Association for Information Systems
AIS Electronic Library (AISeL)

SAIS 2005 Proceedings | Southern (SAIS)

3-1-2005

The Implementation of Care Coordination and Home Telehealth Programs in the VA Mid Atlantic Healthcare Network (VISN6): A Research Proposal

Dorothea LaChon Abraham
Chon.Abraham@business.wm.edu

David Rosenthal

THE IMPLEMENTATION OF CARE COORDINATION AND HOME TELEHEALTH PROGRAMS IN THE VA MID-ATLANTIC HEALTHCARE NETWORK (VISN 6): A RESEARCH PROPOSAL

Dorothea LaChon Abraham
College of William and Mary
Chon.Abraham@business.wm.edu

David Rosenthal
East Carolina University
rosenthald@mail.ecu.edu

Abstract

In this time of war there exists a heightened awareness of doing more with less, and the Veterans Administration (VA) has transformed itself and taken the lead in delivering value-added healthcare utilizing technology solutions in ways that promote patient empowerment, build relationships with providers and ultimately improve clinical care outcomes through telemedicine initiatives. The research proposed here is in the form of a longitudinal case study (i.e., research duration spanning pre and post implementation) examining the home telehealth care project as directed by a northeast VA medical facility that seeks to do the following: (1) during pre and post implementation, chronicle the socio-technical aspects (e.g., degree of task-technology fit, healthcare provider expectations and satisfaction, training, and resistance to change issues), (2) during post implementation, provide empirical analysis for the relationship between use of technologies facilitating home telehealth care for eligible veterans, healthcare provider productivity, cost of service, and patient satisfaction.

Keywords: telemedicine, home care, telehealth technology, Veterans Administration (VA)

Introduction

The quality of healthcare provided in this country is steadily increasing thanks in part to technological innovations that empower patients and their practitioners in ways that are not only effective, but appear to be grounded in sensibility and efficiency. However, with the average life expectancy now estimated to be approximately 77.2 years (Center for Disease Control and Prevention, 2001), disease prevention and treatment of an ever-increasing geriatric population has become a major agent for change, forcing the healthcare industry to rethink many of its traditional paradigms. Compared to its civilian counterparts, the Veterans Healthcare Administration (VHA), and its many VA hospitals and clinics across this country are openly embracing this paradigm shift.

Robert Roswell, Under Secretary for Health in the Department of Veterans Affairs credits the transformation of the delivery of veteran's healthcare to four major areas of improvement (Roswell, 2003):

- Cost - delivery of care to America's veterans has shifted from inpatient to outpatient, resulting in a 24 percent decrease in the cost of care per veteran.

- Access - The role of the VA has changed from a provider of catastrophic, last resort healthcare, to that of primary care provider for all veterans enrolled in the VA system.

- Quality - VA outcomes have exceeded best-reported performance in 16 of 18 healthcare quality indicators, as compared to data from managed care organizations, population-based surveys, and government sources.

- Patient Satisfaction – VA customer satisfaction index scores for pharmacy and inpatient care services have consistently been in the "high" range as measured on the American Customer Satisfaction Index, a cross-industry/government survey of customer satisfaction, used since 1995 to measure how well the veterans' experiences matched their expectations during their last visit to a VA medical center.

Roswell (2003) has also identified three factors as contributing significantly to this transformation:
The reorganization of the VHA from a Medical Center focus to that of a Veterans Integrated Service Network (VISN), the shifting of the management emphasis from single medical centers to a collaborative cluster of regional medical centers, and the VHA's excellent information technology platform, which is at the heart of the changes in VA healthcare.

Many of the new healthcare initiatives being put into place by the VA are overseen by the Office of Care Coordination (OCC), which was established in July of 2003 and tasked with creating ways in which technology can be incorporated within the coordination of healthcare services in VISNs to ensure that veterans receive "…the right care at the right place at the right time" (Spotswood, 2004). The OCC emerged out of the need to implement a wider use of new technologies in telehealth such as telemonitors, in-home messaging devices and personal computers, to empower patients, facilitate convenience and improve patient satisfaction (Spotswood).

The VA program that has successfully incorporated telehealth technologies into care coordination programs is the Care Coordination/Home Telehealth (CCHT) project, piloted in Florida's VISN 8 Sunshine Healthcare Network in 2000. The aim of the VISN 8 CCHT project was to use technology to treat and maintain in their homes, veteran patients who suffer from chronic diseases (Spotswood, 2004; Office of Care Coordination, n.d.; Meyer, Cobb, & Ryan, 2002). 2002 outcomes analysis for the Florida CCHT programs showed patient satisfaction rates over 90%, as well as an 88% reduction in nursing home bed days of care, a 63% reduction in VA nursing home admissions, and a 40% reduction in hospital emergency room visits (Office of Care Coordination, n.d.; Meyer, Cobb, & Ryan, 2002).

The CCHT model has been replicated in other service networks, such as VISN 1 (VA New England Healthcare System), VISN 2 (VA Healthcare Network Upstate New York), VISN 11 (Michigan, Indiana, central Illinois and northwest Ohio), and VISN 17 (VA Heart of Texas Healthcare Network (Office of Care Coordination, n.d.). To date all 21 VISNs nationwide have care coordination programs in place, with CCHT projects either in progress or planned for implementation in the near future (Darkins, 2004).

Implementing Telehealth Technologies

VHA Directive 2002-042 (Department of Veterans Affairs, 2002) outlines the comprehensive requirements for the provision of remote healthcare services to veterans by way of home telehealth programs, and its specific criteria must be followed in conjunction with, or in addition to any other accreditation requirements such as those promulgated by the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO). VHA Directive 2002-042 also states that the delivery of health care services to veterans in their homes, veteran centers, and other non-healthcare settings is only appropriate "…when it enhances patient care, and under circumstances where direct 'hands-on' care is not possible nor a necessary requirement of the patient's treatment and/or care in the judgment of the patient's health care provider" (Department of Veterans Affairs, 2002).

Not every VA patient is an appropriate candidate for home telehealth care. Based upon a inclusion and exclusion criteria, which include a complete review of a patient's medical record and/or consult documentation, he/she may be selected for enrollment into a home telehealth care program, at which time the Care Coordinator will assign technology solutions based on a number of specific criteria outlined in the OCC's Technology Assignment Algorithm including the patient's willingness to participate, specific needs such as functional ability, and cognitive and acuity levels (Gionala, 2004; Office of Care Coordination, 2004).

Technology solutions that may be assigned include monitoring and measurement devices, messaging and measurement devices for disease management, personal computers, videophones, instamatic and/or digital cameras, and telephone/assisted screen phones. The Care Coordinator may authorize a change in technology as a patient's condition warrants.

According to the VHA Home Telehealth Toolkit (Office of Care Coordination, 2003), "technology should be selected to meet the needs of the target population instead of making the target population fit within the scope of services provided by the technology." Selection of technology for use in home telehealth environments must be made within existing technical support systems, and it is recommended that any products selected should have been vendor and pilot tested within the target population, if possible, to ensure appropriateness of application (Office of Care Coordination, 2003).

In a collaborative effort with the VHA's Prosthetic and Sensory Aids Service Strategic Healthcare Group and VA's National Acquisition Center (NAC), the Office of Care Coordination has created national contracts for the technologies described in the Technology Assignment Algorithm (Office of Care Coordination, 2004), the purposes for which are to ensure that VHA (a) purchases technology to a defined national standard; (b) has a technology inventory that links with VHA's computerized health record; (c) obtains the best value for money when purchasing; and (d) obviates obstructions to program expansion from delays in purchasing technology (Office of Care Coordination, n.d.). Awards for the aforementioned contracts are in varying stages of completion (Office of Care Coordination).

Research Opportunity

The VA has introduced telehealth into the home care setting as a way to meet the healthcare needs of the veteran while overcoming barriers to care such as time and distance, and ultimately enhancing the continuity of care "…by linking health care delivery programs that may span the hospital and the community" (Department of Veterans Affairs, 2002).

The VISN 6 VA Mid-Atlantic Healthcare Network, which incorporates VA facilities in North Carolina, West Virginia and Virginia, has received approval and funding to implement its CCHT program in FY 05. This presents the researchers with an invaluable opportunity to observe and document the implementation of telehealth technologies in the VISN 6 network in the beginning stages and employing empirical analysis post implementation for discerning the relationship between use of the technology and healthcare provider productivity, impact on organizational efficacy issues like cost of service, and patient satisfaction.

Literature Review

The following table summarizes selected studies that contribute to theoretical sensitivity of the researchers conducting this study.

Table 1. Selected Studies

Author(s)	Title, Objective and/or Findings	Method
Chau and Hu, 2004	"Technology implementation for telemedicine programs." Findings: Telemedicine is a promising technology-enabled solution for long-standing problems in health care, including service accessibility, quality, costs, and resource allocation. The technology implementation of a Hong Kong-based telemedicine program is discussed.	Case Study
Whitten, Kuwahara, 2004	"A multi-phase telepsychiatry program in Michigan: organizational factors affecting utilization and user perceptions." Findings: The role of organizational issues in the success of the program was examined through patient interviews, provider interviews, patient and provider pre- and post-project focus groups, and service documents. Utilization data were obtained from activity logs and patient charts. During the study, 297 clients received 578 teleconsultations. Almost 97% of the telepsychiatry visits were scheduled. Telemedicine usage varied between the four project phases. The reasons for its variation in use included provider roles, existing organizational strategic goals and resources, the inherent organizational culture and quirks, and leadership and managerial factors. The major difficulties stemmed from the providers and the organization itself.	Mixed methods
A.I.MONRAD, 2003	"Organizing for remote consultations in health care - the production process."	Case Study

	Findings: To obtain information on the little analysed production process of remote consultations, qualitative interviews were performed with 30 persons working in tele-dermatology, tele-psychiatry, a tele-pathology frozen-section service, and tele-otolaryngology. The results show that managers in organizations planning telemedicine activity do not need to prepare the personnel by organizing communication on goal formulation and content for the remote consultations. For the single health care worker a remote consultation does not require more preparation than an ordinary consultation. The variation in type of images seen on the screen here does not seem to play a major role. Evaluation of each step mainly shows that the production process of remote consultations functions well. The most frequently mentioned problems are technical problems (which should not be exaggerated), but other problems also exist. Proposals for improvements were given, such as wishing that a technician was available, and improved booking systems. The main conclusion is that no major reorganization seems to be necessary for the production process of remote consultations.	
Garfield and Watson, 2003	"Four Case Studies in State Telemedicine Initiatives," Garfield, Monica J., Watson, Richard. Telemedicine Journal and e-Health, vol. 9, no. 2, 197, 2003. Findings: The state needs to aid healthcare facilities in gaining access to a low cost, high-quality telecommunications infrastructure. Telemedicine for correctional facilities is typically effective but not always comparable to other environments. A network of site champions in conjunction with a system-wide champion is essential. User buy-in is created by linking the system to a business plan and by making the system easy to use (convenient, reliable, etc.). Competition reduces the desire to collaborate with other facilities on a telemedicine project and also inhibits the sharing of knowledge. The state can facilitate the use of telemedicine but may no longer be successful in establishing a statewide program, if the healthcare facilities in the state have a vested interest in their own in house system. Financial support for a telemedicine system can increase its chances of becoming successful.	Case Study
Billingsley, et.al, 2002	"The Development of a Telemedical Cancer Center within the Veterans Affairs Health Care System: A Report of Preliminary Clinical Results." Findings: The telemedical outreach effort functions through the use of a multidisciplinary telemedicine tumor board. The tumor board serves patients in outlying facilities by providing comprehensive, multidisciplinary consultation for the complete range of malignancies. 85 patients have been evaluated in the telemedicine tumor board. Sixty-two percent of the patients were treated at their closest facility; 38% were referred to the cancer center for treatment and/or additional diagnostic studies. The patients' diagnoses included the entire clinical spectrum of malignant disease. Preliminary clinical results demonstrate the program is feasible and it improves access to multidisciplinary cancer care. Potential benefits include improved referral coordination and minimization of patient travel and treatment delays.	Survey
Hu, Chau, Sheng, 2002	"Adoption of Telemedicine Technology by Health Care Organizations: An Exploratory Study." Findings: Developed a research model for technology adoption and empirically evaluated it in a survey study that involved most of the public health care organizations in Hong Kong. Results from our exploratory study suggest that the model exhibits reasonable significance and explanatory utility to differentiate between adopting and non-adopting organizations	Survey
Loane; R Wootton, 2002	"A review of guidelines and standards for telemedicine." Findings: Three types of guidelines were identified, namely clinical, operational and technical. Clinical guidelines included those for teleradiology, telepsychiatry, home telenursing, minor injuries telemedicine,	Conceptual

	surgical telemedicine, teledermatology and telepathology. Operational guidelines included those for email communication, Internet access and videoconferencing. Technical guidelines included those from the American Telemedicine Association and the US Office for the Advancement of Telehealth. The main standards relevant to telemedicine include those of the International Telecommunication Union and the DICOM standard. The scarcity of guidelines and standards suggests that telemedicine is not yet near to routine use. If an international telemedicine organization were to take responsibility for defining guidelines, under the direction of clinicians with appropriate telemedicine experience, this might speed up their development.	
Sjogren, et.al, 2001	"The potential of telemedicine: barriers, incentives and possibilities in the implementation phase." Findings: Between 1998 and 1999, the Swedish Institute for Health Services Development evaluated three applications in which specialist competence was being accessed via telemedicine. The results indicated that these kinds of application can be cost-effective in an organization well adapted to new technology and that telemedicine can improve continuity of care for patients. However, the new technology was seldom supported by the old organization and better education and technical support are needed. The interviewees agreed that telemedicine was likely to affect the whole structure of health-care. Peripheral competence was expected to increase and referral patterns to change, as well as the functions of the personnel and the hospitals. New working conditions and methods of work were expected to be made possible by telemedicine and health-care was expected to become more process oriented, partly because patients are likely to be more demanding and better informed. To be able to utilize this potential, health-care managers will have to show more interest in and commitment to telemedicine. Old organizational patterns must be called into question and be developed along with information technology and telemedicine. It is also important to give priority to training in telemedicine for physicians and nurses.	Case Study
Paul, et.al, 1999	"Technology implementation for telemedicine programs." Findings: Telemedicine has the potential to increase the quality and access to health care and to lower costs. This growth of telemedicine installations is occurring even as the utilization rates for installed telemedicine projects are falling well below expectations. Drawing on data collected from three operational telemedicine projects involving different clinical telemedicine applications, we examine how the technological barriers to telemedicine are impacting telemedicine utilization rates. Addressing technological barriers is a necessary but not sufficient condition if telemedicine is to fulfill its promise, and it is predominantly only after such barriers are addressed that the other barriers - professional, legal, and financial - come to the fore. Our findings support end-user and technical training as major barriers but do not support the quality of the video, system reliability, or the perceived inconvenience for physicians to use the equipment as barriers to telemedicine. The mismatch between the sophistication of the technology and end-user requirements for clinical activities and patient confidentiality and privacy issues were supported as barriers, but how they impacted telemedicine utilization was different than expected. Finally, unsatisfactory sound quality of the telemedicine equipment was identified as a frequent and unexpected barrier to telemedicine utilization rates.	Mixed Methods
Sykes and McIntosh, 1999	"Telemedicine, Hospital Viability, and Community Embeddedness: A Case Study." Findings: This article presents a case study of one hospital's attempt to remain viable through the adoption of telemedicine. Through a 17-year analysis of local hospital-related news reports, it is argued that a hospital's relationship to the local community can affect the success and potential of such innovations. Establishing a pattern of trust and support between the	Case Study

	local community and hospital is found to be of utmost importance in increasing hospital viability.	

Research Methodology

We propose a case study of the implementation of the VISN 6 network that will use the following qualitative and quantitative data collection methods:

- **Audio Recorded In-depth Face-to-Face Interviews** – 1 to 1.5 hours either with individual stakeholders of the technology or small (3 to 5 personnel) focus groups. Stakeholders include telemedicine personnel involved with the home care project, nurses, doctors, and departmental/hospital administrators who are cognizant of the efficacy impacts of home telehealth care.

- **Observation** – At the discretion of the organization to dictate when and where first hand observations of actual technology usage will be undertaken at the clinical sites managing the home care technologies.

- **Supplemental Documents Analysis** – At the discretion of the organization to provide documents related to metrics (quantitative or qualitative) performed by the organization to assess aspects of the implementation process.

- **Survey** – Used to collect data for quantitative analysis for assessing the impact of home care on organizational and individual efficacy and patient satisfaction.

- **Expected Start and End Dates** – A detailed research schedule outlining potential interviews and times based on the availability of the participants will be developed within two weeks of the acceptance of this proposal. At this point, completion of this research is expected to be within one year after full implementation of a representative sample of the clinics/sites managing home telehealth care patients in VISN 6.

Conclusion

We hope to use the results of this study to validate the VA's model of care coordination and home telehealth implementation and provide other VISN's with valuable information for their future planning and implementation efforts regarding socio-technical related issues, healthcare provider productivity, cost to service, and patient satisfaction. We also intend for this research to inform private sector healthcare organizations about the benefits and impediments to be aware of during pre and post implementation of home telehealth care technologies. From an academic standpoint, we hope to add to the body of knowledge concerning socio-technical aspects implementation in a multi-stakeholder setting.

References

A.I MONRAD (2003) Organizing for remote consultations in health care - the production process. *Behavior and Information Technology*. 22(2) 91-101.

Billingsley, G., Schwartz, K., Lentz, S., Vallieres, E., Montgomery R., Schubach, W., Penson, D., Yueh B., Chansky, H., Zink, C., Parayno, D., and G. Starkebaum (2002) The Development of a Telemedical Cancer Center within the Veterans Affairs Health Care System: A Report of Preliminary Clinical Results. *Telemedicine Journal and e-Health*. 8(1), 123-131.

Center for Disease Control and Prevention, (2001) Fast Stats A to Z." Available on the World Wide Web: http://www.cdc.gov/nchs/fastats/lifexpec.htm Accessed on November 15, 2004.

Chau, P. and J. Hu (2004) Technology implementation for telemedicine programs. *Communications of the ACM*, 47(2), 87- 93.

Darkins, A. (2004) Personal Communication via e-mail; received on November 12, 2004.

Department of Veterans Affairs, (2002) VHA Directive 2002-042: The Credentialing and Privileging of VHA Health Care Providers Remotely Delivering Health Car to Patients at Home, In Vet Centers, and in Non-health Care Settings Via Telemedicine and/or Telehealth July 9, 2002.

Garfield, M. and R. Watson (2003). Four Case Studies in State Telemedicine Initiatives. *Telemedicine Journal and e-Health*, 9(2), 197- 207.

Gianola, K., 2004. Personal interview via face-to-face; November 5, 2004.

Hu, J., Chau, P., and O. Sheng.(2002) Adoption of Telemedicine Technology by Health Care Organizations: An Exploratory Study. *Journal of Organizational Computing & Electronic Commerce*. 12(3), 197-232.

Loane, M., and R Wootton (2002) A review of guidelines and standards for telemedicine. *Journal of Telemedicine and Telecare*. 8(2), 63-72.

Meyer, M., Kobb, R. & Ryan, P. (2002) Virtually Healthy: Chronic Disease Management in the Home. *Disease Management*. 5(2), 87-94.

Office of Care Coordination, (2004) Care Coordination Home Telehealth (CCHT) Technology Algorithm, August 2, 2004. Available on the World Wide Web: http://www.va.gov/occ/Technology_Assignment_Algorithm.pdf Accessed on November 13, 2004.

Office of Care Coordination, (2003) VHA Home Telehealth Toolkit Version 1, June, 2003. Available on the World Wide Web: http://www.va.gov/telehealth/toolkits/hometelehealth/vha_home_telehealth_toolkit_v1_07-08-03.pdf Accessed on November 13, 2004.

Office of Care Coordination, n.d. Information About National Contracts for Home Telehealth Technologies. Available on the World Wide Web: www.va.gov/occ/ntl_rollout_technologies.asp Accessed on November 13, 2004.

Office of Care Coordination, n.d. The National Rollout of Care Coordination in VHA. Available on the World Wide Web: http://www.va.gov/occ/ntl_rollout.asp Accessed on November 13, 2004.

Office of Care Coordination, n.d. History. Available on the World Wide Web: http://www.va.gov/occ/history.asp Accessed on November 13, 2004.

Pamel, W., and E. Kuwahara (2004) A multi-phase telepsychiatry program in Michigan: organizational factors affecting utilization and user perceptions. *Journal of Telemedicine and Telecare*. 10(5), 254-262.

Paul, D., Pearson K., and R. McDaniel (1999). Assessing technological barriers to telemedicine: technology-management implications. *IEEE Transactions on Engineering Management*, 46(3) 279-280.

Roswell, R. (2003) Transforming VA Healthcare. *U.S. Medicine Information Central*, January 2003. Available on the World Wide Web: http://www.usmedicine.com/column.cfm?columnID=112&issueID=46 Accessed on November 12, 2004.

Sjogren L., Tornqvist, H., Schwiele, A., and L. Karlsson (2001) The potential of telemedicine: barriers, incentives and possibilities in the implementation phase. *Journal of Telemedicine and Telecare*, 7(1), 12-14.

Spotswood, S. (2004). VA 'Care Coordination' Uses Telehealth In Home. *U.S. Medicine Information Central*, February 2004. Available on the World Wide Web: http://www.usmedicine.com/article.cfm?articleID=811&issueID=59 Accessed on November 11, 2004.

Sykes, D. and McIntosh, A. (1999) Hospital Viability, and Community Embeddedness: A Case Study. *Journal of Healthcare Managemen*t. 44(1), 59-60.