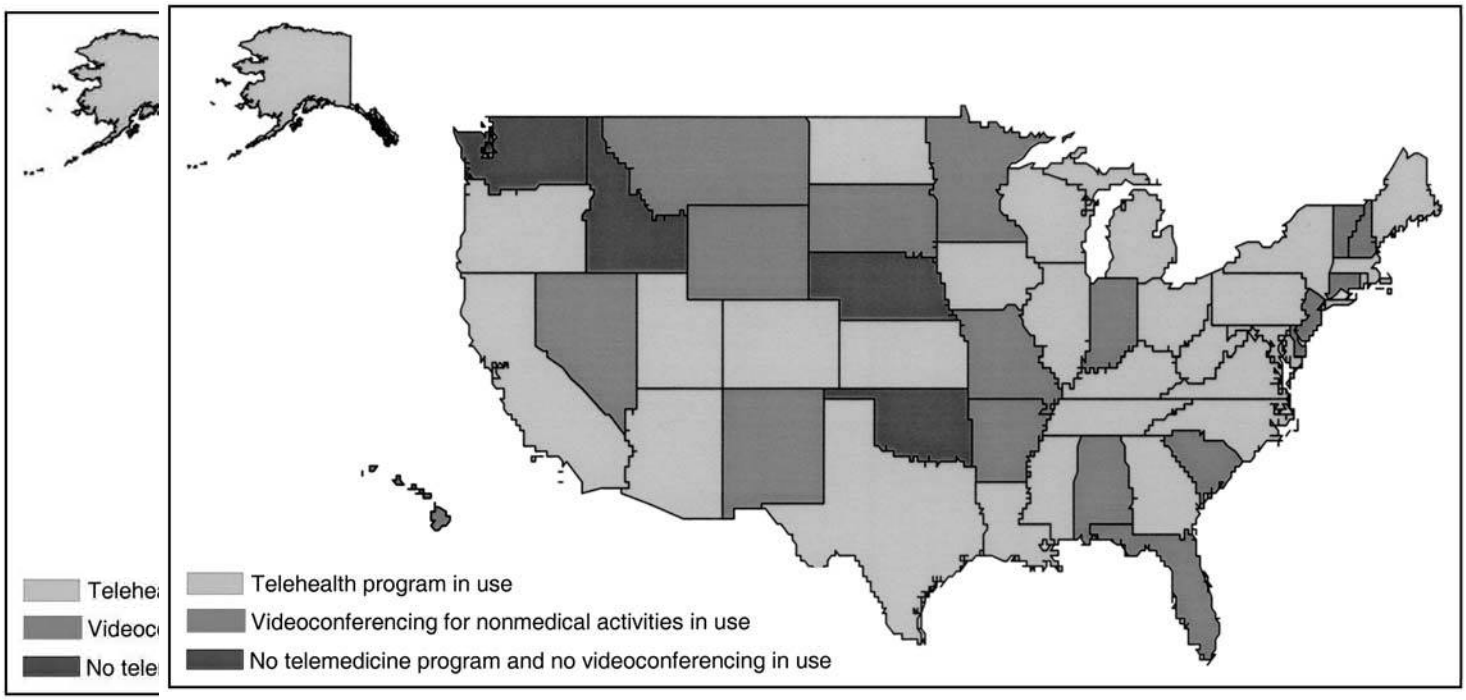

FIG. 1. Telemedicine and telecommunication utilization reported by state departments of correction. Reprinted with permission from B.H. Stamm, Institute of Rural Health, Idaho State University, Pocatello, ID.

Table 3. Non-Medical Uses of Telecommunication in Correctional Settings

Non-medical telecommunication activity	*State (n = 26) telemedicine programs*	*States (n = 24) without telemedicine programs*	*Total (n = 50) corrections departments*
Administration/staff meetings	20 (76.9%)	14 (58.3%)	34 (68.0%)
Judicial proceedings	19 (73.0%)	14 (58.3%)	33 (66.0%)
Staff training/continuing education	18 (69.2%)	13 (50.0%)	31 (62.0%)
Inmate education	6 (23.1%)	3 (12.5%)	9 (18.0%)
Other[a]	2 (7.7%)	0 (0%)	2 (4.0%)
1 or more non-medical activity reported	26 (100.0%)	20 (83.3%)	46 (96.0%)

Data are number (%).
[a]Other services included inmate visitation programs and work interviews.

no videoconferencing since these activities do not include state correction facilities.

State departments of corrections reported that administrative/staff meetings and judicial proceedings are the most common non-medical remote activities for state programs, regardless of whether or not an active telemedicine program is in place (Table 3). As seen in Table 3, it appears that states with active telemedicine programs use telecommunications more frequently and for a greater variety of non-medical uses (i.e., work interviews, visitation programs), but this difference was not statistically significant.

Telemedicine utilization for the 26 existing programs has a clear pattern of use dominated by specialty-based medical and mental health consultations (Table 4). Consultations with specialized medical professionals were reported by 21 of the 26 programs (81.0%) with medical specialists defined as including all medical specialties (e.g., cardiology, radiology, dermatology, orthopedics, etc.) with the exception of psychiatry. Mental health consultations with a psychiatrist, psychologist, or therapist were reported by 19 of the 26 programs (73.1%). The medical uses reported as "other" included programs such as peer medical consultation (2/26; 7.7%) and human immunodeficiency virus, dialysis treatments, prenatal education, or dietary consultations (1/26; 3.8% each).

Table 4. Types of Services Provided by the 26 State Corrections Telemedicine Programs

Type of service	*Programs providing services*
Medical specialist consultation	21 (80.8%)
Mental healthcare	19 (73.1%)
Primary medical care	9 (34.6%)
Emergency medical triage	3 (11.5%)
Dental	2 (7.7%)
Other[a]	5 (19.2%)

Data are number (%).
[a]Other services included transitional care planning/peer consultation, dietary consults, prenatal education, dialysis, and human immunodeficiency virus care.

Barriers to telemedicine programs

The most common barrier encountered by state telemedicine programs was the cost of equipment (Table 5). However, personnel factors including resistance from medical providers, staff technical expertise, and coordination of sites and services were mentioned nearly as often as cost.

Table 5. Percentage of States Reporting Specific Perceived Barriers to Telemedicine Utilization

Barriers	*Percentage*
Cost of equipment	50.0
Resistance from medical providers	46.2
Lack of technical expertise for staff	46.2
Coordination of sites and services	42.3
Staffing problems	34.6
Inadequate technical infrastructure	34.6
Resistance from inmates	19.2
Cost of equipment maintenance	15.4
Resistance from security staff	15.4
Resistance from administrators	15.4
Other[a]	15.4

[a]Other barriers include government processes that are time consuming; equipment location confidentiality/safety; budget revenues reduced; physician cancellations.

Table 6. Percentage of States Reporting Specific Perceived Benefits to Telemedicine Utilization

Benefits	*Percentage*
Improved security for the community	96.2
Improved safety to security personnel	88.5
Cost savings	84.6
Availability of specialist consults	80.8
Reduced staffing demands	73.1
Improved medical response time	69.2
Shorter waiting lists	69.2
Improved quality of care	65.4
Reallocation of staff	46.2
Other benefits[a]	15.4

[a]Other benefits include: increased compliance of inmates to treatment, especially dialysis; improved communication between administration and clinical staff; ability to have remote staff more involved in policy and meet regularly; increased education of staff and inmates; increased competence of staff; peer interaction with other professionals.

Benefits of telemedicine programs

Of the benefits reported by states operating telemedicine programs, security for the prison staff and the community was reported most frequently (Table 6). However, the majority of programs reported cost savings as a significant advantage in telemedicine. Some programs kept detailed cost savings records specific to the telehealth program. Others estimated cost savings based on broader budgetary allocations required for medical/mental health service provision and inmate transportation costs. Both those who did and those who did not keep these records attributed the greatest cost savings to the reduced transportation of prisoners.

Federal programs

Currently, 40 of the 102 federal correctional facilities in the United States have active telemedicine programs; all are funded through their regular federal budget allocations. Of these 40 programs, 37 are provided by in-house services, and the remaining three programs are provided by contracted private companies. All federal programs use telecommunications to provide the following services: primary medical care, specialist medical consultations, psychiatric mental healthcare, administrative/staff meetings, staff training/continuing education, and judicial proceedings. Plans are being implemented to provide telemedicine services in all 102 correctional facilities.

CONCLUSIONS

Our results indicate that over half (26) of state departments of correction and slightly less than half of federal facilities currently have active telemedicine programs, representing an increase compared to previous studies. The fact that the majority of this growth has occurred during a 10-year period is remarkable. All but four states reported using videoconferencing technology for non-medical purposes, a trend that points toward increased utilization. Many states, and the correctional facilities therein, have some of the necessary equipment in place for a telehealth system, providing a viable foundation for developing a system able to provide medical services in conjunction with the current non-medical uses.

The survey findings suggest that the cost–benefit equation is weighted more heavily toward safety than monetary costs alone. Although the facilities experience cost savings or "cost avoidance" by reducing the number of offsite inmate transports, the greatest benefit appears to be the increased safety to security personnel and to the community at large.

Consistent with the general trend toward difficulty in hiring and retaining medical personnel[13] in corrections, many states indicated experiencing difficulties with recruiting medical professionals who are willing to participate in telemedicine specifically. Provider resistance has been mentioned as a potential problem in the literature,[16,19,21] and some states offered anecdotal reasons for their own experience. For example, some facilities had problems with older physicians being unwilling to participate while the younger physicians who are more familiar with the technology were more willing to participate. Future research should consider the nature of this resistance as well as effective methods for ameliorating it.

Insufficient infrastructure was reported by a

number of states, a phenomenon specific to prisons located in rural settings. This was not surprising in view of the technological divide in rural areas in a variety of contexts.[10]

Overall, more benefits were reported more frequently than were barriers. In addition, concern with equipment costs may be based more on perception than fact given the declining costs over the last few years. Finally, as broadband becomes more available in rural areas, the ability to use telehealth effectively in rural corrections facilities, as has been seen in health facilities, may increase. If this happens, both inmates and corrections staff are likely to be pleased.[21]

ACKNOWLEDGMENTS

This project is supported in part by grant 1 D1B TM 00042-01 from the Department of Health and Human Services Health Resources and Services Administration, Office for the Advancement of Telehealth.

REFERENCES

1. Brunicardi BO. Financial analysis of savings from telemedicine in Ohio's prison system. *Telemed J* **1998;**4:49–54.
2. Gailiun M. Telemedicine takes off. *Corrections Today* **1997;**Feb:68–71.
3. McCue MJ, Hampton CL, Malloy W, Fisk KJ, Dixon L, Neece A. Financial analysis of telecardiology used in a correctional setting. *Telemed J e-Health* **2000;**6:385–391.
4. Mekhijian H, Warisse J, Gailium M, McCain T. An Ohio telemedicine system for prison inmates: A case report. *Telemed J* **1996;**2:17–24.
5. Mekhjian H, Turner JW, Gailiun M, McCain TA. Patient satisfaction with telemedicine in a prison environment. *J Telemed Telecare* **1999;**5:55–61.
6. National Institute of Justice. *Telemedicine can reduce correctional health care costs: an evaluation of a prison telemedicine network.* Report no. NCJ 175040. Washington, DC: U.S. Department of Justice, **1999.**
7. National Institute of Justice. *Implementing telemedicine in correctional facilities.* Report no. NCJ 190310. Washington, DC: U.S. Department of Justice, **2002.**
8. Zollo S, Kienzle M, Loeffelholz P, Sebille S. Telemedicine in Iowa's correctional facilities: initial clinical experience and assessment of program costs. *Telemed J* **1999;**5:291–301.
9. Ax RK, Fagan TJ, Holt SMB. Individuals with serious mental illnesses in prison: rural perspectives and issues. In: Stamm BH, ed. *Rural behavioral health care* Washington, DC: APA Books, **2003:** 203–216.
10. Stamm BH. Bridging the rural-urban divide with telehealth and telemedicine. In: Stamm BH, ed. *Behavioral healthcare in rural and frontier areas.* Washington, DC: APA Books, **2003:** 145–156.
11. Camp CG, Camp GM. *The corrections yearbook 2001: adult systems.* Middletown, CT: Criminal Justice Institute, **2002.**
12. Diamond PM, Wang EW, Holzer CE III, Thomas CR, Cruser DA. The prevalence of mental illness in prison: review and policy implications. *Admin Policy Mental Health* **2001;**29:21–40.
13. McDonald DC. Medical care in prisons. In: Tonry M, Petersilia J, eds. *Prisons.* Chicago: University of Chicago Press, **1999:**427–478.
14. Camp GK, Camp GM. *The 2001 corrections yearbook.* Middletown, CT: Criminal Justice Institute, Inc., **2001:** 12–72.
15. Bashshur RL. Telemedicine and health care. *Telemed J e-Health* **2002;**8:5–12.
16. Magaletta PR, Fagan TJ, Ax RK. Advancing psychology services through telehealth in the Federal Bureau of Prisons. *Profess Psychol Res Pract* **1998;**29:543–548.
17. Caramanis T. Editorial. *Telemedicine Today* **2002;** 8(1):10.
18. Zincone LH Jr, Doty E, Balch DC. Financial analysis of telemedicine in a prison system. *Telemed J* **1997;**3: 247–255.
19. Magaletta PR, Dennery C, Ax R. Telehealth: a future for correctional healthcare. In: S. Stojkovic, ed. *Managing special populations in jails and prisons.* Kingston, NJ: Civic Research Institute, **in press.**
20. Lowes R. Telemedicine. *Med Econ* **2001;**78(3):24.
21. Campbell JD, Harris KD, Hodge R. Introducing telemedicine to rural physicians and settings. *J Fam Pract* **2001;**50:419–424.

Address reprint requests to:
B. Hudnall Stamn, Ph.D.
Institute of Rural Health
Idaho State University
Campus Box 8174
Pocatello, ID 83209

E-mail: bhstamm@isu.edu

APPENDIX:

STRUCTURED INTERVIEW USED WITH DEPARTMENT OF CORRECTIONS REPRESENTATIVES

Do your adult correctional facilities use any type of telemedicine? ___yes ___no
If yes, go to #1. If no, complete only 4e, 4f, 4g, 4h, & 4i.

1. Number of corrections facilities with access to telehealth/telemedicine programs _____
   What types of facilities are these: ____Min. Security Prison ____Max. Security Prison
   ____Work Release Program ____Treatment Program ____Hospital
   ____Jail ____Other_____
   ____# Urban (pop. 50,000+) ____Rural (pop<50,000)

2. Telehealth/telemedicine programs provided by: ____in-house/direct ____contracts ____both

3. Number of contracted telehealth/telemedicine providers_____

Would you be willing to tell us what organizations you use as contractors?____yes ____no

(Note: We will find these through other public records if they do not know or will not tell us. The Telemedicine Information Exchange [TIE] has most of them listed.)

Organization	Contact Person	Phone	Address

4. I am now going to read you a list of activities. I would like you to tell me if these activities are provided by distance delivery or telecommunication in any of your facilities. For example, I will ask if you provide adminstrative/staff meetings by telecommunication or distance delivery. Do you understand?

	Use Telehealth/ distance delivery
a. Primary medical care (general practitioner)	
b. Specialist medical consults (i.e., cardiology, radiology, orthopedics, etc.)	
c. Mental healthcare: psychiatrist, psychologist, and/or therapy	
d. Dental care	
e. Administrative/staff meetings	
f. Inmate educational opportunities (i.e., health ed., GED)	
g. Staff training/continuing education	
h. Judicial proceedings (i.e., court appearances, competency hearings)	
i. Other_____	

5. For your correctional facilities using telemedicine, is telemedicine funded by the following: (yes/no)

_____ grants _____ regular allocated budget _____ billed services

other_____

6. Has having a telehealth/telemedicine program been beneficial in any of the following ways:

_____Improved quality of medical care
_____Shorter waiting lists
_____Improved security for the community
_____Reduced staffing demands (overtime)
_____Cost savings
____Improved quicker medical response time
____ Availability of specialist consults
____Improved safety to security personnel
____Reallocation of staff
Other_____
_____

7. Which of the following barriers or difficulties have you encountered with using telehealth/telemedicine, if any?

_____Cost of equipment
_____Staffing problems
_____Coordination of sites/services
_____Resistance from administrators
_____Resistance from medical providers
_____Other_____
_____Cost of equipment mainentance
_____Lack of technical expertise for staff
_____Resistance from inmates
_____Resistance from security staff
_____Insufficient technical infrastructure

8. Is there anything else you would like to tell us?

Patient and Provider Satisfaction with the Use of Telemedicine: Overview and Rationale for Cautious Enthusiasm

Whitten P, Love B[1]

Department of Communication, Beering Hall, Purdue University, West Lafayette, IN, USA
[1]School of Journalism, Michigan State University, East Lansing, MI, USA.

Correspondence:
B Love,
E-mail: lovebrad@msu.edu

ABSTRACT

Telemedicine research addressing user satisfaction abounds in academic literature. Results from patient satisfaction studies indicate exceptionally high levels of perceived satisfaction, often above the rates of expected satisfaction for traditional forms of health delivery. Results from provider satisfaction studies are also generally quite positive; however, data from providers point to higher concerns with delivery barriers and challenges. Even though data from patient and provider satisfaction research suggests overwhelming optimism for this delivery modality, this paper urges cautious embracement of these results for several reasons. First, many of the studies exhibit serious methodological weaknesses related to design and data collection instruments. In addition, the construct of satisfaction is largely undefined and is not clear. Even recognizing these caveats, the results of the study do offer some evidence that patient satisfaction will not impede the deployment of telemedicine, but provider satisfaction merits additional study.

PubMed ID : 16388172
J Postgrad Med 2005;51:294-300

KEY WORDS: Patient satisfaction, provider satisfaction, telemedicine, patient outcomes, healthcare costs

Telemedicine possesses the ability to bridge gaps and overcome barriers in a way unthinkable to traditional forms of healthcare. For more than 50 years, telecommunications technology has played a role in spreading medical care to previously unreachable populations.[1] Throughout telemedicine's bumpy start and deployment, researchers and practitioners have been concerned with user satisfaction,[2] a key challenge that still remains for today's healthcare organizations.[3] Insights supplied by patients and providers remain essential across the medical fields served by telemedine projects, especially as the number of these projects continues to incease at a dramatic rate. In fact, only four active telemedicine programs existed in 1990, but 10 years later, the number has jumped to an unquantifiable level.[4]

In general, investment in telemedicine by governments around the world spurred – and continues to spur – much of the growth. Infrastructure development and health alert networks in the United States are such a priority that the federal Departments of Agriculture, Commerce, Defense and Health and Human Services all offer government-provided grants to promote telemedicine applications.[5] In addition, varying entities in Norway, Spain, Sweden, Ireland, Greece, Germany and elsewhere maintain programs to encourage the development of telemedicine.[6–10]

As the dramatic expansion of the last decade continues,[11] a better understanding of how satisfied patients and providers feel will become increasingly important.[12] A rapidly growing number of studies across several medical fields have demonstrated that the attitudes of patients play a significant role in health outcomes,[13,14] further stressing the need to understand satisfaction.

Most of the currently available research on satisfaction describes a situation where patients and providers express pleasure with health care delivered through telemedicine, even if that approval is sometimes offered with reservation. Additionally, the two groups tend to maintain different motivations for their opinions. However, much of the satisfaction that literature reports comes from studies that are not experimental in nature. The publications generally consist of small sample, descriptive feasibility studies or advice to other telemedicine providers.[15,16] Therefore, this body of work may not offer generalizable results.[17,18] Furthermore, the very meaning of satisfaction remains ill-defined at best, lacking the specific