Quality and access outcomes in 2 Veterans Health Administration facilities with fidelity to the comprehensive medication management framework

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Purpose: Utilization of clinical pharmacists providing comprehensive medication management (CMM) has been shown to improve the quadruple aim of healthcare. Lack of fidelity surrounding CMM practice standardization components has led to heterogeneity in interpretation of clinical pharmacist outcomes. We compared 2 Veterans Health Administration (VHA) facilities with the patient-aligned care team (PACT) Platinum Practice designation in terms of clinical pharmacist practitioner (CPP) access and care quality relative to national CPP averages.

Methods: All data was extracted from the VHA Corporate Data Warehouse (CDW) and reports derived from data within the CDW. Within the fiscal year 2019-2020 timeframe, the PACT Platinum Practice facilities were assessed against a national average comparator on quality and access metrics using electronic VHA databases that capture data on patient visits with a CPP. For the evaluation of care quality, an electronic composite score of diabetes and hypertension metrics was used. Third next available appointment for the primary care provider (PCP) and CPP utilization were used as measures of access.

Results: Compared to national averages, the PACT Platinum Practice facilities had a higher proportion of patients meeting the evaluated quality metric across all months of the study period. For access, the mean time to the third next available primary care appointment was lower for the PACT Platinum Practice facilities compared to the national average. PACT Platinum sites had CPP utilization rates higher than national averages across the study period, and these rates remained stable.

Conclusion: This study demonstrated improved quality and access outcomes for 2 VA medical centers designated as PACT Platinum Practice sites relative to national averages. This is important because these practices have been evaluated and shown to have fidelity with the CMM practice management component. Evaluation of outcomes removing the element of practice heterogeneity allows for a more standardized comparison of outcome measures.

Keywords: access, comprehensive medication management, delivery of health care, pharmacists, quality, reference standards, veterans health

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The quadruple aim of healthcare is focused on the ability of healthcare systems to provide better patient care, reduce healthcare costs, improve the patient experience, and improve clinician well-being.[1] Utilization of the clinical pharmacist providing comprehensive medication management (CMM) has been shown to improve the quadruple aim of healthcare.[2] Three core components of CMM have been defined: a shared philosophy of practice, a patient care process, and the practice management elements of CMM.[3-5] Although a model framework for CMM has been described, there

is a lack of consistent implementation across clinical pharmacy practices providing CMM. Specifically, the core elements of the practice management component include care team engagement, program evaluation, care delivery process, organizational support, and ensuring consistent and high-quality care. These elements make up the foundational practice requirements for a pharmacist to provide CMM and include categories like leadership support, ancillary support, and outcomes measurement.[6] While the literature has been substantially populated with reports of clinical pharmacists providing CMM and their proven benefits as part of the care team, review of this literature further emphasizes the reality that fidelity with CMM practice management core components is inconsistent, making reliable comparisons difficult.[7] The statement "If you have seen one clinical pharmacist practice CMM, you have seen one clinical pharmacist practice CMM" could aptly describe the current state of CMM practice. Research is needed to quantify the outcomes of a clinical pharmacist's practice activities with a focus on fidelity within the CMM model.[7]

The Veterans Health Administration (VHA) within the Department of Veterans Affairs (VA) is the United States' largest integrated healthcare delivery system, with an estimated 9.2 million enrollees.[8]

VHA employs nearly 370,000 persons, making it one of the federal government's largest departments. The VHA system comprises 1,293 US government–operated facilities, including 171 VHA medical centers and over 1,112 outpatient care sites. The VHA clinical pharmacist practitioner (CPP) operates as an advanced practice provider, providing CMM with authority to initiate, discontinue, or modify medication under a scope of practice.[9] The VA Pharmacy Benefits Management (PBM) Services created the Clinical Pharmacy Practice Office (CPPO) in 2010 in response to a recognized need for transformational change and expansion and standardization of clinical pharmacy practice. The CPPO has the responsibility of standardization of CPP practice for CPPs providing CMM.

KEY POINTS

- Comprehensive medication management (CMM) standardization improves patient access and quality.
- Evaluation of outcomes of clinical pharmacist practitioner care should be centered around a consistent care delivery process.
- Fidelity of clinical pharmacist CMM practice is crucial in order to fully understand the value of pharmacist integrated care.

VHA utilizes components of the patient-centered medical home model to provide primary care to veterans. Within VHA this model is called the patient-aligned care team (PACT) model.[10] The PACT model was introduced by VA in 2009 and was implemented across the healthcare system in 2010. CPPs in PACTs provide CMM in between PACT primary care provider visits to initiate, modify, or discontinue medications in an effort to provide medication optimization.[11] In 2019 the CPPO worked to develop a recognition program whereby VHA facilities could apply for the CPPO designation of PACT Platinum Practice.[12] This designation evaluated the core elements of CMM practice management, which included care team engagement, program evaluation, care delivery process, organizational support, and ensuring consistent and high-quality care. A strict evaluation criterion was set forth in an effort to identify VHA primary care clinical pharmacy practices that were standardized in CMM makeup and is described in previous literature.[12] In short, the submission process consisted of 3 rounds. The first round included use of an online survey open for submission to all VA facilities wishing to apply. The survey contained questions regarding the core elements of ideal practice management and practice advancement (Table 1). Reviewers evaluated each individual question to which a respondent answered "no" and evaluated the core element. Submissions were reviewed to determine if the facility would advance to round 2 based achievement of the round 1 core elements. The second round of the process focused on submission of required supporting documentation from facilities regarding practice and validation of the information answered as part of the round 1 survey. Round 2 sites were reviewed and scored using a predetermined scoring checklist by 2 independent reviewers to determine advancement to round 3 based on compliance with the practice management components of CMM. Facilities were moved to round 3 if greater than 90% of the evaluated core components were deemed as complete or acceptable. Round 3 involved facility interviews led by CPPO team and the VA National Office of Primary Care. Key stakeholders from facilities attended the interviews, including primary care leadership, pharmacy leadership, nursing leadership, administrative staff leadership, frontline primary care providers, and frontline clinical pharmacists. Interview scores were compiled and then presented to the interview team, who made the final recommendation as to whether to award the PACT Platinum Practice designation.

The primary objective of this study was to compare quality and access outcomes for veterans seen by a CPP at VHA CPPO PACT Platinum Practice facilities as compared to facilities that have not achieved the designation. Secondary outcomes included evaluation of PACT CPP utilization.

Methods

Setting. Two VA facilities have received the PACT Platinum Practice designation and will be referred to as PACT Platinum Practices throughout this article.

PACT Platinum Practice 1 is a 142-bed, multispecialty, 1b complexity facility that provides comprehensive services to veterans. Facility 1 is an

Table 1. Round 1 Questions Addressing Core Regulatory Components of CMM

Question	CMM core component
Is there at least one PACT Clinical Pharmacy Specialist with a scope of practice for every 3,600 patients?	Organizational support
What percentage of PACT teams have Clinical Pharmacy Specialist support for CMM services? (check one answer that best applies to the current PACT team alignments)	Organizational support
Do PACT Clinical Pharmacy Specialists routinely and consistently perform Outpatient Clinical Pharmacist dispensing functions as part of their PACT responsibilities?	Organizational support
Does the Pharmacy Service ensure PACT Clinical Pharmacy Specialist's team functions and patient care duties are covered when the assigned Clinical Pharmacy Specialist is on leave?	Organizational support
Is there adequate space for the PACT Clinical Pharmacy Specialists colocated with the PACT teams?	Organizational support
Does the facility have a Care Coordination Agreement in place for PACT Clinical Pharmacy Specialists?	Care delivery processes
Do all PACT Clinical Pharmacy Specialists have standardized grids with 80% bookable appointments based on their direct patient care time?	Care delivery processes
Do PACT Clinical Pharmacy Specialists practice in a variety of primary care chronic disease states beyond hypertension, diabetes, and hyperlipidemia (eg, heart failure, COPD, pain)?	Care delivery processes
Does the facility have centralized anticoagulation services separate from the primary care setting (ie, for patients not scheduled into PACT clinic grids)?	Care delivery processes
Are PACT Clinical Pharmacy Specialists provided the same ancillary support given to other providers on the team? (support includes scheduling patients, calling patients and sending letters for appointment reminders, rescheduling patients who miss appointments)	Care delivery processes
Are PACT Clinical Pharmacy Specialists provided the same ancillary support given to other providers (LPNs, health teaching and nursing assistants) on the team? (support includes taking vital signs on intake, downloading glucometer readings, teaching patient to use a home monitoring device)	Care delivery processes
Are all patient care encounters made by PACT Clinical Pharmacy Specialists that include a medical history and clinical decision-making captured as workload?	Care delivery processes
Are alternatives to traditional face-to-face visits incorporated into the PACT model?	Care delivery processes
Are these encounters documented in clinics that have appropriate clinic setup and meet recommendations outlined in PBM guidance?	Care delivery processes
Are greater than 80% of PACT Clinical Pharmacy Specialists meeting standardized productivity measures, which include clinic utilization of 75% to 85% and encounter goals based on bookable time?	Evaluating CMM services
Are at least 75% of PACT Clinical Pharmacy Specialist appointments documented using the VHA intervention capture PhARMD Tool?	Evaluation of CMM services
Are workload/productivity measures for PACT Clinical Pharmacy Specialists consistently monitored and included in the PACT Clinical Pharmacy Specialist performance plan?	Evaluation of CMM services
In the past 2 years, have PACT Clinical Pharmacy Specialists been involved in improving facility-specific quality metrics (eg, HEDIS, ACSC)?	Evaluation of CMM services
Does your pharmacy service consistently take action to improve and/or maintain employee satisfaction (AES results, PACT survey results, etc)?	Evaluation of CMM Services
Do PACT Clinical Pharmacy Specialists precept PGY1 and/or PGY2 pharmacy residents?	Care team engagement
Do all PACT Clinical Pharmacy Specialists with prescriptive authority participate in a Professional Practice Evaluation program that includes clinical pertinence reviews, clinical care reviews, FPPE, and OPPE, as appropriate?	Care team engagement
What is PACT Clinical Pharmacy Specialists' involvement in the training of student pharmacist?	Care team engagement

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Table 1. Round 1 Questions Addressing Core Regulatory Components of CMM

Question	CMM core component
In the past 2 years, have practices that could be classified as innovative in promoting the role of the PACT Clinical Pharmacy Specialist (ie, CPPO PACT Strong Practices) been implemented or expanded?	Care team engagement
Do PACT Clinical Pharmacy Specialists have an established global scope of practice document describing both routine and nonroutine professional duties?	Care team engagement

Abbreviations: ACSC, ambulatory care–sensitive conditions; CCA, care coordination agreement; CMM, comprehensive medication management; COPD, chronic obstructive pulmonary disease; CPPO, Clinical Pharmacy Practice Office; FPPE, focused professional practice evaluation; LPN, licensed practical nurse; OPPE, ongoing professional practice evaluation; PGY1, postgraduate year 1; PGY2, postgraduate year 2.

Table 2. Measures Comprising the Electronic Composite Quality Metric[a]

eQM measure (HEDIS)	Definition
Dmg13h_ec	Diabetes mellitus – outpatient – glycemic control – HbA_{1c} less than 8
Dmg23h_ec	Diabetes mellitus – outpatient – glycemic control – HbA_{1c} greater than 9 or not done (poor control) in past year
Dmg27h_ec	Diabetes mellitus – outpatient – blood pressure less than 140/90
Ihd53h_ec	Hypertension – blood pressure less than 140/90
Statn1_ec	Statin therapy for patients with cardiovascular disease
Statn7_ec	Statin therapy for patients with diabetes

Abbreviations: ASCS, ambulatory care–sensitive conditions; eQM, Electronic Quality Measurement; HbA_{1c}, glycated hemoglobin; HEDIS, Healthcare Effectiveness Data and Information Set.
[a]The eQM composite score was calculated as the sum of patients meeting all applicable measures divided by the sum of patients eligible for each measure. A higher composite score meant a higher percentage of patients met the desired HEDIS measure.

integrated healthcare system that is comprised of the main medical center and 9 community-based outpatient clinics (CBOCs). 35,000 veterans are enrolled in PACT outpatient services. A total of 12 PACT CPPs, 2 at the main facility and 10 located within CBOCs, practice CMM within the PACT model.

PACT Platinum Practice 2 is a 130-bed, multispecialty, 1b complexity facility. The facility is an integrated healthcare system that is compromised of the main medical center, 5 community-based outpatient clinics (CBOCs), and 1 annex clinic. Approximately 30,000 veterans are enrolled in PACT outpatient services. A total of 16 PACT CPPs practice CMM within the PACT model.

The national aggregate included all VHA medical centers except for the 2 platinum practices.

Outcomes. The primary outcomes of this study were to compare quality and access outcomes for veterans seen by CPPs for the PACT Platinum Practice facilities as compared to the national aggregate. Secondary outcomes included evaluation of PACT CPP utilization. CPP utilization is a VA metric to convey the utilization of a CPP by a specific primary care provider (PCP).

For measurement of quality, VA has developed the Electronic Quality Measurement (eQM) platform, which provides the ability to evaluate quality measurements, including those from the Healthcare Effectiveness Data and Information Set (HEDIS) (Table 2). This prevents facilities from manually evaluating metrics through individual chart reviews and maximizes the robust VA data architecture to provide large patient population data. Access was evaluated using the metric of third next available appointment, which was defined as the average time, in days, on a primary care clinic's schedule until their third next available appointment in the provider's most utilized clinic (eg, face-to-face or virtual); a lower number of days equates to better access, with a higher number of days indicating worse access. CPP utilization is defined as the percentage of the PCP panel that had a visit with the CPP within the past year. A VA institutional review board reviewed the research and granted it an exemption, recognizing it as a quality improvement project.

Data extraction. All data was extracted from the VHA Corporate Data Warehouse (CDW) and reports derived from data within the CDW. Within the fiscal year (FY) 2019 to FY2020 timeframe, the PACT Platinum

Practice facilities were assessed against a national average comparator. Data in the eQM platform is processed every month, and the platform uses an inventory snapshot–style approach. The month in which the data is applicable is known as the snapshot date. All data in eQM is processed and partitioned by the snapshot date. Therefore, extraction logic is based on changes made to a given snapshot. The eQM platform continuously computes 3 months of data relative to the current date (ie, data for the prior and current months and a forecast for the next month). Veterans with an active primary care assignment at the time of the monthly snapshot are included in the monthly calculations for measures. HEDIS measures available as part of the eQM framework related to diabetes, hypertension, and statins were evaluated (Table 2). An eQM composite score was calculated as the sum of patients who met the applicable measures divided by the sum of patients eligible for each measure. A higher composite score meant a higher percentage of patients met the desired HEDIS measures. The patient population included primary care patients who had a visit with a CPP and met criteria for at least one eQM metric. The comparison was made between the eQM composite score of the PACT Platinum Practice facilities compared to the national aggregate. For access, third next available appointment was calculated using data from the CDW that tabulates the days until the next third open slot for each day for each primary care clinic. An average is taken over each month for all clinics within a facility to determine the average days to third next available appointment for each month for each facility. All primary care provider clinics were included except for resident physician clinics and registered nurse clinics. Resident physician clinics were excluded as these were training-based clinics that had variability in how they were standardized at each facility, which would have resulted in the skewing of data had they been included. Registered nurse clinics were excluded as these were non–medication management clinics. The secondary outcome of CPP utilization was electronically evaluated. Each month, the percentage of the PCP panel that had a visit with the CPP within the past year is determined to be the CPP utilization for that panel.

Statistical analysis. We used an unpaired *t* test for continuous data. Continuous variables that were normally distributed were represented by a mean and standard deviation. Statistical analysis was performed using Microsoft Excel version 2023 (Microsoft Corporation, Redmond, WA).

Results

Quality. Compared to national averages, the PACT Platinum Practices had a higher proportion of patients meeting eQM metrics across all months of the study period. The national cohort had an average monthly population of 734,418 veterans, whereas the PACT Platinum Practice cohorts averaged 12,080 patients each month. The mean (SD) monthly eQM composite score for PACT Platinum Practices for the population was 77.6% (1.1%) and was statistically higher than the national score of 76.5% (1.1%) ($P < 0.05$) (Table 3).

Access. For access, the mean time to the third next available primary care appointment was lower for the PACT Platinum Practice facilities relative to the national average (Figure 1). These access measures stayed stable across the study period, with the PACT Platinum Practice facilities averaging 8.2 days, as compared to the national cohort average of 13.9 days.

CPP utilization. PACT Platinum sites had higher CPP utilization rates relative to national averages across the study period, and these rates remained stable (Figure 2). The national cohort of patients assigned to primary care averaged 2,841,414 veterans each quarter within the study period, with the PACT Platinum Practice sites averaging 32,081 veterans. The mean (SD) quarterly CPP utilization rate for PACT Platinum sites was 13.9% (0.9%), compared to 7.3% (0.5%) for the national comparator ($P < 0.05$).

Discussion

CMM holds great value and promise as a medication optimization strategy to improve patient care.[2] However, lack of consistent implementation surrounding the core components of CMM have led to heterogeneity in the ability to evaluate, interpret, and draw conclusions from outcomes related to quality of care and access.[3-6] We report outcomes related to quality and access from 2 CMM practices where the core components for implementation have been evaluated and quantified through the awarding of a VA practice designation with strict CMM evaluation criteria.[12] Using this evaluation framework, we are able to verify implementation of standard CMM core components with the hope of truly providing a like comparison of quality and access data on CPPs providing CMM.

Use of a clinical pharmacist to improve markers surrounding diabetes and hypertension is not a new proposition, as the primary literature has been sufficiently populated with such data.[13] We describe a standard evaluation method using the VA data framework to report overall improvement in quality of care surrounding standard measures that are electronically measured. CPP intervention at the PACT Platinum Practice sites resulted in higher quality and access relative to national averages. This difference was seen consistently over the 2 fiscal years of the study period. VA literature has shown that pharmacist referral of patients tends to involve patients of a higher complexity[14] than those generally seen by a PCP, which further validates CPP care, especially in the context of outperforming the national average for all patients.

The primary literature is scant with regard to the evaluation of improvement of access to PCPs through use of CPPs.[15] It has been postulated and shown in previous evaluations that using a CPP for care can offload patient volume from a PCP and thus increase access for new patients. To our knowledge, this work represents the

Table 3. Electronic Quality Measurement Composite Scores for Patients With CPP Visit

Period	Month	PACT Platinum Practice sites, % score	National average, % score
FY2019	Oct	78.5	77.7
	Nov	78.3	77.4
	Dec	78.2	77.1
	Jan	76.0	75.3
	Feb	75.6	75.3
	Mar	75.6	75.4
	Apr	76.5	75.8
	May	77.2	76.3
	Jun	77.5	76.9
	Jul	78.2	77.5
	Aug	78.6	77.9
	Sep	79.3	78.0
FY2020	Oct	78.8	77.7
	Nov	78.1	77.4
	Dec	77.6	77.1
	Jan	77.7	75.1
	Feb	77.6	75.1
	Mar	77.1	74.8
Mean (SD)		77.6 (1.1)[a]	76.5 (1.1)

Abbreviations: CPP, clinical pharmacist practitioner; FY, fiscal year; PACT, patient-aligned care team.
[a]$P < 0.05$ for comparison with national average.

first study using a standard parameter for evaluation of PCP access in relation to CPP utilization. Using third next available appointment as a measure of access, we showed the 2 Platinum Practice sites improved PCP access to above the national average. Although differences were observed between the Platinum Practices sites in the increase in access, any improvement in PCP access can be viewed as a positive. Secondarily, our study used a standard metric for the evaluation of CPP utilization. In our study, the 2 sites outperformed the VA national average for CPP utilization. This result was expected, given that the practice management component of CMM evaluates organizational support as well as care team engagement. These 2 domains of the practice management component underscore true integration of the CPP as a valued provider coupled with standardized processes for identification and referral of patients to the CPP for CMM.

The data collected for CPP utilization is comprised of the entire patient population with primary care assignments for the PACT Platinum Practice sites and nationally. Furthermore, the quality population is the same population but only includes veterans who met the criteria to be included in one of the quality metrics. The study did not need to sample patients to represent the entire population because it is already measuring the population. This addresses disadvantages of sampling such as bias or inadequate sample size. However, our study is not without limitations. This study was conducted within the VA system, which limits external validity to other, non-VA sites. However, the core components of practice management are consistent, regardless of facility, giving the thought that major components of CMM practice standardization can and should be implemented with the notion that improved quality and access would follow. Secondly, this data was retrospective in nature and may be impacted by multiple variables, lending the possibility that the increase in access in quality was not entirely associated with the practice designation. Access data, in particular, was limited to the nationally created reports available, which only report average days to third next available without the ability to drill down to the granularity needed to perform any statistical analysis. We did not require strict inclusion/exclusion criteria for a segment of the population but provided a real-world evaluation of quality

Figure 1. Third next available appointment was defined as the average time, in days, on a primary care clinic's schedule until the third next available appointment. Within VA this is a routine measurement of provider access, as opposed to the next available appointment, which can lead to an underestimation of access availability due to same-day cancellations. A lower number in days equates to better access, with higher days indicating worse access.

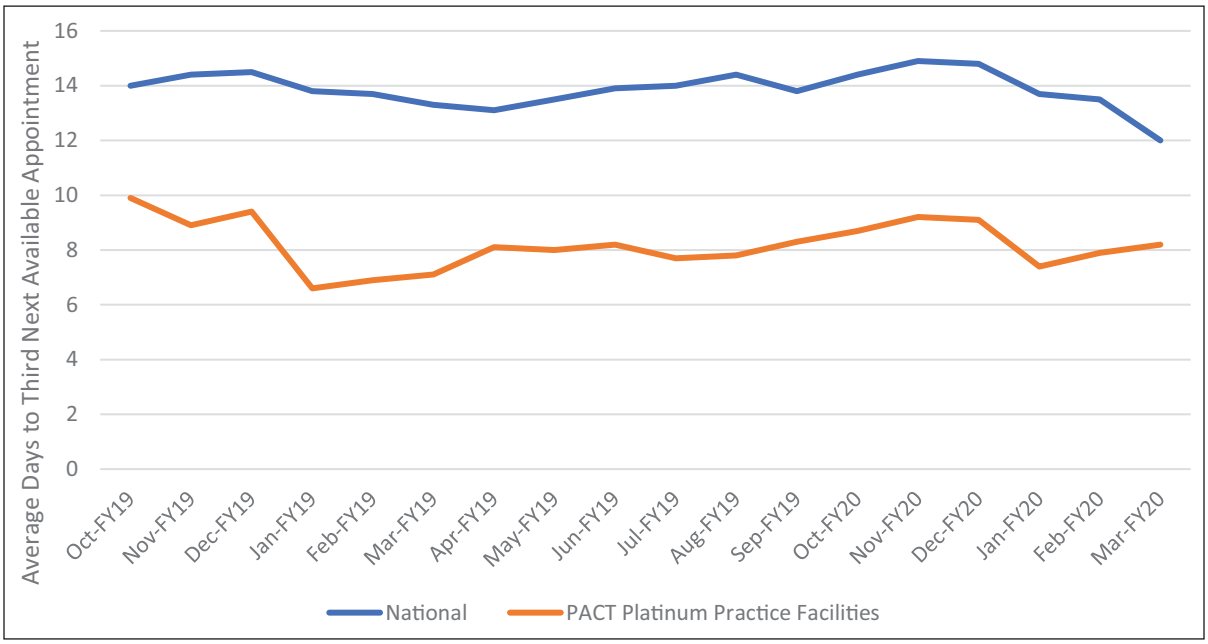
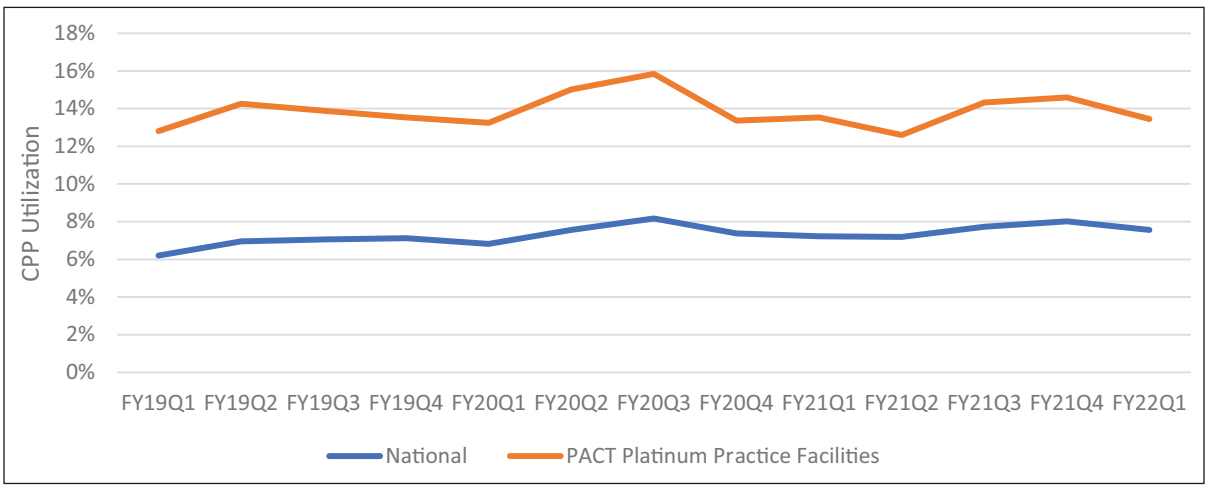


Figure 2. Clinical pharmacist practitioner (CPP) utilization by primary care providers (PCPs). CPP utilization is the percentage of the PCP panel that had a CPP visit within the past year, calculated as the number of unique veterans on the PACT PCP panel who are seen by a CPP divided by the total number of veterans on the PCP panel. Each month, the percentage of the PCP panel that had a visit with the CPP within the past year is calculated to determine the CPP utilization for that panel. Higher CPP utilization is preferred.



and access for all patients seen at 2 practices where the core components of CMM were recognized as standard. We evaluated standard sites, but we did not evaluate standardization of the patient care process, which may explain variances in quality metrics from the sites individually. Additionally, we did not take into consideration the possibility of primary care provider vacancies, which could have affected CPP utilization as well as primary care provider utilization. Withing VA, gap or float coverage does exist to ensure veterans receive continual care when a provider chooses to leave the system. Lastly, we recognize the exceptional patient care provided by VA CPPs and

the level of practice VA has created that allows CPPs to practice at the highest level. Practices may have standardized their facility CPP practice around the practice management component of CMM but may have not submitted for PACT Platinum Practice designation, which limits a comparison between a "standard" control group and the 2 exceptional practices. This limitation can be viewed from the perspective that any variation to the positive for the Platinum Practice sites is above a level already representing the highest level of clinical pharmacy.

Conclusion

This study demonstrated improved quality and access outcomes for medical centers designated as PACT Platinum Practices in comparison to national aggregate measures. To our knowledge, this is the first study evaluating outcomes regarding quality and access using a fidelity evaluation with the CMM practice management core component that is foundational in providing CMM. Evaluation of outcomes standardizing the practice management element of CMM allows for a more homogenous comparison of outcome measures.

Data availability

The data underlying this article are available in the article.

Disclosures

The authors have declared no potential conflicts of interest.

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