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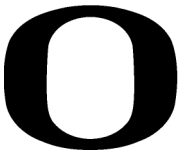

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# Using Telehealth to Expand and Strengthen the Patient Centered Care Model for Veterans

CAPSTONE 1 Bibliography


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## Introduction to the Annotated Bibliography

### Problem

With the initiation of the Affordable Care Act (ACA) in October 2013, the Veterans Administration (VA) joined a pool of private sector health insurance providers from which Veterans may choose to receive health care (DHHS, 2013). The option for Veterans to participate in this newly created insurance marketplace directly affects the healthcare choices of over eight million eligible Veterans (Kizer, 2012). Not only does this law allow Veterans to choose a health care provider from those in the pool, but the law also requires the Veterans Administration (VA) to provide payment for the care to Veterans when delivered by any of them (U.S. Congress, 2013).

In order to be competitive within this new context of healthcare provider choice, the VA and US Congress need to change not only how the agency is funded—which is currently based on delivered care projections —but how the VA markets to and maintains its enrolled patient base (VA, 2013). This new context presents the VA with an opportunity for examination of existing patient care delivery models with the goal to create a competitive advantage. Porter (1996) defines a competitive advantage as having a superior product or service in the eyes of the consumer, a cost advantage, or both. As noted by several authors cited in this study, this outcome can be achieved by offering Veterans (patients) easier access to and more choices in their care with a greater share in the decision making process (i.e., *the patient centered care model*) (Kawaguchi, Azuma, & Ohta, 2013; Schooley et al., 2010; Steel, Cox, & Garry, 2011).

**Patient centered care.** Dr. Gaudet, national VA Director of the Office of Patient Centered Care and Cultural Transformation defines *patient centered care* as "a personalized, proactive, patient driven approach*"* (2013). Dr. Cross, National Director of VA Primary Care

defines *patient centered care* as *"partnering with patients"* (2004, p.1). The VA Quality of Care national program office has published a diagram to help demonstrate the implementation and scope of patient centered care through eight areas of self-care (see figure 1). These areas of self-care demonstrate how the VA healthcare system utilizes a number of approaches to support the patient centered care model. The focus of patient centered care is to provide a patient-driven, team-based approach that delivers efficient, comprehensive and continuous care through active communication and coordination of healthcare services (Shea, 2006). The VA's Quality of Care national office also defines *patient centered care* to include: expanded systems for evaluating care, small and large team synchronization management of data generated by both the care team and the patient, expanded patient and physician/care team education, proactive vs. reactive care practices, and utilization of available and new technologies for open communication between the care team and patients (VA QOC, 2013).

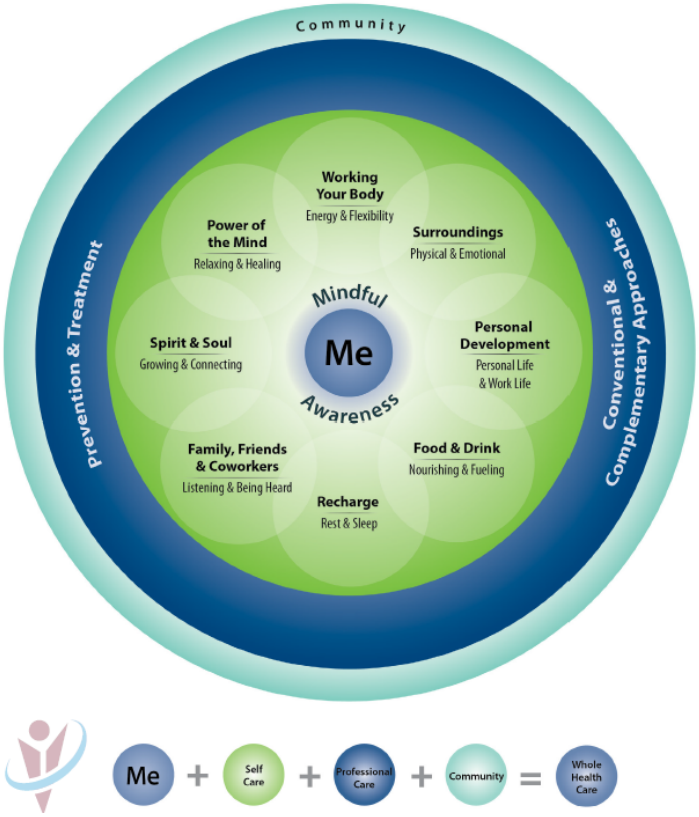

**Figure 1.** *Patient centered care, eight components of proactive health and well-being.* VA Quality of Care national program office (2013). Retrieved from http://www.va.gov/QUALITYOFCARE/docs/proactive-health-well-being-interactive-08212013.pdf

**The VA Telehealth Program.** According to the U.S. Department of Health and Human Services, Telehealth is defined as "the use of electronic information and telecommunications technologies to support long-distance clinical health care, patient and professional health-related education, public health and health administration" (HRSA, 2013). The VA's implementation of Telehealth includes: videoconferencing, the internet, store-and-forward imaging, streaming media, and terrestrial and wireless communications. Telehealth is one of the many tools the VA has put into practice over the past 30 years to address the needs of rural patients that are unable to travel long distances for basic care (Brooks et al., 2012; McFarland, Raugi, Taylor, & Reiber, 2012). When Telehealth was first implemented in the VA nationally, programs were focused on preventative care (e.g. smoking cessation and diabetes management), performed by nursing and out-patient/in-home care teams (Dansky, & Gamm, 2002), and not integrated into the expanded cadre of clinical settings that exist today (Hoanca, 2007). As the technology is becoming more affordable and access to broadband and wireless technologies is becoming commonplace, the modalities in delivery are shifting to improve access to all Veteran populations, including homeless Veterans (Gordon, Haas, Luther, Hilton, & Goldstein, 2010). Improved access includes the implementation of the patient centered care model in which the patient participates in their care, medical team members share information and the patient has open and easy access to records and medical history (Gordon et al., 2010).

Telehealth is just one part of an integrated care model within the VA, known as the Patient Aligned Care Team (PACT), which is the direct extension of the patient centered care approach. PACT is designed to increase patient access to care, improve care coordination, improve communication, and align the continuity of care. VA PACT model is defined on the VA Primary Care Program Office as: "*accessible, coordinated, comprehensive, patient-centered care, and is managed by primary care providers with the active involvement of other clinical and non-clinical staff*" (VA PACT, 2013) PACT implements the ability for patients to have a more active role in their health care. Once implemented, PACT is associated with increased quality improvement, increased patient satisfaction, or Survey of Healthcare Experiences of Patients (SHEP) scores, and a defined decrease in hospital costs due to fewer hospital visits and readmissions (Perlin, Kolodner, & Roswell, 2004). As noted a decade ago by Hung and Zhang (2003), VA Telehealth modalities (care delivery options) have expanded to include: Teleradiology, Telepsychiatry, Telepathology, Telecardiology, Teledermatology, Tele-homecare, Teleoncology, Tele-surgery, and remote patient monitoring, or Teleconsultation. These various delivery options demonstrate how technology can be adopted and utilized for proactive and not just reactive patient care, a core part of the patient centered care model (Dobke, Bhavsar, & Herrera, 2011; Sinha, 2000).

With the continued growth of Telehealth as a care delivery tool, the VA now has the ability to deliver care more effectively and cheaply than bringing a patient to a bricks-and-mortar facility for treatment (Fortney et al., 2011). VA VSSC clinical access data is included in Appendix A for further assessing usage and savings in the VISN 20 VA region during a portion of FY'12-FY'13. According to Ediripplulige (2010) technological advances provide a platform for healthcare delivery with a competitive edge over the private sector. While the private

healthcare industry and some state agencies utilize Telehealth modalities in various ways to support rural and urban populations, no healthcare system has the ability to share information and provide Telehealth services across the entire United States to the patient populations served by the VA (Kehle, Greer, Rutks, & Wit, 2011). This circumstance adds to the opportunity of the VA to build competitive advantage by maintaining and growing existing patient populations (VA NPCPO, 2013).

Telehealth when integrated into the patient centered care approach, additionally provides the VA with a potential means of saving millions of dollars in patient reimbursement costs and fees related to traveling to receive care (VA VSSC, 2013). While the costs of implementing and maintaining the Telehealth infrastructure is difficult to measure across the VA over the past 30 years, regionally it is shown that Telehealth programs offer increasing cost savings and benefits to patients and their care teams (VA VSSC, 2013; VISN 20, 2009). Although cost savings is not a focus of this annotated bibliography, for additional information regarding the cost-benefits of Telehealth regarding travel reimbursement for the VISN 20 region, (see Appendix B).

**Purpose**

Three key areas that could be analyzed in order to address the role of VA healthcare within this new ACA healthcare environment include examination of (a) current VA Telehealth initiatives including program successes and failures (Radhakrishnan, Jacelon, & Roche, 2012; Sanders et al., 2012; Young, 2012); (b) ways in which existing Telehealth delivery options can be further utilized to expand and strengthen patient centered care to rural and urban patient populations (Hogan et al., 2011; Wootton, 2012), and (c) methods to measure initiative outcomes (Finch et al., 2003; Miller, 2011 ). The purpose of this annotated bibliography is to identify literature that suggests ways in which the VA could expand and strengthen patient centered care

to rural and urban patient populations through better utilization of the Telehealth program delivery options (Edirippulige, 2011; Rogers et al., 2012). As one example, Telehealth real-time video-based options enable enrolled Veterans to electronically interact with their care team, including Clinical Video Telehealth, Store and Forward Telehealth, and Care Coordination Home Telehealth (Hopp et al., 2006).

**Audience**

The audience for this study is local, regional, and national Veterans Administration managers who rely on reporting and data provided through various channels within the VA's clinical and non-clinical settings upon which to base expenditures and allocation of resources (VSSC, 2013). The information found within this study provide managers with a strong foundation to influence decisions made about the delivery of health care options for enrolled Veterans, and in particular, decisions to expand and strengthen Patient centered care to rural and urban patient populations through better utilization of the Telehealth program delivery options.

Specific groups in this audience include: VA Central Office Telehealth Management (technology implementation and clinical oversight); Regional Office of Information and Technology Chiefs and CIOs (technology and infrastructure support); VISN Network Directors, Deputy Network Directors, CFO, Decision Support Staffs, as well as Quality & Performance (Q&P) staffs which oversee the clinical and budgetary aspects of the regional VHA administration; and lastly, Telehealth Coordinators (clinical care team leads) at the regional and local levels. Additional definitions related to VA Telehealth are available in Appendix C for clarification.

**Research Question**

In what ways can existing Telehealth delivery options within the VA be further utilized to expand and strengthen patient centered care to rural and urban patient populations in order to build competitive advantage among healthcare options available to veterans, within the Affordable Care Act?

**Sub-questions.** How can current delivery options be further utilized to *expand* the patient centered care model? How can current delivery options be further utilized to *strengthen* the patient centered care model? How does expanded utilization of Telehealth technologies provide a competitive advantage?

**Search Report**

**Search strategy.** Sources, articles, and government documents are gathered by searching the University of Oregon Libraries online databases including: Journal Storage (JSTOR), Academic Search Premier, and Sage Complete. During the initial searches, a list of possible sources is recorded to include: APA citation, abstracts, keywords and source URL's of each source document. Adobe pdf and Microsoft Word document versions of selected works are saved locally and naming conventions (e.g. ranking-article-year-author-pp) utilized for easy identification and categorization. During the selection of the key references, hard copies are produced with specific quotations and data identified. Additionally, a number of VA Telehealth related documents, memorandums, policies, and congressional video testimonies are retrieved from the VA regional and national Telehealth program SharePoint websites. Raw data is also retrieved directly from the VHA's Support Services Center (VSSC) Telehealth utilization (encounter measurements) from both FY'12 and FY'13; this data contains no Personally

Identifiable Information and is being used with permission from the Portland VA Medical Center Privacy Office. (see Appendix B)

**Established indexing descriptors.** *Patient centered care* paradigms and *Telehealth* technologies have been utilized in both public and private healthcare systems for over thirty years (Kehle et al., 2013). Works cited in this study focus only on Telehealth delivery options that support and/or expand the patient care model, rather than general areas of healthcare delivery and outcomes for Veterans. This includes quality and performance measurements of clinical processes and outcomes specific to Telehealth (Finch et al., 2003; Hoanca, 2007; Sanders et al., 2012), examinations of technology success and failures rates of Telehealth integration (Shea, 2006), the overcoming of barriers to Telehealth adoption (Hopp et al., 2006 and assessments of patient centered care methodologies within clinical settings (Perlin et al., 2004). As Telehealth technologies change rapidly, literature published before 1998 is excluded. Key words used to search include:

- eHealth
- Telehealth Veteran
- Veteran Administration
- Patient Centered Care
- Telehealth efficacy
- Telehealth Patient Satisfaction

**Documentation approach.** References are collected and documented by utilizing both Firefox web browser plugin/electronic data tool Zotero (www.zotero.org) and manually recording via Excel spreadsheet to include URL, title, author, publication, date, and abstract. Full text digital documents are stored on external devices for later retrieval and study. Tools used

during research and authoring include digital annotation and commenting within Adobe PDF for expedited retrieval of materials and referencing. The entries are organized into sub-categories based on their relationship to the core research question regarding ways to expand and/or strengthen the Patient centered care model within these sub-categories: (a) *Telehealth* (Hopp et al., 2006), (b) *Telehealth effectiveness* (Miller, 2011), and (c) *patient centered care* (Perlin et al., 2004).

**Evaluation of references.** Following the guidelines established by the University of Oregon *Critical Evaluation of Information Sources,* articles, data, and documentation are only considered scholarly if retrieved from sources which exhibit credible, relevant, and qualified origin such as a peer-reviewed journal or directly by a federal agency (UO Libraries, 2013). Any materials or data not gathered from other than peer reviewed journals are judged by relevance, date, and author credentials (e.g. medical professional, national level director, or academic expert). Articles and other materials are limited to the past 15 years to prevent the inclusion of obsolete material. For additional technical and clinical terminology and definitions related to Telehealth, see Appendix C.

## Annotated Bibliography

The following 15 references were selected and reviewed based on their relationship and support of the primary research question: In what ways can existing Telehealth delivery options within the VA be further utilized to expand and strengthen patient centered care to rural and urban patient populations in order to build competitive advantage among healthcare options available to veterans, within the Affordable Care Act? This set of 15 references examines the historical approaches and uses of Telehealth (e.g. chronic disease/condition management, Telemental care, Teleradiology, etc.) to identify the purpose and use of VA Telehealth; The measuring of clinical Telehealth efficacy rates (successes and failures) to examine its effectiveness within the continuum of care; And how the use of Telehealth technologies, through a variety of approaches and applications (e.g. improved access to care, collaborative communication, patient driven care), can be utilized to *expand* and *strengthen* the patient centered care model for rural and urban populations.

Each of the 15 annotation entries contains: (a) full bibliographic citation, (b) published abstract, and (c) a summary. The summary provides a description of the content in each reference that is most relevant to the purpose of this study, which is to identify ways in which the VA could expand and strengthen patient centered care to rural and urban patient populations through better utilization of the Telehealth program. The focus of patient centered care is to provide a patient-driven, team-based approach that delivers efficient, comprehensive and continuous care through active communication and coordination of healthcare services (Shea, 2006). The VA's Quality of Care national office also defines *patient centered care* to include: (a) expanded systems for evaluating care, (b) small and large team synchronization management of data generated by both the care team and the patient, (c) expanded patient and physician/care

team education, (d) proactive vs. reactive care practices, and (e) utilization of available and new technologies for open communication between the care team and patients (VA QOC, 2013).

Brooks, E., Manson, S., Bair, B., Dailey, N., & Shore, J., (2012, January/February). The diffusion of Telehealth in rural American Indian communities: A retrospective survey of key stakeholders. *Telemedicine and E-Health*, 60-66. doi: 10.1089/tmj.2011.0076. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/22082106

**Abstract.** Objective: Mental health issues are a serious concern for many American Indian Veterans, especially for post-traumatic stress disorder and related psychiatric conditions. Yet, acquiring mental health treatment can be a challenge in Native communities where specialized services are largely unavailable. Consequently, Telehealth is increasingly being suggested as a way to expand healthcare access on or near reservation lands. In this study, we wanted to understand the factors affecting the diffusion of Telehealth clinics that provided mental health care to rural, American Indian Veterans. Materials and Methods: We surveyed 39 key personnel and stakeholders who were involved in the decision-making process, technological infrastructure, and implementation of three clinics. Using Roger Everett's Diffusion Theory as a framework, we gathered information about specific tasks, factors hindering progress, and personal reactions to Telehealth both before and after implementation. Results: Many participants expressed initial concerns about using Telehealth; however, most became positive over time. Factors that influenced participants' viewpoint largely included patient and staff feedback and witnessing the fulfillment of a community health need. The use of outside information to support the implementation of the clinics and personal champions also

showed considerable influence in the clinics' success. Conclusion: The findings presented here address critical gaps in our understanding of Telehealth diffusion and inform research strategies regarding the cultural issues and outcomes related to Telemental health services. Information contained in this report serves as a long overdue guide for developing Telemental health programs and policies among American Indians, specifically, and rural populations in general.

**Summary.** This study utilizes Everett Roger's Diffusion Theory to break down and analyze the issues that create barriers to the implementation of Telehealth technologies to specific populations within the Alaskan Veterans Administration region. The findings provided in the study data outcomes demonstrate that those involved with Telehealth services, administrative, healthcare workers and providers, believe that Telehealth services can meet the needs of the populations it serves and expansion of these services should continue. The study provides a synthesis of data to demonstrate that VA clinical staff has a general understanding of their native local populations and identified the growing need for mental health outreach to these at-risk Veteran populations. The data collected also indicates a stronger need for expanding *education* of Telehealth benefits and a strong need for *feedback* within the delivery system, which in turn leads to greater understanding and flexibility within the clinical setting. This directly relates to the patient centered care modality: *(e) expanded open communication between the care team and patients.* This study, in turn, demonstrates the need for continued integration of Telehealth services into mental health and preventative modalities present in patient centered care clinical systems as they can provide a much needed access to care, *expanding* the role of patient centered care.

Finch, T., May, C., Mair, M., Mort, M., & Gask, L. (2003). Integrating service development with evaluation in Telehealthcare: an ethnographic study. *BMJ: British Medical Journal*, *327*(7425), 1205-1208. Retrieved from http://www.jstor.org/stable/25457835

**Abstract. Objectives** To identify issues that facilitate the successful integration of evaluation and development of Telehealthcare services.

**Design** Ethnographic study using various qualitative research techniques to obtain data from several sources, including in-depth semistructured interviews, project steering group meetings, and public Telehealthcare meetings.

**Setting** Seven Telehealthcare evaluation projects (four randomised controlled trials and three pragmatic service evaluations) in the United Kingdom, studied over two years. Projects spanned a range of specialties—dermatology, psychiatry, respiratory medicine, cardiology, and oncology.

**Participants** Clinicians, managers, technical experts, and researchers involved in the projects.

**Results and discussion** Key problems in successfully integrating evaluation and service development in Telehealthcare are, firstly, defining existing clinical practices (and anticipating changes) in ways that permit measurement; secondly, managing additional workload and conflicting responsibilities brought about by combining clinical and research responsibilities (including managing risk); and, thirdly, understanding various perspectives on effectiveness and the limitations of evaluation results beyond the context of the research study.

**Conclusions** Combined implementation and evaluation of Telehealthcare systems is complex, and is often underestimated. The distinction between quantitative outcomes and

the workability of the system is important for producing evaluative knowledge that is of practical value. More pragmatic approaches to evaluation, that permit both quantitative and qualitative methods, are required to improve the quality of such research and its relevance for service provision in the NHS.

**Summary.** This decade old ethnographic study provides insights into the methodologies used for measuring outcomes and the ensuing problems within the Telehealth settings through the examination of seven different projects. As demonstrated within the findings, there are clear issues regarding accuracy of patient evaluations when utilizing Telehealth systems from established clinical delivery models. The study recommends that a more pragmatic approach to the evaluation would provide for greater validity of outcomes and increase positive results. Regarding changes to clinical practices, this study directly correlates to the VA goal to measure and compare success between brick-and-mortar and Telehealth clinical settings. This study provides a foundation to emphasize the *instruction, training and support* that Telehealth programs need to provide to both clinical and patient populations, while creating effective and useful approaches to *data collection* and *evaluations* of patients. These relate to the goals of patient centered care: *(a)expanded systems for evaluating care*, and *(c) expanded patient and physician/care team education*. One can draw the conclusion that without accurate data and measurements of outcomes, it will be difficult to address the specific changes that need to occur when Telehealth technologies are utilized within patient centered care modalities.

Fortney, J., Burgess, J., Bosworth, H., Booth, B., & Kaboli, P. (2011). A Re-conceptualization of Access for 21st Century Healthcare. *Journal of General Internal Medicine*, *26* (2), 639–

647. doi: 10.1007/s11606-011-1806-6. Retrieved from http://link.springer.com.libproxy.uoregon.edu/article/10.1007/s11606-011-1806-6

**Abstract.** Many e-health technologies are available to promote virtual patient–provider communication outside the context of face-to-face clinical encounters. Current digital communication modalities include cell phones, smartphones, interactive voice response, text messages, e-mails, clinic-based interactive video, home-based web-cams, mobile smartphone two-way cameras, personal monitoring devices, kiosks, dashboards, personal health records, web-based portals, social networking sites, secure chat rooms, and on-line forums. Improvements in digital access could drastically diminish the geographical, temporal, and cultural access problems faced by many patients. Conversely, a growing digital divide could create greater access disparities for some populations. As the paradigm of healthcare delivery evolves towards greater reliance on non-encounter-based digital communications between patients and their care teams, it is critical that our theoretical conceptualization of access undergoes a concurrent paradigm shift to make it more relevant for the digital age. The traditional conceptualizations and indicators of access are not well adapted to measure access to health services that are delivered digitally outside the context of face-to-face encounters with providers. This paper provides an overview of digital "encounterless" utilization, discusses the weaknesses of traditional conceptual frameworks of access, presents a new access framework, provides recommendations for how to measure access in the new framework, and discusses future directions for research on access.

**Summary.** This study assesses tracking and identifying access when healthcare services are delivered using "virtual healthcare" methodologies, which are included with the VA's

Telehealth cadre of clinical digital tools. The data presented points to a need for restructuring of clinical measures, utilization, quality and performance outcomes as these have traditionally been based in a brick-and-mortar setting, because these identifiers don't correlate to virtual care standard clinical practices. The findings also point out that patient satisfaction indicators (SHEP scores) and perceptions of access to care tend to shift with the adoption and utilization of non-traditional in Telehealth technologies within care delivery setting. This study supports the goal to include additional training and support for both clinical and patient participants to help adjust perceptions relating to the care practices. It also reviews the impacts that Telehealth modalities have in enabling synchronous and asynchronous digital communication between patients and their provider teams, relating to the focus of patient centered care practice (b) *small and large team synchronization management of data.* A key aspect of the article also includes a review of performance measures and outcomes, as they relate to identifying the overall success of Telehealth programs from both provider and patient perspectives. These findings identify the desire to include the technologies available in Telehealth into standard clinical practices, thus *expanding* patient centered care within the VA.

Gordon, A., Haas, G., Luther, J., Hilton, M., & Goldstein, G. (2010, May) Personal, medical, and healthcare utilization among homeless Veterans served by metropolitan and nonmetropolitan veteran facilities. *Psychological Services*, *7*(2), 65–74. doi: 10.1037/a0018479. Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2998232/

**Abstract.** This study assessed differences in personal, medical, and health care utilization characteristics of homeless Veterans living in metropolitan versus nonmetropolitan

environments. Data were obtained from a Veterans Health Administration (VHA) network sample of homeless Veterans. Chi-square tests were used to assess differences in demographics, military history, living situation, medical history, employment status, and health care utilization. Moderator analyses determined whether predictors of health care utilization varied by metropolitan status. Of 3,595 respondents, 60% were residing in metropolitan areas. Age, sex, and marital status were similar between metropolitan and nonmetropolitan homeless. Metropolitan homeless were less likely to receive public financial support or to be employed, to have at least one medical problem, one psychiatric problem, or current alcohol dependency, but more likely to be homeless longer. Of the 52% of the sample who used VHA care in the last 6 months, 53% were metropolitan versus 49% nonmetropolitan ($p$ = .01). Metropolitan status predicted at least one VHA visit within the prior 6 months (OR:1.3, CI:1.1, 1.6). Significant differences occur in the personal, medical, and health care utilization characteristics of homeless Veterans in metropolitan versus nonmetropolitan areas.

**Summary.** This study provides direct evidence to support expansion of both alternative and traditional care to the homeless VA patient populations in both rural and urban settings. The data collection included both observational and demographic questions gathered through interviews, which were conducted at a VA healthcare facility that included urban and rural patient populations. The study identifies the gaps in healthcare access within these two populations and proposes *expanding outreach services* in order to meet care delivery goals and improve patient access, relating to *(d) proactive vs reactive care practices* found within patient centered care modalities. The study findings directly provide evidence for continued growth of Telemental health services within the VA

healthcare system to counter the growing patient demographic of homelessness and mental illness regardless of the differences present within rural vs. urban populations.

Hoanca, B. (2007). Alaska Federal Health Care Access Network: Deploying telemedicine services in the 49th State. In B. Rocheleau (Ed.), *Case Studies on Digital Government,* 201-216. Hershey, PA: Idea Group Publishing. doi:10.4018/978-1-59904-177-3.ch014 Retrieved from http://www.igi-global.com/chapter/alaska-federal-health-care-access/6194

**Abstract.** The case describes the development of the Alaska Federal Health Care Access Network (AF-HCAN), a consortium providing Telemedicine in Alaska. Given the state's vast geographical areas, the lack of infrastructure in the remote villages, and the extreme climate, AFHCAN faced particular challenges in ensuring access to quality health care across its target area. Using federal funds, a consortium of federal, military, and private organizations developed an intuitive, easy to use, custom-developed software and an integrated (cart-based) hardware platform. Low utilization levels following the initial deployment, prompted an organizational change from delivering a software/hardware product to delivering a turn-key system (including training). The system has been successfully deployed to 260 sites in the state. Users with limited computer literacy levels and even with limited English language skills are able to use the systems successfully. Overall, both patients and providers report high levels of satisfaction with the system.

**Summary.** This historical study analyzes the seven year Telehealth deployment of the Alaska Federal Health Care Access Network (AFHCAN) across the state of Alaska to 290 rural and urban locations. AFHCAN works directly and integrates services from 43 autonomous organizations throughout the state of Alaska, including eight U.S. Coast

Guard locations, six U.S. Army sites, three U.S. Air Force bases and multiple VA outpatient clinics which share patient loads with U.S. military bases. This technological deployment demonstrates the flexibility of Telehealth services as a comprehensive and integrated part of patient centered care models for the VA. It assesses the clinical impacts and shifts in care success rates within the various modalities of the system including hardware and training issues, as well as the patient impacts and satisfaction rates which are at a constant growth rate. While the processes identified in the study were not without problems, the AFHCAN has provided a rural patient population the ability to interact with their care teams when previously they would have no care available, and this is a clear justification for the expenditures. The findings demonstrate the need for *continued training, support, and expansion to support the rural population* of Alaska, correlating directly to patient centered care modalities *(c) expanded patient and physician/care team education* and *(e) utilization of available and new technologies for open communication between the care team and patients*.

Hogan, T., Wakefield, B., Nazi, K., Houston, K., & Weaver, F. (2011). Promoting access through complementary eHealth technologies: recommendations for VA's home Telehealth and personal health record programs. *Journal of General Internal Medicine*, *26* (2), 628–635. doi: 10.1007/s11606-011-1765-y. Retrieved from http://link.springer.com.libproxy.uoregon.edu/article/10.1007/s11606-011-1765-y

**Abstract.** Using the Department of Veterans Affairs (VA) as a case study, this paper presents two specific eHealth technologies, the Care Coordination Home Telehealth (CCHT) Program and the My HealtheVet (MHV) personal health record (PHR) portal with integrated secure messaging, and articulates a vision of how they might be

implemented as part of a patient-centric healthcare model and used in a complementary manner to enhance access to care and to support patient-centered care. VA's CCHT and MHV programs are examples of an expanding repertoire of eHealth applications available to patients and healthcare teams. VA's new patient-centric healthcare model represents a significant shift in the way that services are delivered and a profound opportunity to incorporate eHealth technologies like the CCHT and MHV programs into clinical practice to increase access to care, and to ensure the responsiveness of such technologies to the preferences and circumstances of patients.

**Summary.** This study provides clear linkage to the adoption of a Patient-Centered-Care model beyond what is currently being utilized within the VA, to include the expansion and growth of Telehealth technologies. Treatment and long term care relating to clinical situations such as chronic disease management, patient vital monitoring, mental health screenings and care, and diabetes can be addressed and successfully managed using Telehealth care systems. This demonstrates the need for the VA to promote "eHealth" programs such as Care Coordination Home Telehealth (CCHT) and the MyHealtheVet (MHV) website, or online patient interactions, and video based Telehealth services as a part of the care delivery modalities available to patients in order to meet patient care needs and further the integration of care in an effective and efficient way. The study shows how the VA's Patient Aligned Care Team (PACT) model lends to greater inclusion and opportunity to enhance healthcare outcomes and meet or exceed the quality goals the VA has implemented, that in turn, create competitive advantages over other healthcare systems. While the study does identify some of the barriers of inclusion and utilization by patients of online (web based) and video Telehealth systems, the expansion

of the care team to include “eHealth” will ultimately strengthen the VA’s position in dealing with complex patient conditions, improve clinical outcomes, and patient satisfaction (SHEP) scores. The findings reviewed in the article definitively link the use of various Telehealth technologies to these patient centered care modalities: *(b) small and large team synchronization management of data generated by both the care team and the patient*, and *(e) utilization of available and new technologies for open communication between the care team and patients.*

Hopp, F., Whitten, P., Subramanian, U., Woodbridge, P., Mackert, M., & Lowery J., (December, 2006). Perspectives from the Veterans Health Administration about opportunities and barriers in Telemedicine. *Journal of Telemedicine and Telecare*. *12*(8), 404-409. doi: 10.1258/135763306779378717. Retrieved from: http://jtt.sagepub.com/content/12/8/404

**Abstract.** We used qualitative interviews to examine the perceptions of direct providers of Telemedicine services, primary care providers (PCPs) and hospital administrators about opportunities and barriers to the implementation of Telemedicine services in a network of Veterans Health Administration hospitals. A total of 37 interviews were conducted (response rate of 28%) with 17 direct Telemedicine providers, nine PCPs and 11 administrators. The overall inter-coder reliability across all themes was high (Scott's $\pi = 0.94$). Direct Telemedicine providers generally agreed that Telemedicine improved rapport with patients, and respondents in all three groups generally agreed that Telemedicine improves access, productivity, and the quality and coordination of care. Respondents mentioned several benefits to home Telemedicine, including the ability to better manage chronic diseases, provide frequent clinician contact, facilitate quick responses to patient needs and provide care in patient's homes. Most respondents

anticipated future growth in Telemedicine services. Barriers to Telemedicine implementation included technical challenges, the need for more education and training for patients and staff, preferences for in-person care, the need for program improvement and the need for additional staff time to provide Telemedicine services.

**Summary.** This assessment of VHA Telemedicine care providers was conducted utilizing interviews, which included direct questions regarding Telehealth implementation and barriers within the VA healthcare delivery system. The themes of access to care, productivity, quality of care, and coordination of care provide great insight into the needs of the Veteran population being served and directly point to patient centered care modalities as the means for improving care and supporting rural and urban patient populations. The study findings demonstrate the needs and gaps for improvements of staff training and the lack of tracking of outcomes within the VHA Telehealth system. This relates to the patient centered care modalities *(a) expanded systems for evaluating care*, and *(d) proactive vs reactive care practices*. Measuring success within Telehealth modalities of care is an important aspect to be addressed within the patient centered care model in decision making by administrative and clinical staffs and ensures patient safety and accountability of the VA to its patients.

Kehle, S., Greer, N., Rutks, I., & Wit., T., (2011). Interventions to Improve Veterans' Access to Care: A Systematic Review of the Literature. *Journal General Internal Medicine, 26*(2), 689–696. Retrieved from http://www.hsrd.research.va.gov/publications/esp/access.cfm

**Abstract.** Health Services Research & Development Service's (HSR&D's) Evidence-based Synthesis Program (ESP) was established to provide timely and accurate syntheses of targeted healthcare topics of particular importance to Veterans Affairs (VA) managers

and policymakers, as they work to improve the health and healthcare of Veterans. The ESP disseminates these reports throughout VA.

HSR&D provides funding for four ESP Centers and each Center has an active VA affiliation. The ESP Centers generate evidence syntheses on important clinical practice topics, and these reports help:

- develop clinical policies informed by evidence,
- guide the implementation of effective services to improve patient outcomes and to support VA clinical practice guidelines and performance measures, and
- set the direction for future research to address gaps in clinical knowledge.

In 2009, an ESP Coordinating Center was created to expand the capacity of HSR&D Central Office and the four ESP sites by developing and maintaining program processes. In addition, the Center established a Steering Committee comprised of HSR&D field-based investigators, VA Patient Care Services, Office of Quality and Performance, and Veterans Integrated Service Networks (VISN) Clinical Management Officers. The Steering Committee provides program oversight and guides strategic planning, coordinates dissemination activities, and develops collaborations with VA leadership to identify new ESP topics of importance to Veterans and the VA healthcare system.

**Summary.** This VA HSR&D literature review of 19 articles provides direct assessment guidelines for Telehealth initiatives correlated to patient outcomes through clinical intervention measurements. This study provides one of the most current reviews related to VA Telehealth regarding the measurements of clinical and quality success, Telehealth

access, and long term ramifications of continued VA Telehealth programs produced by VA clinical staff. The outcomes and measurements from a quality management perspective give leadership direct correlated evidence for support, expansion, and continued integration of Telehealth services into patient centered care delivery models when examining access to care and improvement of related clinical outcomes. This is an important aspect to justification of expenditures and resources, while encouraging the adoption of technology (Telehealth services) into the Primary Care setting. The study also identifies the issues around measuring clinical outcomes within the complexities of the continuum of care present within various Veteran patient populations. This demonstrates the importance of further study of the impacts of Telehealth care delivery systems and tools within the primary care setting, and provides support for *(b) small and large team synchronization management of data generated by both the care team and the patient*.

Miller, T., Morgan, R., & Wood, J. (2009). A Telehealth technology model for information science in rural settings. *Handbook of Research on Information Technology Management and Clinical Data Administration in Healthcare 2*, 54-68. Hershey, PA: IGI Global. doi:10.4018/978-1-60566-356-2. Retrieved from http://www.igi-global.com/chapter/Telehealth-technology-model-information-science/35769

**Abstract.** Examined is the application of Telehealth technology in a rural community clinical and educational system. Telehealth is viewed as the removal of time and distance barriers in the provision of healthcare and patient education to underserved populations (Nickelson, 1996). Presented is a clinical consultation model of healthcare for underserved populations and where professional consultation with a team of professionals

may benefit rural educational systems and their students. Offered are specific applications within a broad spectrum of services utilizing Telehealth technology. Finally, shifts in administrative paradigms, clinical models, and educational information technology for healthcare services through Telehealth technology are explored.

**Summary.** This article examines the implementation and impacts of VA Telehealth programs and systemic changes, which occurred within the VA's healthcare system as it adopted Telehealth practices over the past two decades, specifically from a technological and clinical perspective. It describes the need for VA Telehealth expansion via improved measurements of patient care (Telehealth Intervention Models) and provides a measurement for justification of Telehealth systemically regarding underserved rural populations. The study identifies the factors related to improved patient satisfaction, patient efficacy rates, and long term quality of care as equal to or exceeding those of traditional face-to-face services. One of the outcomes of the study findings points to patient centered care modes of delivery (i.e., cultural, interpersonal, and team approaches) being established within outpatient settings, and the ability for Telehealth tools/methods of care delivery directly and positively impacting patients and care teams through improved clinical success rates and improved access over geographical distances. These findings relate to the following patient centered goals (b) *small and large team synchronization management of data generated by both the care team and the patient*, *(c) expanded patient and physician/care team education*, and *(e) utilization of available and new technologies for open communication between the care team and patients*. The findings also point to the reasons for improved patient outcomes, in examining the use of computers and the internet as a part of the care paradigm. The ability for patients to make

better informed decisions regarding their care is brought about in part through increases in patient to provider communication and access to information, supported by the inclusion of technologies such as the VA MyHealtheVet website.

Perlin, J., Kolodner, R., & Roswell, R. (2004). The Veterans Health Administration: Quality, value, accountability, and information as transforming strategies for Patient-Centered Care. *The American Journal of Managed Care*, *10*(11)*,* 828-836. doi:10.12927/hcpap..17381. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/16088305

**Abstract.** The Veterans Health Administration is the United States' largest integrated health system. Once disparaged as a bureaucracy providing mediocre care, the Department of Veterans Affairs (VA) reinvented itself during the past decade through a policy shift mandating structural and organizational change, rationalization of resource allocation, explicit measurement and accountability for quality and value, and development of an information infrastructure supporting the needs of patients, clinicians, and administrators. Today, the VA is recognized for leadership in clinical informatics and performance improvement, cares for more patients with proportionally fewer resources, and sets national benchmarks in patient satisfaction and for 18 indicators of quality in disease prevention and treatment.

**Summary.** This article analyzes historical approaches to patient care processes in comparison to the recent utilization of Telehealth technologies during the 1990's, and their integration into patient centered care goal *(b) small and large team synchronization management of data generated by both the care team and the patient*. It provides evidence that Telehealth services *strengthen* patient-centric environments and are

improving both clinic access (patient access to care) and providing measurable increases in performance by clinical staff. It addresses the increases in patient enrollment from when Telehealth technologies were first introduced, and the impacts that these increases have caused on clinical workloads, processes, and success rates for common preventative procedures such as tobacco cessation, diabetes care and cancer screenings. This article provides support for the expanded role of technology such as electronic medical records access by clinical and non-clinical staff and patients with patient centered care practices, and improved efficacy rates over extended periods of time.

Sanders, C., Rogers, A., Bowen, R., Bower, P., Hirani, S., Cartwright, M., Fitzpatrick, R., Knapp, M., Barlow, J., Hendy, J., Chrysanthaki, T., Bardsley, M., & Newman, S. (2012). Exploring barriers to participation and adoption of Telehealth and Telecare within the Whole System Demonstrator trial: a qualitative study. *BMC Health Services Research*, *12*(220). doi:10.1186/1472-6963-12-220. Retrieved from http://www.biomedcentral.com/1472-6963/12/220

**Abstract. Background** Telehealth (TH) and Telecare (TC) interventions are increasingly valued for supporting self-care in ageing populations; however, evaluation studies often report high rates of non-participation that are not well understood. This paper reports from a qualitative study nested within a large randomized controlled trial in the UK: the Whole System Demonstrator (WSD) project. It explores barriers to participation and adoption of TH and TC from the perspective of people who declined to participate or withdrew from the trial.

**Methods** Qualitative semi-structured interviews were conducted with 22 people who declined to participate in the trial following explanations of the intervention (n = 19), or

who withdrew from the intervention arm (n = 3). Participants were recruited from the four trial groups (with diabetes, chronic obstructive pulmonary disease, heart failure, or social care needs); and all came from the three trial areas (Cornwall, Kent, east London). Observations of home visits where the trial and interventions were first explained were also conducted by shadowing 8 members of health and social care staff visiting 23 people at home. Field notes were made of observational visits and explored alongside interview transcripts to elicit key themes.

**Results** Barriers to adoption of TH and TC associated with non-participation and withdrawal from the trial were identified within the following themes: requirements for technical competence and operation of equipment; threats to identity, independence and self-care; expectations and experiences of disruption to services. Respondents held concerns that special skills were needed to operate equipment but these were often based on misunderstandings. Respondents' views were often explained in terms of potential threats to identity associated with positive ageing and self-reliance, and views that interventions could undermine self-care and coping. Finally, participants were reluctant to risk potentially disruptive changes to existing services that were often highly valued.

**Conclusions** These findings regarding perceptions of potential disruption of interventions to identity and services go beyond more common expectations that concerns about privacy and dislike of technology deter uptake. These insights have implications for health and social care staff indicating that more detailed information and time for discussion could be valuable especially on introduction. It seems especially important for potential recipients to have the opportunity to discuss their expectations and such views might usefully feed back into design and implementation.

**Summary.** While this qualitative study of Telehealth and Telecare patient participation is conducted within the UK national healthcare system, it identifies four reasons that patients withdraw from Telehealth programs that seem to be important for consideration in this annotated bibliography: (a) patient requirements for technical competence and operation of equipment; (b) threats to identity, (c) patient independence and self-care, and (d) patient expectations and experiences of disruption to services. Each of these reasons can provide the VA with additional insight about patient satisfaction when establishing new programs among rural populations from a technological perspective, which is paramount for *strengthening* patient centered care programs and creates direct alignment with the patient centered goals *(a) expanded systems for evaluating care*, and *(c) expanded patient and physician/care team education*. The study indicates that non-technically based older rural populations require both a hands-on approach and continued support with technologies utilized in Telecare settings. This in turn, provides a clearer picture to VA administration and Telehealth coordinators in how they should approach rural populations, in defining their needs proactively within the patient centered care model of continual dialogue and discussion between provider and patient.

Schooley, B., Horan, T A., Lee, P., & West, P. (2010, April). Rural Veteran access to healthcare services: investigating the role of information and communication technologies in overcoming spatial barriers. *Perspectives in Health Information Management*. Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2889372/

**Abstract.** This multimethod pilot study examined patient and practitioner perspectives on the influence of spatial barriers to healthcare access and the role of health information technology in overcoming these barriers. The study included a survey administered to

patients attending a Department of Veterans Affairs (VA) health visit, and a focus group with VA care providers. Descriptive results and focus group findings are presented. Spatial distance is a significant factor for many rural Veterans when seeking healthcare. For this sample of rural veterans, a range of telephone, computer, and Internet technologies may become more important for accessing care as Internet access becomes more ubiquitous and as younger veterans begin using the VA health system. The focus group highlighted the negative impact of distance, economic considerations, geographic barriers, and specific medical conditions on access to care. Lack of adequate technology infrastructure was seen as an obstacle to utilization. This study discusses the need to consider distance, travel modes, age, and information technology infrastructure and adoption when designing health information technology to care for rural patients.

**Summary.** This study of VA rural and urban patient populations indicates that there is a strong need for continued expansion of and support for a variety of Telemedicine approaches to address the impact that the amount of travel necessary to receive care has on Veteran patients. The study points out that expansion of electronic and Telehealth services can reduce the need for travel, which in turn increases the likelihood of the utilization of the alternative care delivery modalities for treating various health conditions. The data also identifies some of the barriers that exist within the current VA Telehealth programs and provides insights into the preferred modalities that patients utilize in seeking care when they are available. The study shows the clear need for expansion and greater utilization of existing alternative care delivery systems in order to meet the expanding Veteran patient population in both rural and urban areas and provides direct evidence to the continued *expansion* of Telehealth services and delivery modalities

into patient centered care. The findings also provide strong evidence for healthcare information managers to work towards greater technical development of online and virtual based services which align with patient centered care goals of *(a) expanded systems for evaluating care*, and *(e) utilization of available and new technologies for open communication between the care team and patients*.

Shea, S. (2006, September). Health delivery system changes required when integrating Telemedicine into existing treatment flows of information and patients. *Journal of Telemedicine and Telecare*, *12*(2), 85-90. doi: 10.1258/135763306778393126. Retrieved from http://jtt.sagepub.com/content/12/suppl_2/85

**Abstract.** Business model and financial recovery issues dominate discussions about using Telemedicine to improve chronic disease management. The technical issues are numerous, daunting and complex, but many can be addressed using the resources and infrastructure available in large, well-integrated clinical information systems. The cost–benefit balance will change when it becomes possible to use devices that are owned by patients for everyday use, rather than installing special-purpose devices for Telemedicine. Technology and communications capabilities are driven mainly by market factors other than uses for health care. Provider-side Telemedicine capabilities, specifically for upload, storage and display of home medical data, will improve as technology develops. How health-care providers will process the larger amount of data made available by Telemedicine is a clinical issue, but it is likely that software will emerge to assist in this task. The alignment of financial incentives for health-care providers is a decisive factor in understanding why Telemedicine has had substantial deployment within the US Veterans

Hospital Administration system, and to some extent within prison health systems and the Kaiser Permanente Health Plan, but much less widely in other settings.

**Summary.** This article directly addresses the issues within the VA, public, and private healthcare systems specifically dealing with clinical work settings, productivity and resource allocations measurements and how these are influenced by provider payments based on care. It provides a clear assessment of the clinical impacts within the VA Telehealth program related to technical costs, projected systemic changes and outcomes. The findings also identify the need to better integrate Telehealth services for rural and urban patient populations to assist in the improvement of clinical access to chronic disease management such as Diabetes. Another important aspect covered within the article provides clinical outcomes (links) between electronic records management, Telehealth services, and communication strategies employed by both Kaiser Permanente and the VA and how these are going to shift the dynamic between providers and patients in positive ways. These findings correlate with the patient centered goals of *(c) expanded patient and physician/care team education*, and *(d) proactive vs. reactive care practices*.

Wootton, R., (2012, June). Twenty years of Telemedicine in chronic disease management – an evidence synthesis. *Journal of Telemedicine and Telecare*, *18*(4), 211-220. doi: 10.1258/jtt.2012.120219. Retrieved from http://jtt.sagepub.com/content/18/4/211.full

**Abstract.** A literature review was conducted to obtain a high-level view of the value of Telemedicine in the management of five common chronic diseases (asthma, COPD, diabetes, heart failure, hypertension). A total of 141 randomized controlled trials (RCTs) was identified, in which 148 Telemedicine interventions of various kinds had been tested in a total of 37,695 patients. The value of each intervention was categorized in terms of

the outcomes specified by the investigators in that trial, i.e. no attempt was made to extract a common outcome from all studies, as would be required for a conventional meta-analysis. Summarizing the value of these interventions shows, first, that most studies have reported positive effects (n = 108), and almost none have reported negative effects (n = 2). This suggests publication bias. Second, there were no significant differences between the chronic diseases, i.e. Telemedicine seems equally effective (or ineffective) in the diseases studied. Third, most studies have been relatively short-term (median duration 6 months). It seems unlikely that in a chronic disease, any intervention can have much effect unless applied for a long period. Finally, there have been very few studies of cost-effectiveness. Thus the evidence base for the value of Telemedicine in managing chronic diseases is on the whole weak and contradictory.

**Summary.** Wootton provides a clear picture of the medical studies conducted over the past twenty years regarding telemedicine based management of five specific chronic conditions. While the outcomes measured by a large percentage of the studies examined provide a clear positive effect in the patient care outcomes, efficacy, and treatments provided, one cannot easily validate the positive correlations between studies as the research was not conducted in the same way. The data points to no differentiation in outcomes between the types of telemedicine care provided, for example telemonitoring and videoconferencing as compared to telephone based support indicating integrated use of the various Telehealth technologies are valid methodologies for chronic condition care. The analysis also identifies a lack of research and reporting on the cost-benefit and financial impacts to healthcare systems that telemedicine can provide regarding long term chronic disease management. This study also provides a historical assessment that

indicates the continued need for expanding quantitative clinical approaches to measurements in telemedicine clinical settings that integrate patient centered care approaches. The findings correlate with the patient centered goals of *(a) expanded systems for evaluating care*, and *(b) small and large team synchronization management of data generated by both the care team and the patient*.

Young, L. (2012, January). Telemedicine interventions for substance-use disorder: a literature review. *Journal of Telemedicine and Telecare, 18*(1), 47-53. doi: 10.1258/jtt.2011.110608. Retrieved from http://jtt.sagepub.com/content/18/1/47.abstract

**Abstract.** A literature review was conducted to identify research into multiple-contact (i.e. extended) Telemedicine interventions for substance-use disorder. The goals were: (1) to describe the methodology used to evaluate Telemedicine interventions; (2) to identify the range of interventions which have been formally evaluated; and (3) to summarize the findings. Fourteen databases and Google Scholar were searched, as well as bibliographies of relevant papers and online conference abstracts. There were 50 studies which met the inclusion criteria, of which 50% were randomized controlled trials. The studies most frequently reported the effect on substance use and 61% of those findings fully supported Telemedicine interventions. Although the studies reported persistent challenges in sustaining participation, 76% of the studies reporting on satisfaction indicated that participants were enthusiastic supporters of Telemedicine. Only 30% of reviewed studies addressed the effect on resource utilization. The majority of studies reported evidence of clinical effectiveness, which justifies continued research in the field.

**Summary.** Young's analysis of the studies relating to the treatment of substance-use disorders via telemedicine modalities demonstrates highly-effective clinical outcomes

and varied patient acceptance. While the data also points to a negative utilization trend of the most severe substance use cases, this is also true among standard clinical visit patterns. This leads to the assessment that increased exposure to and support of these programs can improve the patient access and utilization, which relate directly to the patient centered care goal *(d) proactive vs. reactive care practices*. An important aspect discussed in the findings is the need for long term telemedicine care for both complex patient issues and traditional mental healthcare services geared towards substance abuse and interventions. These findings also identify that successful long-term collaborative approaches to care delivery are important and essential for improved patient outcomes (e.g. patient centered care). One of the more important aspects discussed in the article covers the expansion of Tele-based services, but with an emphasis placed on additional support within the administration for technical and patient monitoring, which *strengthen* patient centered care outcomes.

## Conclusion

VA Telehealth services accounted for nearly 10% of VA patient encounters during FY 2012 (VA VSSC, 2013) and must continue to adapt and expand as patient needs and technology become more stable and accessible (VA, 2013). VA Telehealth utilization in primary care settings has a proven track record of success (Gross, 2007; Miller, 2011). When these Telehealth technologies are integrated with the patient centered care model, they support positive and unique treatment experiences for patients (Radhakrishnan, Jacelon, & Roche, 2012; Sanders et al., 2012; Young, 2012). These experiences ensure continued patient utilization of VA care services, which in turn are demonstrated to sustain and grow patient enrollment.

Patient centered care as an integrated approach to patient/provider interaction has been adopted by the VA nationally (Gaudet, 2013; VA QOC, 2013). The focus of patient centered care is to provide a patient-driven, team-based approach that delivers efficient, comprehensive and continuous care through active communication and coordination of healthcare services (Shea, 2006). The VA's Quality of Care national office also defines *patient centered care* to include the following goals and outcomes: (a) expanded systems for evaluating care, (b) small and large team synchronization management of data generated by both the care team and the patient, (c) expanded patient and physician/care team education, (d) proactive vs. reactive care practices, and (e) utilization of available and new technologies for open communication between the care team and patients (VA QOC, 2013). When examining the various uses of Telehealth technologies to *expand* and *strengthen* patient centered care to rural and urban patient populations, the following patient centered goals and Telehealth clinical outcomes are essential for validating not only the use of the technology, but also creating a unique patient experience to differentiate the VA from other healthcare systems.

**Expanded systems for evaluating care.** When made available, Telehealth technologies, can provide not only a platform for delivering care to patients who live remotely, but also clinical outcomes that measure similarly to those found in brick-and-mortar settings (Fortney et al., 2011). Regarding availability to patients, Schooley (2010) finds that "results indicated Veterans likelihood of and interest in adopting and using the telephone and Internet to access information about health issues, make appointments, and access other medical services" (p.4). When examining clinical outcomes, Wootton (2012) finds that, "there was no significant difference in effect between interventions which employed telemonitoring and those which did not" when examining chronic disease treatment (p.215).

**Small and large team synchronization management of data generated by both the care team and the patient.** Tracking, reporting and utilization of data within the clinical setting, especially one that utilizes Telehealth technologies are key to ensuring patient safety and positive clinical outcomes. Fortney et al. (2011) state~~s~~,

> …e-health technologies enable synchronous and asynchronous digital communications between patients and their formal providers, informal caregivers, peers, and computer applications and allow face-to-face patient-to-provider encounters to focus on medical procedures requiring physical proximity and tactile contact. (p.2)

Without a synergistic approach between technology modalities and care delivery, the ability for patient centered care to occur is minimal (Hogan et al., 2011).

**Expanded patient and physician/care team education.** The use of Telehealth technologies requires ongoing training and support, which integrates into patient centered care delivery methodologies regarding educating patients and care staff on both use of the technology and access to additional materials that previously were not available. (Sanders et al., 2012).

Miller (2009) regards communication via the use of technology in clinical settings essential to each other, "Research indicates that health communication best supports health promotion when multiple communication channels are used to reach specific audience segments with information that is appropriate and relevant to them" (p.4) .

**Proactive vs. reactive care practices.** Telehealth technologies in both outpatient and inpatient clinical settings have the potential to facilitate patient self-management and integrated care coordination via PACT teams (Gordon et al., 2010). Patient driven healthcare decisions and integrated communication modes have been identified as pivotal to successful treatment of chronic health conditions (Hopp et al., 2006). The VA's care delivery system which utilizes digital records management (CPRS), creates a conducive environment for including Telehealth processes to be integrated within the systems, allowing for active participation of chronic disease management (Shea, 2006).

**Utilization of available and new technologies for open communication between the care team and patients.** Communications between patient and provider must be acknowledged, measured, and reported to establish credible information concerning patient satisfaction. The ability to utilize voice streaming, web-based access to electronic patient records (myhealthevet.va.gov), and communication modalities such as email and text messaging (Edirippulige et al., 2010) has improved patient efficacy rates within the VA (Miller, 2011). Identification of how these tools are used via surveys (i.e. SHEP scores) demonstrates clear increases in patient satisfaction regarding the quality of care they receive via Telehealth methodologies (VA VSSC, 2013), as well as the effectiveness of the communications to the patients regarding implementation and participation (Brooks et al., 2012).

Information pertaining to the VA patient centered care goals presented in this annotated bibliography supports the need to fully integrate Telehealth technologies such as voice, video, and digital text communications between patients and care teams within primary care and in-patient settings. The use of these Telehealth tools, when aligned with patient centered care approaches, reveals demonstrated potential to provide the VA with the ability to meet the growing health care needs of today's veterans. This outcome should ensure the ability to offer a competitive advantage among other healthcare systems by providing a proactive healthcare delivery setting, responsive to this distinct population.

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## Appendix A: VA Telehealth Enrollment Growth and Cost Savings

Under the New Models of Care Transformation Initiative (VA, 2012), VA senior leadership required a significant growth in Telehealth related health care delivery in VA. Following VISN capacity for the growth and budgetary considerations, the national levels of growth for Telehealth in VA were set at the levels shown in Table 1.

**Table 1.**

| **2012 National Growth Targets for Telehealth in VA** | |
|---|---|
| Area of Telehealth | National Percentage Growth Targets |
| CCHT (Care Coordination Home Telehealth) | 50% |
| CVT (Clinical Video Teleconference) | 50% |
| CCSF (Care Coordination Store Forward Telehealth) | 30% |

The census for CCHT and numbers of consultations for CVT and CCSF vary widely across VISNs. Therefore, to set growth targets for Telehealth in each VISN that match the national percentages would impose extreme burdens on those VISNs with high current levels of Telehealth activity and lead to Veteran patients in VISNs with low Telehealth activity being underserved with respect to Telehealth-based services. Because the numbers of enrolled Veteran patients that each VISN serve vary, the raw CCHT census, CVT consultation and CCSF consultation rates is not a good comparator of Telehealth usage in VISNs. A more representative way to compare VISN levels of Telehealth upon which to base targets is the rate of Telehealth usage per 1,000 enrolled Veteran patients.

Table 2 below gives the range of CCHT census, CVT consultation and CCSF consultation as rates/1,000 enrollees, together for the national mean figures for rates/1,000 enrollees.

**Table 2.**

| Rates of Telehealth Usage Across in VA for FY2010 | | | |
|---|---|---|---|
| Area of Telehealth | Mean Rates/1,000 Enrolled Veteran Patients Served | Maximum VISN Rate/1,000 Enrolled Veteran Patients Served | Minimum VISN Rate/1,000 Enrolled Veteran Patients Served |
| CCHT | 6 | 8 | 4 |
| CVT* | 52 | 180 | 11 |
| CCSF* | 47 | 105 | 6 |

* For CVT and CCSF, rates were calculated based on rates per 1,000 rural and highly rural Veterans enrolled.

Targets for VISN growth of Telehealth per VISN were set with a view to bringing all VISNs in line over the next four years to common rate/1,000 population of Telehealth usage in all areas of Telehealth. VISN figures were finally set based on this growth trajectory and adjusted to ensure that all VISNs have positive targets; no VISN was given unachievable expectations for growth and targets were adjusted to reflect the degree to which the Veteran population in a VISN is based in rural areas.

Additional clinical access data relating to Telehealth programs for VISN 20 and the VA nationally can be found in Appendix D. These charts provide the clinical access data relating to the various ways that Telehealth is utilized. Expanding the ability of enrolled participants for each of these areas is projected to follow a standard technology adoption curve, with slow buy-in, gradual acceptance and then peaking after being commonly utilized by clinical staff. The data was provided by the national VA VSSC encounter database during the 2012-2013 fiscal year.

## Appendix B: VISN 20 Telehealth Travel Reimbursement Savings

| Total Telehealth Encounters Oct 2012 to Feb 2013: | 111582 |
|---|---|
| MILES SAVED | 1,758,503 |
| $ SAVED IN PAYOUT/TRAVEL | $72,977,874.50 |

The VA travel requirements for patient reimbursement are:

> *Effective November 17, 2008 VA reimburses 41.5 cents per mile for ALL veteran travel, including C&P exams and when VA has determined that a deficiency lab, EKG, x-ray etc. exists in relation to a C&P exam ("Convenience of the Government").*
>
> *Mileage rates for Veterans and VA employees are determined under separate authorities and take different criteria under account. Title 38 United States Code (U.S.C.) 111 and 38 Code of Federal Regulations (C.F.R.) 70.1 – 70.50 are the authorities for Beneficiary Travel. 41 C.F.R. Chapter 301 provides guidance for employee travel.*

## Appendix C: Telehealth Related Definitions

**Clinical Video Telehealth (CVT):** is defined as the use of real-time interactive video conferencing, sometimes with supportive peripheral technologies, to assess, treat and provide care to a Veteran remotely. Typically, Clinical Video Telehealth links the Veteran(s) at a clinic to the provider(s) at another location. Clinical Video Telehealth can also provide video connectivity between a provider and a Veteran at home. Clinical Video Telehealth encompasses a wide variety of clinical applications such as specialty and primary care.

**Consulting Provider:** The provider who completes the request for Telehealth activity.

**Distant Site (DS):** This is the location of the health care provider in a Telehealth setting. This is applied to the facility or Health care system from which the provider delivers care. Coding is used to distinguish if the care is delivered within the boundaries of the primary facility or outside the boundaries.

**Home Telehealth (HT):** A program that applies care and case management principles to coordinate care using health informatics, disease management and Home Telehealth technologies to facilitate access to care and to improve the health of Veterans with the specific intent of providing the right care in the right place at the right time in the least restrictive, most cost effective manner. The goal of Home Telehealth is to improve clinical outcomes and access to care while reducing complications, hospitalizations, and clinic or emergency room visits for Veterans in post-acute care settings and high-risk Veterans with chronic disease.

**Interfacility Consult (IFC):** This is a request for services, usually specialty care, generated within CPRS. The request and the subsequent results travel across facility VISTA/CPRS record system boundaries

**Local Consult:** This is a request for services, usually specialty care, to be delivered by a provider privileged to practice at the same facility at which the Veteran receives primary care. The request and subsequent results remain with the facility VISTA/CPRS record system boundaries.

**Originating Site (OS):** This is the location of the Veteran in the Telehealth setting. This is applied to the health care system or facility at which the Veteran receives care.

**Reader:** In Store-and-Forward Telehealth applications, the Reader (typically a licensed independent practitioner) is located at a site distant to the Veteran and is responsible for viewing and interpreting digital images acquired by the Imager at the Patient/originating site and responding to those Telehealth consult requests.

**Referring Provider:** The provider who initiates the request for Telehealth activity.

**Store and Forward Telehealth (SF):** is defined as the use of technologies to acquire and store clinical information (e.g. data, image, sound and video) that is then forwarded to or retrieved by a provider at another location for clinical evaluation. Store-and-Forward Telehealth in VA uses a clinical consult pathway and Vista Imaging in conjunction with a TeleReader to provide screening, diagnostic and treatment services where time and distance separate the Veteran and provider.

**Telecare/Telehealth:** The wider application of care and case management principles to the delivery of health care services using health informatics, disease management and Telehealth technologies to facilitate access to care and improve the health of designated individuals and populations with the intent of providing the right care in the right place at the right time.

**Telehealth Technologies/Modalities/Systems:** Information technology-based tools that collect clinical indices for each of the above types of Telehealth. The indices may be in the form

of vital signs, disease management data, still images and real-time video from an Originating Site (OS) where the Veteran is located. This information is sent via the telecommunications networks to a Distant Site (DS) where they are received, reviewed and assessed by clinicians. Telehealth technologies enable a range of health care services to be provided that cross the usual constraining boundaries of geographic distance, time, and social and/or cultural borders.

**Telemedicine vs. Teleconsultation:** Telemedicine is the direct care of patients by the distant provider. Teleconsultaiton is the collaborative care of patients by the distant provider and local provider.

**Telehealth Coordinator, Facility:** This individual provides leadership, training, technical and/or administrative support for the Telehealth program; coordinates scheduling of resources (rooms, equipment, bandwidth, etc.) and Veterans for the Telehealth program; serves as a liaison between image reviewers, primary care providers, specialty care providers, Veterans and other VA personnel; and coordinates activities between the VA and non-VA locations involved with providing Telehealth. They provide leadership in the development and management of Telehealth modalities at the facility and serve as the point of contact for providers, clinical staff, and support staff involved with providing Telehealth services.

**Telehealth Lead, Home:** Besides coordinating a panel of patients the Lead will be responsible for providing training and mentoring for Home Telehealth staff and evaluating performance, marketing Home Telehealth program, providing data for quality and administrative reports, providing for coverage for absent staff's panel, and serving as a spokesperson for program to other facility entities, Veterans and community contacts. Implement new program developments in Home Telehealth at the facility level. Represent Home Telehealth on facility committees and in meetings.

**Telehealth Care Coordinator, Home:** This person is a licensed professional who coordinates care for a panel of patients throughout the continuum of care to ensure that care is timely, appropriate, of high quality and cost effective. Care Coordination professionals work closely with the Primary Care Providers (PCPs), other healthcare professionals and team members, clinics, internal or external services, and community agencies. He/she provides professional assessment, coordination and planning of multiple health care services. He/she also acts on behalf of the Veteran to ensure that he or she receives wraparound care across the care continuum. He/she ensures that necessary clinical services are received and progress is being made. In addition, he/she provides ongoing evaluation of care management services. He/she interprets data, Veterans' responses and communicates proactively to providers in a timely manner. This function facilitates early intervention and promotes Veteran self-care management. HT reduces clinical complications and the ultimate use of the resources that these complications consume. The Home Telehealth Care Coordinator has the skill and knowledge to provide direct care, and is empowered to make decisions across department lines. However, he/she provides minimal to no direct care and the emphasis of the model is on collaboration on behalf of the Veteran population served with the existing system through the primary care teams.

**Telehealth Clinical Technician:**

**a. Imager:** In the SF program this person at the OS is responsible for:

(i) Acquiring and managing digital medical images of the Veteran including the deletion of images from the workstations;

(ii) Providing basic information to Veterans regarding Telehealth process, and may also provide disease specific patient education.

b. **Telepresenter:** In CVT this person at the OS is responsible for:

(i) Use of the video-conferencing technology;

(ii) Aiding the DS provider in examining the Veteran and includes such activities as: introducing the participants; assuring patient privacy; and documenting in CPRS as required.

(iii) Providing basic information to Veterans regarding Telehealth process and may also provide disease specific patient education.

c. **Scheduler:** Provides appropriate scheduling of resources, rooms, patients and follow-up for both the provider and patient site

d. **Educator/Trainer:** Provides education and training on Telehealth equipment and clinic setup.

e. **Technical Support:** Provides for appropriate equipment and setup for the modality involved making sure it is setup and in working order as well as training staff and Veterans in the use of equipment.

f. **Administrative Support:** Assists Telehealth Coordinator with process issues, equipment needs, data collection and logistics.

## Appendix D: VISN 20/VA Telehealth Encounter Scorecards

### VISN 20
### Clinical Video Teleconferencing (CVT) Encounters – October 2012 through June 2013

| Provider Encounters | Anchorage | Boise | Portland | Roseburg | Seattle | Spokane | Walla Walla | White City | VISN 20 |
|---|---|---|---|---|---|---|---|---|---|
| **Provider Encounters** | 930 | 749 | 5110 | 863 | 2193 | 323 | 635 | 179 | **10982** |
| **Unmatched Diff Stn** | 1 | 0 | 137 | 21 | 01 | 0 | 0 | 3 | **263** |
| **Unmatched Same Stn** | 89 | 0 | 94 | 153 | 123 | 1 | 42 | 15 | **517** |
| **VSSC Prov Enc as of 4/30/2013** | 672 | 570 | 3632 | 627 | 1672 | 136 | 520 | 107 | **7936** |

| Provider Encounters | Anchorage | Boise | Portland | Roseburg | Seattle | Spokane | Walla Walla | White City | VISN 20 |
|---|---|---|---|---|---|---|---|---|---|
| **Patient Encounters** | 1144 | 988 | 2736 | 1823 | 2233 | 493 | 1082 | 562 | **11061** |
| **Unmatched Pt Enc** | 52 | 1 | 177 | 286 | 47 | 106 | 232 | 16 | **917** |
| **VSSC Pt Enc as of 4/30/2013** | 768 | 756 | 2024 | 1303 | 1708 | 267 | 876 | 385 | **8087** |

| Goals | Anchorage | Boise | Portland | Roseburg | Seattle | Spokane | Walla Walla | White City | VISN 20 |
|---|---|---|---|---|---|---|---|---|---|
| **Encounter Goal** | 1504 | 936 | 7043 | 1500 | 4289 | 1427 | 675 | 746 | **18119** |
| **Encounter Goal Credit** | 1037.0 | 868.5 | 3923.0 | 1343.0 | 2213.0 | 408.0 | 858.5 | 370.5 | **11021.5** |
| **% of Goal Met** | **69.0%** | **92.7%** | **55.7%** | **89.5%** | **51.6%** | **28.6%** | **127.1%** | **49.6%** | **60.8%** |
| **Yearly Goal** | 2005 | 1248 | 9390 | 2000 | 5719 | 1902 | 900 | 995 | **24159** |

### VISN 20
### Care Coordination Store & Forward Encounters – October 2012 through June 2013

| Provider Encounters | Anchorage | Boise | Portland | Roseburg | Seattle | Spokane | Walla Walla | White City | VISN 20 |
|---|---|---|---|---|---|---|---|---|---|
| **Provider Encounters** | 0 | 159 | 5418 | 0 | 9397 | 0 | 0 | 0 | **14974** |
| **Unmatched Diff Stn** | 0 | 73 | 110 | 0 | 2165 | 0 | 0 | 0 | **2348** |
| **Unmatched Same Stn** | 0 | 0 | 68 | 0 | 54 | 0 | 0 | 0 | **122** |
| **VSSC Prov Enc as of 4/30/2013** | 0 | 87 | 4137 | 0 | 7270 | 0 | 0 | 0 | **11494** |

| Patient Encounters | Anchorage | Boise | Portland | Roseburg | Seattle | Spokane | Walla Walla | White City | VISN 20 |
|---|---|---|---|---|---|---|---|---|---|
| **Patient Encounters** | 1088 | 1203 | 4032 | 2123 | 2902 | 966 | 1339 | 816 | **14469** |
| **Unmatched Pt Enc** | 137 | 197 | 274 | 269 | 516 | 188 | 113 | 249 | **1943** |
| **VSSC Pt Enc as of 4/30/2013** | 838 | 959 | 3072 | 1666 | 2129 | 773 | 1035 | 581 | **11053** |

| Goals | Anchorage | Boise | Portland | Roseburg | Seattle | Spokane | Walla Walla | White City | VISN 20 |
|---|---|---|---|---|---|---|---|---|---|
| **Encounter Goal** | 791 | 825 | 4237 | 1761 | 9547 | 1816 | 473 | 746 | **20196** |
| **Encounter Goal Credit** | 544.0 | 681.0 | 4725.0 | 1061.0 | 6149.0 | 483.0 | 669.0 | 408.0 | **14720.0** |
| **% of Goal Met** | **68.7%** | **82.5%** | **111.5%** | **60.2%** | **64.4%** | **26.6%** | **141.6%** | **54.7%** | **72.9%** |
| **Yearly Goal** | 1055 | 1100 | 5650 | 2348 | 12729 | 2421 | 630 | 995 | **26928** |

**CCHT (Care Coordination Home Telehealth) Visits All VA Patients (by last five Fiscal Years)**

| | FY09 | FY10 | FY11 | FY12 | FY13 | Subtotal |
|---|---|---|---|---|---|---|
| Patients | 66,770 | 79,836 | 114,214 | 147,527 | 151,510 | 363,439 |
| Visits | 870,978 | 1,092,830 | 1,545,392 | 1,998,261 | 1,773,923 | 9,021,013 |
| Interventions | 432,451 | 567,537 | 870,743 | 1,082,372 | 961,974 | 4,772,830 |
| Monitorings | 396,682 | 471,758 | 605,011 | 827,558 | 738,550 | 3,822,713 |
| Screenings | 40,562 | 49,872 | 66,469 | 86,658 | 73,128 | 405,103 |

**CCHT Visits:CCHT Intervention Type Detail**
**Visits, Patients, Interventions/Patients Enrolled for FY13 (Visit Type)**

| | Visits | Patients |
|---|---|---|
| CCHT Clinic & NonVideo (685684) | 14,839 | 3,863 |
| CCHT Clinic & Video (685179) | 480 | 88 |
| CCHT Clinic (685xxx) | 56,020 | 26,141 |
| CCHT Telephone & NonVideo (686684) | 317,346 | 55,271 |
| CCHT Telephone Intervention (686xxx) | 297,405 | 73,253 |
| Opt2 Other Clinic & CCHT (xxx685) | 128,058 | 33,809 |
| Opt2 Other Clinic & NonVideo (xxx684) | 140,405 | 25,955 |
| Opt2 Other Clinic & Video (xxx179) | 7,421 | 1,539 |

**CCHT Interventions Patients Enrolled, Interventions, Interventions/Patients Enrolled for FY13**

| | Patients Enrolled | Interventions | Interventions per Patients Enrolled |
|---|---|---|---|
| **All Locations** | 132,010 | 961,974 | 7.3 |
| **V01** | 4,598 | 36,633 | 8 |
| **V02** | 3,332 | 15,046 | 4.5 |
| **V03** | 7,927 | 22,637 | 2.9 |
| **V04** | 6,605 | 58,797 | 8.9 |
| **V05** | 3,923 | 37,445 | 9.5 |
| **V06** | 8,432 | 54,706 | 6.5 |
| **V07** | 7,078 | 46,131 | 6.5 |
| **V08** | 10,824 | 70,153 | 6.5 |
| **V09** | 6,966 | 55,241 | 7.9 |
| **V10** | 6,090 | 42,844 | 7 |

| | | | |
|---|---|---|---|
| **V11** | 9,029 | 55,185 | 6.1 |
| **V12** | 5,388 | 37,903 | 7 |
| **V15** | 4,847 | 31,984 | 6.6 |
| **V16** | 11,131 | 89,460 | 8 |
| **V17** | 5,423 | 42,131 | 7.8 |
| **V18** | 4,660 | 38,268 | 8.2 |
| **V19** | 4,997 | 54,666 | 10.9 |
| **V20** | 4,828 | 38,880 | 8.1 |
| **V21** | 5,601 | 47,967 | 8.6 |
| **V22** | 4,557 | 39,425 | 8.7 |
| **V23** | 5,906 | 46,472 | 7.9 |