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INTRODUCTION

Since the 1990's, the Veteran's Health Administration (VHA) has implemented a system of primary care that has been considered some of the best care that can be offered (Klein, 2011). The Patient Center Medical Home (PCMH) Model, also called "Patient Aligned Care Team" (PACT) in the VHA, t been coordinating and integrating services which ensure optimal health outcomes at an acceptable value (Bidassie, Davies, Stark, & Boushon, 2014).

PACT was created in 2010, building on 20 years of the VHA transforming from a loosely based system of inpatient services to a provider of outpatient primary care for veterans. From 2010 until 2011, their primary care staff levels decreased from 2.3 Full Time Equivalents (FTE) to 3.0 FTE, and in there was a reduction in face to face encounters as it was increased telephone consultations and electronic messaging (Trivedi et al., 2011).

However, PCMH was not a new concept created by the VHA. In the 1960s, a PCMH like concept was applied to care for Children with special needs (Kilo & Wasson, 2010). This concept was expanded into PCMH with the introduction of Joint Principles of Patient Center Medical Home by a collaborative effort of the American Academy of Family Physicians, the American Academy of Pediatrics, the American College of Physicians, and the American Osteopathic Association (AAFP et al, 2007). Along with the VHA, the centers for Medicare and Medicaid (CMS) have been researching the implementation of PCMH programs to help control costs (Landon, Gill, Antonelli, & Rich, 2010, and CMS, 2007).

PCMH has been defined in several ways, however the standard model used by the VHA is the one created by the Agency for Healthcare Research and Quality (AHRQ), which has stated that PCMH encompasses five functions, which are comprehensive care, patient-centered, coordinated care, accessible services, quality and safety. Comprehensive care means that a majority of the patient's care has been accounted by the PCMH organization, including prevention, acute care, chronic care, wellness and mental well-being (AHRQ, 2015).

Patient Centered means that the patient is treated as a whole person. This is done by having a Primary Care Physician (PCP) who is responsible for the patient's care (Carver & Jessie, 2011). Coordinated care is when the PCP coordinates care across a broader spectrum of services, like referring the patient to a specialist for a specific illness. However, there is a chance that these specialists will be over utilized, and there may be a diminishing aspect to coordinated care (Fix et al, 2014).

Accessible services have been defined as services which are available to the patient when they need them, without long waits. A team based approach makes this easier to achieve, using a central PCP and several PCP support providers, and a team of specialists who the PCP can refer to. (Helfrich et al, 2014). Lastly, quality and safety are key issues in PCMH. Providers are expected to be well treated and not overloaded with cases, which can cause a patient's issues to be overlooked, and this is where the team approach comes in again, helping to have a well-rounded pictures of the patient's issues (Liss et al 2013).

The VHA meets all five core functions under the PACT system, notably with the Peer to Peer toolkit, which permits the PCP to coordinate care with multiple specialists, and allows the exchange of electronic health records, which meets the requirements for accessible services, comprehensive care, patient centered, and coordination of care with one system (Luck, 2014). Quality metrics are hard to come by because most PCPs under the pact program see

quality metrics to be a hindrance to the spirit of the PACT program, because responding to the performance metrics consume time and resources, and these quality metrics do not take into account the spirt of PCMH (Kansagara et al, 2014). The purpose of this research was to analyze the effects of PACT on the VHA to determine expenditures and the overall outcome of patient care.

METHODOLOGY

The primary hypothesis of this study was: that utilizing the PCMH program, PACT, in the VHA would increase access and quality of care while decreasing costs.

The methodology for this literature review was conducted using a systematic search of key words which were related to the content of VHA, PCMH, PACT, and the challenges facing the VHA. When executing the search, the following terms were used: "VHA," AND "PCMH" AND "PACT" OR "cost" OR "access" OR "quality" OR "barriers." A mix of databases and online sources were used to compile a set of references covering both academic peer reviewed research and practitioner literature (grey literature). The following electronic databases and sources were used: EBSCOhost, Pub Med, ProQuest, LexisNexis, and Google Scholar. The stages in the literature search encompassed: defining the search strategy, identifying the inclusion and exclusion criteria, assessing the application and validity of the studies retrieved, and extracting and analyzing the findings.

The research also involved a semi-structured interview with an expert in the VHA located in Huntington, West Virginia. Dr. James Duthie, the Associate Chief of Staff Ambulatory Care, has provided his professional knowledge and experience with PACT which has been enacted in the VHA. This interview was digitally tape recorded, and only relevant answers were used to support the information found in the literature review to provide a contextualized and more comprehensive overview of this program implementation (See Appendix).

Only articles that were written in English were included for review. Attempting to stay current in research, all journals and references that were older than eight years (starting from 2007) were eliminated from the search to ensure the most recent data. This literature review yielded 14 references which were used in the introduction while 10 sources were used in the results and tables. This literature search was conducted by SL and ES and validated by AC, who acted as second reader and also double checked if references met the research study inclusion criteria. The findings are presented in the subsequent sections of the results using the categories of the positive and negative effects of PACT on the VHA. The implementation and transitioning process has been shown in the conceptual framework in Figure 1 below. The transition began with the initial study of patient interactions, which to reviewing quality of care, then to redesign of the healthcare program, and implementation of the PACT system in the preceding years (See Figure 1).

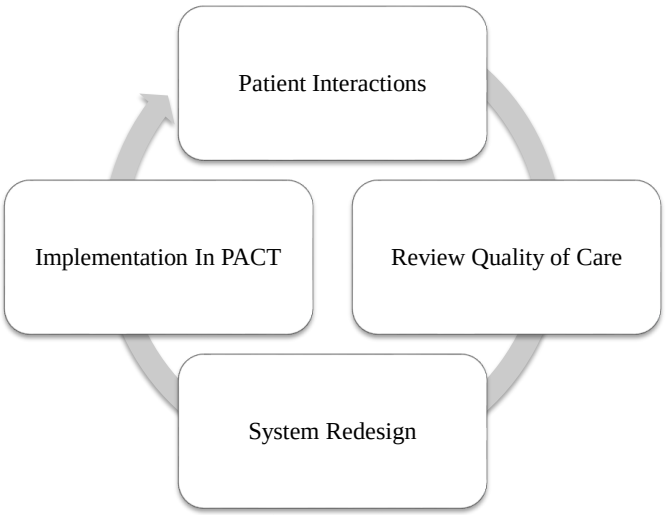

Figure 1: Conceptual Framework of PACT
Source: Dr. James Duthie

Figure 1 depicts the process of PACT Implementation in the VHA system. To research the impact of PACT in the VHA system, it is first necessary to recognize the way PACT evolves over time. Then different applications can be identified to solve or partially unravel these challenges. As a final result of analyzing the literature, the benefits and barriers of PACT utilization in the VHA can be identified (Figure 1).

RESULTS

Costs and Utilization of PACT in the VHA

One of the key factors that have caused significant concerns with the current U.S. healthcare system has been the enormous expenditures which have plagued the industry (Huarng & Yu, 2015). PCMH's have shown the ability to reduce costs for the VHA and other healthcare facilities which have adopted the medical home features. In one study, the patients within the 814 VHA clinics who had the highest access to healthcare, as well as efficient scheduling through PCMH's could lower the costs by 17% for an Ambulatory Care Sensitive Condition (ACSC) than other patients (Yoon et al, 2013). These factors can aid in significantly reducing the costs for preventative hospitalization and expensive emergency care. Continually, if the clinics in the same study were transformed into the maximum level of adoption for a PCMH, the estimated probability of an ACSC could potentially decrease from a 1.51% to a 1.36%, which was projected to be upwards of $100,000 in annual savings in 2010 (Yoon et al, 2013).

Reduced costs with implementation of PCMH's can also be seen to occur within the pharmacy, ancillary, and total medical costs of Pharmacy Expenditures Per member Per quarter (PMPQ) sections of healthcare. A study had used PCMH features to aid in decreasing costs with patients that experienced chronic conditions, patients without chronic conditions, and an overall projection of costs with all patients regardless of the condition (Christensen et al, 2013). Table 1 results illustrate the summary that overall pharmaceutical costs decreased by 12.5%, ancillary costs decreased 15.5%, and PMPQ decreased by 9.5% (See Table 1).

Table 1: The Reduction of Costs Associated with Implementation of a PCMH.

	With Chronic Conditions	Without Chronic Conditions	All Patients
Pharmacy Costs	-14.0%	-9.5%	-12.5%
Ancillary Costs	-17.0	-13.0	-15.5
PMPQ Costs	-10.5	-7.0	-9.5

Source: Christensen et al (2013).
Notes: Pharmacy Expenditures Per Member Per Quarter (PMPQ)

Table 1 has shown the decrease in costs by percentage in the pharmacy, ancillary, and PMPQ costs with a range of -7% to -17% cost savings for the healthcare facility which implemented the PCMH. The financial savings were seen in the categories of patients with chronic conditions, patients without chronic conditions, and the overall percentage of patients regardless of their conditions (See Table 1).

Moreover, the utilization of PCMH in the VHA has changed the patient encounters for various medical visit needs in a given year. Emergency Room (ER) visits have shown an overall 6% decrease of usage, specialty provider visits have seen an increase of 3%, and primary care visits have a projected to be an increase of 21% in overall usage in a given year (See Table 2). Table 2 shows that costly ER visits have decreased in patient use. However, an increase in use of less expensive specialty care and primary care providers have increased, which has shown a further aid in reduction of costs for a healthcare facility (Christensen, 2013).

Table 2: The Increase or Decrease in Patient Encounters with Various Medical Needs.

	With Chronic Conditions	Without Chronic Conditions	All Patients
ER Visits	-7.0	0.0	-6.0
Specialty Care Visits	-3.0	15.0	3.0
Primary Care Visits	27.0	0.0	21.5

Source: Christensen et al (2013).

Table 2 has illustrated the possibility of decreasing costs through the utilization of PCMH's in the VHA by increasing preventative care through the use of less expensive primary and specialty care, in turn having an expected decrease of patients visiting the ER. Continually, the numbers that are 0 can be located under Chronic Conditions. The 0 number can be associated with patients which are either referred to or seek out Specialty Care Providers for their specified Chronic Conditions, and not with ER or Primary Care visits, implicating 15.0 for Specialty Care visits. These factors can lead to further research and implementation for other healthcare facilities to consider adoption of a PCMH to reduce expenditures.

Despite several studies that have shown a cost savings after implementation of a PCMH, other studies have resulted in mixed reviews, as some have found no change in costs, and some have actually increased in costs (Werner, Canamucio, Shea, & True, 2014). Studies have explicated how more rigorous studies and analysis should be made in order to better understand the benefits and barriers with implementation of PCMH and cost savings. For example, one study showed only one of three organizational processes that were tested had consistently improved with association to PACT, which involved nine variables indicating whether PACT providers had implemented structural changes in each study period (Werner et al, 2014). In addition, another study showed no significant differences in costs after 12 months of analysis of the PCMH implementation (Reid et al, 2009).

The estimated costs that had been associated with implementation from the VHA in the year 2012 reached $774 million in expenses (Hebert et al, 2014). Most of the expenditures resulted from the need of hiring new staff for the coordinated care, as well as a significant amount of training for current and new staff. However, the discounted

costs that followed the implementation of the PCMH had come to a financial savings of $596 million in 2012 due to increased efficient utilization in the VHA (Hebert et al, 2014).

Quality of Care with PACT in the VHA

In contrast to the erratic results of cost savings with PCMH, various studies have shown a consistent increase in the quality of care provided for patients (True, Stewart, Lapman, Pelak, & Solimeo, 2014). PCMH has been built on what has been called the team-approach, wherein the responsibility of the patient's health is spread across an interdisciplinary team working coherently, but with mixed independence to perform healthcare tasks. The application of team-based healthcare has shown to be essential to the proper functions and success of PCMH's performance and abilities. Healthcare facilities transitioning to PCMH must engage with the staff, and ensure the resources and support has been provided to evoke team work, which is essential to the success of PCMH's (True et al, 2014).

The quality has shown significant increases in several literature reviews, illustrating the importance for implementing a PCMH. For example, an observational study had utilized data on more than 5.6 million U.S. veterans who received care at over 900 VHA facilities, tracking the results of quality of patient services (Nelson et al, 2014). The authors found that patients had higher satisfaction with their healthcare, and higher clinical performance on 41 of 48 quality measures. Moreover, due to higher quality of care, there was a reduction in ACSC and lower emergency department use (Nelson et al, 2014).

Access to Care for Veterans

The PCMH has been able to increase the accessibility of healthcare for patients in the VHA. Rosland et al (2013) conducted results of access to care from 2009 to 2012 in 850 VHA facilities for optimum collection of data. The results had indicated an increase in same-day requests for appointments from 67% in 2009 to 73% in 2012 (Rosland et al, 2013). Moreover, the researchers found that phone encounter rates had increased 10-fold from 2009 to 2012, showing a significant difference in accessibility and quality of care given to the VHA patients (Rosland et al, 2013). Finally, the total number of inquiring messages from patients to primary care staff had increased from 9,852 in 2010 to 289,519 in 2011, which has shown an enormous increase in access between patients and their healthcare providing staff (Rosland et al, 2013).

DISCUSSION

The purpose of this study was to determine the qualitative and quantitative effects of the PACT in the Veterans Health Administration. In the study, PACT was identified as having several benefits, which were represented by three pillars. The first is allowing veterans better access to care, through making them the center of their care. The second pillar is involves better coordination of care, which means the veteran's care team will be better prepared to help through setting up consultations, testing and other services before the appointment so there is less time wasted by the veteran. The third and final pillar is called system redesign. The VHA reviews how the current system is working and updates it to meet the needs of the veterans, such as implementing better electronic health records or tele health services so the veteran has easier access to providers (Chaiyachati et al, 2014).

The increased staffing and space requirement of PACT has been a potential barrier to its implementation. However, the VHA has found ways around this through shared medical appointments. Shared medical appointments are when the VHA schedules several veterans who with the same condition and have agreed to receive shared medical appointments. They come in and have their vitals taken individually and privately by a nurse, and then have a general group meeting with the primary care physician about their condition. If any individual has specific problems to discuss, this is then done privately in the physician's office.

Another issue with PACT has been the high turnover rate of providers working for the VHA (Chaiyachati et al, 2014). The core to PACT is the team of individuals who work together and learn their patient's needs. However, when one person leaves the team and is replaced by someone else, this can cause an issue as the new provider is required to play catch up and the team dynamic may change.

The disadvantages discussed may not be as important as the advantages to the implementation of the PACT program. Medical Centers such as the location in Huntington have seen a significant improvement in patient

satisfaction since the implementation of PACT, and while costs may not have been contained, they have not increased. Therefore, results have shown to be inconsistent and unreliable with different studies, and more testing should be completed on cost savings with PACT to validate its financial benefit to a healthcare facility. Also, the quality of patient care has increased as the focus of the VHA's attention is on the patient as an individual instead of veterans as a whole. Although the program has areas to improve upon in the coming years, it is still in the early stages of implementation and will benefit more from continuous redesigning from observed patient interaction. PACT will continue to develop into a program that will center the care of veteran's as an individual to ensure optimum quality and access to healthcare in the coming years.

LIMITATIONS

This research study was not without its limitations. Empirical studies on the utilization and implementation PACT in the US health care facilities had varied results. There was limited information which showed a consistent result of impact on overall quality, either positive or negative, that PACT has and will have on the U.S. as it is implemented in all VHA's. Financial information was also a limitation due to it only being an estimated cost as many of the VHA facilities have only had PACT implemented for a few years. Further research now and in the future will be required in order to see the true impact that PACT will have for VHA's on the quantitative and qualitative care for veterans. This literature review was limited due to the restrictions in the search strategy used, such as the number of databases accessed and finally, publication and researchers bias cannot be ruled out.

Practical Implications

The literature review has shed light on the various benefits and changes that can be seen with the implementation of the PACT program within the VHA. The U.S. healthcare system has worked to develop ways to aid veterans in better access and quality to care, while attempting to limit the expenditures entailed with the medical needs. Although quality overall has shown an increase for veteran care with the PACT program, the costs associated with the program have not shown any difference, or have been slightly higher before the implementation. The mixed results and assumption that PACT would have tremendous outcomes for cost savings with care for veterans has been grossly overestimated, exemplifying the need to continue to assess, redesign, and implement new strategies in the VHA for the future . However, the quality and access to care have shown increases and more positive outcomes, creating an optimistic outlook that PACT is one step in the right direction to ensure veterans are receiving the best access and quality of care that can be provided in the U.S. healthcare system.

CONCLUSION

The PACT program has shown varied results in costs as an increase, decrease, or at no change in the expenditures of the healthcare facility. However, research has shown a more positive consistency in the quality and access to care in the VHA for veterans, ensuring they are receiving the healthcare which is needed. PACT continues to evolve and develop as more VHA facilities fully adopt and implement the program, working to provide healthcare to veterans in the United States which focus on individual results.

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