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The Coordination Toolkit and Coaching Project: Cluster-Randomized Quality Improvement Initiative to Improve Patient Experience of Care Coordination

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BACKGROUND: Given persistent gaps in coordination of care for medically complex primary care patients, efficient strategies are needed to promote better care coordination.

OBJECTIVE: The Coordination Toolkit and Coaching project compared two toolkit-based strategies of differing intensity to improve care coordination at VA primary care clinics.

DESIGN: Multi-site, cluster-randomized QI initiative.

PARTICIPANTS: Twelve VA primary care clinics matched in 6 pairs.

INTERVENTIONS: We used a computer-generated allocation sequence to randomize clinics within each pair to two implementation strategies. Active control clinics received an online toolkit with evidence-based tools and QI coaching manual. Intervention clinics received the online toolkit plus weekly assistance from a distance coach for 12 months.

MAIN MEASURES: We quantified patient experience of general care coordination using the Health Care System Hassles Scale (primary outcome) mailed at baseline and 12-month follow-up to serial cross-sectional patient samples. We measured the difference-in-difference (DiD) in clinic-level-predicted mean counts of hassles between coached and non-coached clinics, adjusting for clustering and patient characteristics using zero-inflated negative binomial regression and bootstrapping to obtain 95% confidence intervals. Other measures included care coordination QI projects attempted, tools adopted, and patient-reported exposure to projects.

KEY RESULTS: $N = 2,484$ (49%) patients completed baseline surveys and 2,481 (48%) completed follow-ups. Six coached clinics versus five non-coached clinics attempted QI projects. All coached clinics versus two non-coached clinics attempted more than one project or projects that were multifaceted (i.e., involving multiple components addressing a common goal). Five coached versus three non-coached clinics used 1–2 toolkit tools. Both the coached and non-coached clinics experienced pre-post reductions in hassle counts over the study period (− 0.42 (− 0.76, − 0.08) non-coached; − 0.40 (− 0.75, − 0.06) coached). However, the DiD (0.02 (− 0.47, 0.50)) was not statistically significant; coaching did not improve patient experience of care coordination relative to the toolkit alone.

CONCLUSION: Although coached clinics attempted more or more complex QI projects and used more tools than non-coached clinics, coaching provided no additional benefit versus the online toolkit alone in patient-reported outcomes.

TRIAL REGISTRATION: ClinicalTrials.gov identifier: NCT03063294

KEY WORDS: primary care; care coordination; patient experience; Veteran; cluster-randomized controlled trial.

INTRODUCTION

Inefficiencies in care coordination contribute to wasted healthcare services and frustration for patients,[1,2] even within care models that include a coordination focus such as the patient-centered medical home (PCMH).[3–6] As the largest US integrated healthcare system, the Veterans Health Administration

(VA) faces unique challenges in coordinating care. In 2010, the VA began implementing a PCMH model called Patient-Aligned Care Teams (PACT), in which a primary care provider, registered nurse, licensed practical/vocational nurse, and clerk coordinate VA health services across a continuum of settings.[7] While the majority of specialist consults from PACT (either virtual or in person) are to VA-affiliated specialists, VA also coordinates services delivered to its enrollees by non-VA providers (e.g., through Medicare, or VA-purchased care).[8,9] Despite implementation of PACT and other strategies to support effective care delivery, optimal care coordination has remained elusive for the VA,[10] similar to other healthcare organizations.

Improving care coordination is challenging because implementation strategies must address complex sets of activities that cannot be reduced to a particular evidence-based practice. Furthermore, published research on specific care coordination practices shows that while care coordination can be improved,[11] coordination problems and outcomes can vary substantially depending on local context.[10] Care coordination improvement initiatives that can adapt to local practice environments, while benefiting from evidence-based approaches, are needed.

Toolkits (collections of individual tools addressing a given problem) have been identified as a critical element for spreading evidence-based care into routine practice.[12] Toolkits have proliferated over the past decade, especially since online deployment has provided a relatively inexpensive way to make quality improvement (QI) tools readily accessible. Evidence, however, is lacking on the benefits of toolkits in primary care. Furthermore, passive online approaches without additional support may be insufficient to promote tool uptake in QI initiatives.[13,14] In addition, toolkit contents may vary in quality and applicability to specific settings.

Recent research suggests that an external practice facilitator or "coach" can enhance the active use of toolkits by providing tailored assistance.[15] Practice facilitation is a multifaceted strategy commonly used in primary care settings that involves engaging QI-trained individuals in supporting implementation of evidence-based care guidelines.[16–20] Distance coaching, a form of practice facilitation, extends the model to virtual modalities, increasing scalability.[21]

In the Coordination Toolkit and Coaching (CTAC) project, we systematically identified and rated tools for supporting local care coordination QI by primary care sites. We then developed an online toolkit, made it available on the VA Intranet,[22] and compared two implementation strategies of different intensity to support VA primary care clinics in improving care coordination quality. Six pairs of participating clinics were randomly assigned to either a lower-intensity strategy consisting of online toolkit dissemination with minimal support, or a higher-intensity strategy combining the online toolkit with distance coaching. We judged the relative effectiveness of the two strategies based on patient experience of general care coordination using a validated questionnaire administered at baseline and 12-month follow-up. Secondarily, we described the number and types of care coordination QI projects attempted and the tools used by the coached and non-coached clinics.

METHODS

Approach and Participating Clinics

CTAC, a multi-site, cluster-randomized controlled QI initiative, was determined to be non-research by the VA Office of Patient Care Services and the VA Greater Los Angeles Healthcare System's Institutional Review Board. We recruited and enrolled VA primary care clinics from October 2016 to June 2018 using a multi-pronged approach, including teleconference presentations and direct outreach to regional and national leadership. Pairs of VA primary care clinics within the same VA regional medical centers and with similar panel sizes, number of teams, and offered services were eligible.

Six pairs of primary care clinics ($n = 12$) met inclusion criteria and agreed to participate (Fig. 1).[23] All clinics were urban based on RUCA codes,[24] and located in geographically diverse US Census Divisions.[25] Clinics ranged in size from large (13–19 providers) to very small (1–2 providers). The clinics' PACT Implementation Progress Index, an annual VA measure of PCMH implementation associated with better quality of care,[26] indicated PCMH implementation in the middle range of effectiveness.[27] The project statistician, blinded to clinic characteristics, used a computer-generated allocation sequence to randomize clinics within each pair to the two implementation strategies.

Interventions

Online CTAC Toolkit and Initial Project Engagement. To create an online care coordination toolkit, we systematically identified and rated available tools for inclusion.[22] The final online toolkit comprised 18 care coordination tools in five categories: managing referrals to specialty care, medication management, patient after-visit summary, patient activation materials, and provider contact information for patients (Table 1).[22] The toolkit provides details about the resources required and expected benefits of each tool, the CTAC QI coaching manual, and a webinar orienting users to the toolkit.[22]

After facility directors approved participation, we scheduled initial phone-based "priority-setting" meetings with leadership of all enrolled clinics to review the project scope and timeline. We described the implementation strategies, presented clinic staff survey and readiness interview results (not reported here), discussed local care coordination priorities, introduced the online toolkit, and brainstormed QI project ideas. We explicitly told clinics that projects were not required to utilize a tool from the toolkit.
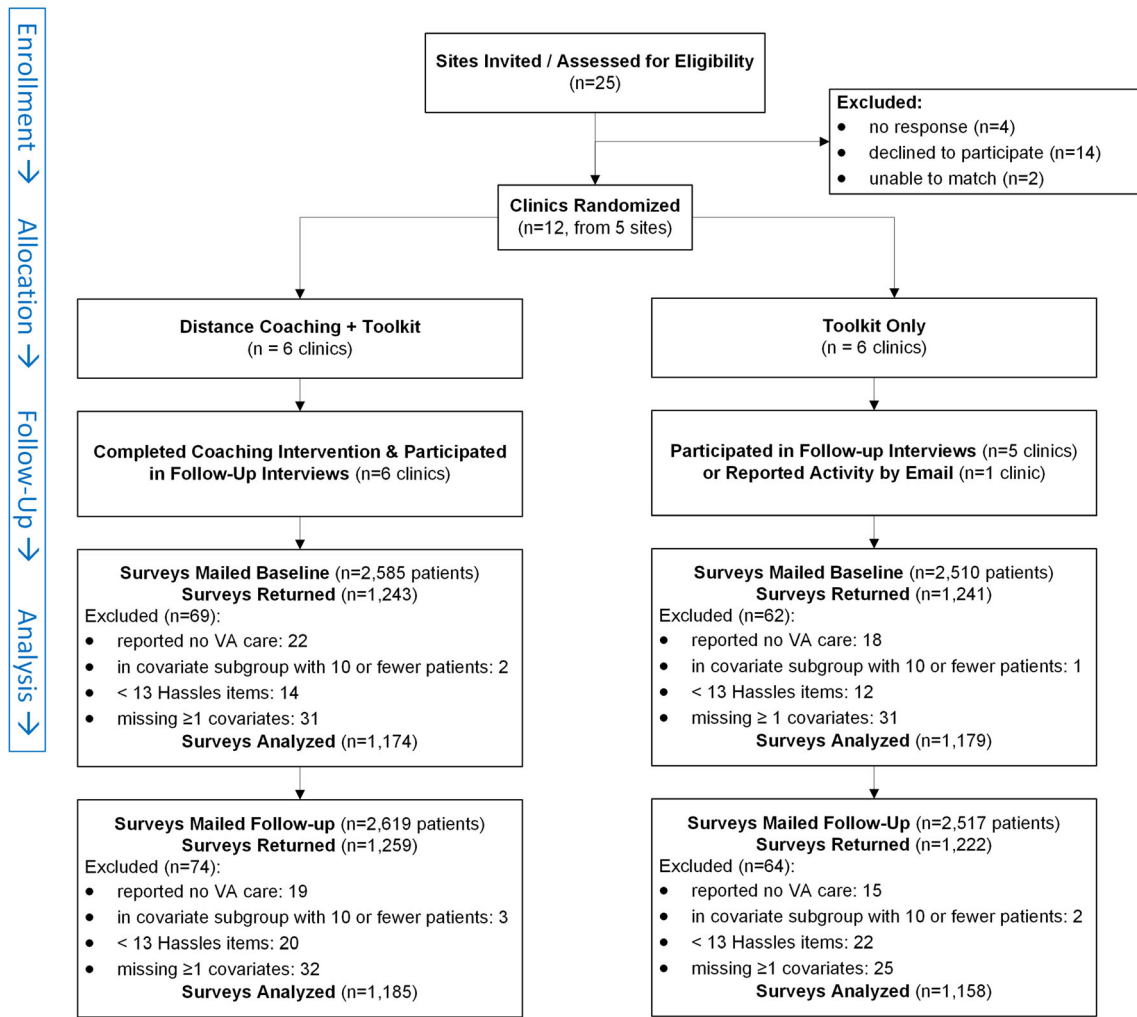
Figure 1 Study flow diagram.

Lower-Intensity Strategy for Non-Coached Clinics. Immediately after the priority-setting meetings, we sent emails to the non-coached clinics that included their randomization assignment, their baseline patient experience survey data, and the link to the CTAC toolkit's webpage.[28] The email also instructed the non-coached clinics to choose a project champion and a proposed QI project and then email this information back to the CTAC project coordinator. The non-coached sites received no further guidance or assistance from project staff during the 12-month intervention period.

Higher-Intensity, Distance Coaching Strategy. The email sent to the coached clinics also included randomization assignment, baseline patient experience survey data, and a link to the CTAC toolkit webpage. The message additionally asked clinics to schedule an in-person 4-h site visit and select a local project champion and team to participate.

The CTAC team included two trained QI coaches with prior clinical experience, each assigned to three of the six coached clinics. Coaching training included shadowing experienced facilitators, and the larger team supported the coaches with weekly calls to discuss coaching challenges and project roadblocks. During the 4-h site visit, the CTAC team introduced the clinic's assigned distance coach, explained the plan for distance coaching (by phone and virtual screen-sharing platform), and facilitated discussion of possible QI project topics.

Over a 12-month period, the coaches helped clinic teams develop and implement care coordination QI projects, facilitating weekly hour-long coaching calls and communicating with team members as needed between scheduled sessions to maintain momentum and accountability. Within the first 3 months, the coaches helped each clinic develop action plans with relevant Specific, Measurable, Achievable, Realistic, and Time-bound (SMART) goals,[29] and suggested relevant tools from the toolkit. The coaches provided technical support in QI techniques, project management, evaluation, and data collection; they also led monthly collaborative calls with coached clinics to encourage cross-site learning.

Main Measures and Sources

QI Projects. To identify the number and type of QI projects that clinics attempted and tools that were used, the project manager created preliminary lists using action plans and final

Table 1 Care Coordination Toolkit tool list with descriptions

Tool category and tool name	Tool description
1. Managing referrals to specialty care	
VA service agreement template	A template with the purpose of facilitating timely access and patient-centered care for patients by promoting an effective relationship between the PACT team and the specialty care team during the management of a patient's care.
Consult guides for primary care (information to include)	A comprehensive list of clinical conditions and for each, a standard set of information to be included in a referral request, to help ensure a meaningful visit when the referred patient visits the relevant specialist. While the tool consists of multiple data sets, not all need to be implemented.
Relaxation and meditation program: An approach to self-management of mental health in primary care	Information and tools for implementing a program that teaches patients relaxation and meditation skills, with the potential benefit of decreasing the number of referrals to specialty mental health services.
2. Medication management	
VA formulary (Abbreviated)	The Primary Care Service in the VA Palo Alto Healthcare System worked with its pharmacy department to create an abbreviated and searchable VA formulary. This resource was posted on the healthcare system's external web page and is updated periodically for accuracy.
AudioRENEWAL: Phone-based medication renewal for patients	Allows patients to request a renewal of their prescription directly from within the AudioCARE telephone refill system 24 hours a day, 7 days a week.
Communication with community providers to co-manage Veterans' care	A two-page document that includes a letter to help facilitate communication between a VA provider and an outside healthcare provider regarding management of the Veteran patient and instructions for obtaining medications through the VA, and a guide for providers (non-VA) to request a prescription medication that is non-formulary.
Medication tracker for patients	A one-page form with sections to be filled in by a member of the PACT team for the patient. Spaces are provided to fill in a patient's medication details and healthcare provider name and contact information. The medication list includes details that can help patients remember when to take their medications and what dose to take.
3. Patient after-visit summary	
After-visit instructions for patients (paper)	A customizable document instructing patients about where to go before leaving the VA the day of their appointment, as well as any follow-up actions which need to be taken. Includes contact information for specialty clinics as well as a map of the campus, which can be used to direct patients to their next destination on campus.
After-visit summary for patients (electronic)	An electronic tool that produces a customizable, printable patient summary that can be provided to a patient after his/her primary care office visit to summarize visit content and subsequent action steps, if appropriate.
4. Patient activation materials	
Patient agenda setting form	A simple, easy to fill-out form to help patients prepare for their healthcare visit. The form can be sent to patients in the mail with a pre-visit packet or can be given to patients to complete in the waiting room.
Patient treatment decision guide	A worksheet for patients to use when faced with a medical decision. The form includes questions to ask the provider during the medical appointment, space to take notes, and guidance on how to proceed with making a decision.
Tips for patients: Improving communication with your primary care team	A two-page handout that can be mailed to patients in a pre-visit packet or given to patients at check-in, before their appointment. The tool includes tips for communicating with the primary care team, questions for patients to think about before their appointment and space to write down answers. This tool can help ensure all patient questions and concerns are addressed during their medical appointment.
Pharmacy safety for patients	A patient handout that explains the role of the pharmacist, pharmacy and patient during the process of obtaining medications.
Tips for patients: Questions to ask before, during and after your visit	A guide that includes tips, ideas, and questions for patients to use before, during, and after their appointment that will help facilitate a successful healthcare visit.
5. Provider contact information for patients	
Clinic information pamphlet	A template that clinics can customize to create a clinic information pamphlet for patients that includes pertinent information about the clinic. Information may include appointment-making instructions, provider contact information, prescription refill instructions, and other clinic details.
My primary care team: Contact and other information	A one-page handout that lists important provider contact information for a patient. Includes contact details for the primary care provider, PACT nurse, tele-health nurse, specialty care, pharmacy, and mental health.
My primary care team: Wallet card with contact information	A customizable wallet-sized card that can be printed, populated with a patient's primary care team information and given to the patient. The back of the card includes a list of information patients should provide when leaving a message at the clinic.
Save a trip to primary care	A one-page resource for patients, explaining and illustrating the difference between routine, non-urgent, and urgent medical situations. The sheet explains to patients what actions to take in the case of each of these situations and provides relevant contact information.

project reports for the coached clinics and the initial report emailed by the non-coached clinics. Coached clinic lists were verified by the coaches. We also conducted semi-structured interviews at 6-, 12-, and 18-month follow-up with the champions of both non-coached and coached clinics. Using transcripts from these interviews and the final reports from the coached clinics, an evaluator who was uninvolved in intervention activities (LP—medical anthropologist) adapted the project manager's preliminary lists to include details about QI projects attempted by clinic teams, as well as any tools that were selected, adapted, or created for the projects.

Patient-Reported Measures. We collected our primary outcome and patient characteristics by surveys mailed to serial cross-sections of Veterans selected from participating clinics at baseline and 12-month follow-up. Because frequent users of primary care are more likely to have multimorbidity, require greater care coordination, and experience greater healthcare system hassles,[30,31] our sample included only patients with four or more primary care visits to their assigned clinic during the preceding 12 months, based on data from the VA's Corporate Data Warehouse.[23] Patients were not offered an incentive to participate. Of the invited Veterans, 2,484 (49%) and 2,481 (48%) returned surveys at baseline and follow-up, respectively (see Supplementary Appendix for details about participating clinics, survey methodology, and sample, and Fig. 1 for response rates by study arm).

The primary outcome was improvement in patient-reported experience assessed with the 16-item Health Care System Hassles Scale.[30] Recognized as a measure of care coordination,[32] the Hassles questionnaire lists problems that patients may encounter with their general healthcare, as opposed to their care experience with one specific visit or provider.[30] The questionnaire prompts patients to indicate how much situations such as "lack of information about why you've been referred to a specialist" have been a problem, using a 5-point scale ranging from 0 to 4. Ratings were dichotomized (0 = "Not a problem at all" vs. 1 = any level of problem indicated) and summed to yield a hassles count ranging from 0 to 16, with higher scores indicating more hassles.[30]

Because we allowed clinics to pursue projects of their own choosing that addressed salient care coordination problems, we were not able to identify a process measure a priori that would universally apply to all clinics. Therefore, we developed supplemental questions for the follow-up patient survey that were tailored to the initial project(s) undertaken by the coached clinic in each clinic pair.

Covariates assessed by the surveys included sociodemographic characteristics (sex, age group, race/ethnicity, education, and marital status) and ratings of overall physical and mental health status using single items adapted from the Medical Outcomes Study Short Form-36 (MOS SF-36).[33] Patients were also asked to report their source of healthcare in the past 12 months (e.g., VA healthcare providers only or both VA and non-VA providers).[23]

Quantitative Analysis. We computed descriptive statistics for patient-reported characteristics and compared the intervention arms at baseline using bivariate statistics. We calculated total Hassles counts after using hot deck multiple imputation for missing values only if individuals responded to at least 13 of the 16 items comprising the scale. Multivariate difference-in-difference (DiD) analysis was used to determine the difference between coached and non-coached clinics in the change in patient-reported hassles from baseline to 12-month follow-up. Because of the number of zero scores (i.e., no hassles) noted in the Hassles count data, we used zero-inflated negative binomial regression (ZINB)[34,35] to calculate predicted mean hassles at baseline and follow-up for each clinic after controlling for factors that might confound the relationship between the exposure (coaching) and the outcome (hassles). ZINB analyses were conducted using Stata/SE15.1 (StataCorp, College Station, TX).[36] We calculated DiD point estimates and generated associated 95% confidence intervals (CIs) for coached and non-coached arms for each time point using a bootstrap procedure. We used two models for the DiD. The base model adjusted for clinic fixed effects and clustering of survey responses within clinics. The full model included the base model and adjusted for patient characteristics. We conducted post hoc analyses of the supplemental questions included in the follow-up surveys, using the chi-square test to compare the proportion of patients from coached versus non-coached clinics within each pair who reported being exposed to the coached clinic's patient-facing QI project components.

RESULTS

QI Projects and Tools

Table 2 describes QI projects attempted and tools used by the coached and non-coached clinics. All six coached clinics versus two non-coached clinics attempted more than one project or projects that were multifaceted. However, both coached and non-coached clinics primarily pursued projects that teams could implement by themselves without additional support or policy changes. All six coached clinics and five of the non-coached clinics attempted QI projects on the following topics: walk-ins (project $n = 5$), medications ($n = 2$), prediabetes ($n = 1$), diabetes ($n = 1$), extended clinic hours ($n = 1$), specialty consult discontinuation ($n = 1$), patient self-management ($n = 1$), and no-shows ($n = 1$). The sixth non-coached clinic chose a champion and selected a project topic on access, but never initiated a project. Of the eleven clinics that attempted projects, eight (five coached versus three non-coached) used one or more of the following three tools from the toolkit (Table 2): Clinic Information Brochure, Save a Trip to Primary Care, and Medication Tracker. The three other clinics (one coached versus two non-coached) either adapted other tools and/or created their own tool.

Table 2 QI Projects Proposed and Attempted, and Tools Used by Coached and Non-Coached Clinics

Pair	Coached	QI project(s)*	Adoption of tools from online CTAC toolkit
A	Coached	(1) Improve the process for managing unscheduled patient visits to the clinic, using: • new walk-in tracking and triage form • nurse and clerk workflows • patient education brochure and script (2) Extend clinic hours to better meet needs and desires of patients.	• Clinic information brochure
A	Non-coached	(1) Improve the percentage of patients with controlled blood pressure, using: • follow-up with semi-monthly nursing visits for blood pressure monitoring and patient education (including a medication list) • as-needed medication management from provider	• Medication tracker for patients
B	Coached	(1) Improve the medication reconciliation process during patient clinic visits: • Customize medication lists in the electronic health record • Pre-appointment calls and letters to patients to remind them what they need to bring to their visit • Clinic medication reconciliation workflows for clerks and nurses (e.g., instructing patients how to mark up their medication lists) • Clinic medication brochure	• Clinic information brochure (basis for medication brochure)
B	Non-coached	(1) Reduce the number of specialty consult discontinuations by giving patients a form letter with consult clinic phone number	None from toolkit (created own tool)
C	Coached	(1) Improve the management of walk-in patients by: • developing a clinic brochure for patients that will improve patient-staff relationships • improve clinic workflows for handling walk-in patients with certain needs (including standardizing patient education about how to handle those needs in the future)	• Clinic information brochure • Save a trip to primary care
C	Non-coached	Goal to improve Veterans' perceptions of clinic access, but no QI projects implemented	N/A (no tools used)
D	Coached	(1) Educate pre-diabetic patients about diabetes prevention and enroll them in a Healthy Living class (staff education, patient mailers). (2) Adapt the process developed for pre-diabetic patients for patients with hemoglobin A1c ≥ 9% and no A1c test in the past 12 months.	None from toolkit (adapted other tools and created own tools)
D	Non-coached	(1) Reduce the number of unscheduled appointments using Save a Trip Form, with standardization of key talking points for nurses using form (including promoting use of secure messaging).	• Save a trip to primary care

E	Coached	(1) Improve the process for walk-in patients to address multiple patient needs:
		• medication refill and renewal
		  • tailored patient education brochure
		  • new nurse and scripted clerk workflows
		• release of information
		  • patient education slides
		  • workflow
		• new symptoms (triage nurse)
		• lab orders
		  • clerk and nurse workflows
		  • patient education
			• Clinic information brochure (basis for medication brochure)

E	Non-coached	(1) Support patient self-management by implementing Save a Trip Form	• Save a trip to primary care
F	Coached	(1) Improve the process for managing unscheduled patient visits to the clinic and help prevent unnecessary walk-in visits, through: • patient education brochure • improved workflows • formalized nurse-clerk communication.	• Clinic information brochure
F	Non-coached	(1) Decrease missed opportunity rate using the Daily Missed Opportunity Rate report to call patients with a 20% or more chance of not showing up for appointments.	None from toolkit (adapted another tool)

Details of QI projects provided here are what sites proposed and attempted. The degree of implementation varied from no implementation (applicable only to site C, non-coached clinic) to full implementation depending on the particular project and site in question. Details regarding extent of implementation are beyond the scope of this analysis but will be the subject of future work

Chi-square analysis of the supplemental process questions tailored to coached clinics' QI projects indicates that two of six coached clinics had significantly higher proportions of patients who reported receiving patient brochures than their counterparts in paired non-coached clinics (Table 3), indicating greater awareness of the patient-facing aspects of the coached QI projects.

Patient-Reported Hassles

The number of hassles patients reported at baseline ranged from 0 to 16. Seventy-nine percent of Veterans reported experiencing one or more hassles (median 4; interquartile range 1–8). The top five hassles were having to wait a long time for an appointment with specialty providers or clinics (56%), poor communication between different healthcare providers (44%), lack of information about treatment options (41%), lack of information about medical conditions (40%), and difficulty getting questions answered or getting medical advice between scheduled appointments (40%).[23] Non-coached clinics had significantly more patient-reported hassles than coached clinics at baseline (mean 5.25 (SD 4.85) vs. mean 4.62 (SD 4.51), respectively; $p < 0.001$).

Table 3 Analysis of Supplemental Process Questions Tailored to Coached Clinics' Projects

Site	Process question	Coached clinics Total eligible respondents (% of eligible answering "yes")	Non-Coached clinics Total eligible respondents (% of eligible answering "yes"))	p
A	Did you receive or pick up a brochure with information about the clinic's services, hours of operation, contact names and numbers, and how to refill or renew your medications?	223 (46.6%)	227 (30.8%)	< 0.001
B	Did you receive or pick up a brochure with information about how to refill or renew your medications?	91 (37.4%)	50 (18.0%)	0.02
C	Did you receive or pick up a brochure with information about the clinic's services, hours of operation, contact names and numbers, and online resources?	220 (37.3%)	221 (37.1%)	0.97
D	Have you received any information about pre-diabetes, diabetes or diabetes classes from your care team via a letter, phone call, or in-person visit?	108 (61.1%)	111 (65.8%)	0.47
E	Did you receive or pick up a brochure about how to refill or renew your medications?	208 (22.1%)	219 (25.1%)	0.47
F	Did you receive or pick up a brochure with information about the clinic's services, hours of operation, contact names and numbers, and how to refill or renew your medications?	218 (42.2%)	233 (47.2%)	0.29

For clinics within site D, we used a two-part question. The first part asked respondents to indicate if a healthcare provider had ever told them that they had diabetes, pre-diabetes, or were at risk for diabetes. The total eligible respondents shown above for site D's row reflect only those who answered "yes" to the first part of the question and were thus eligible to receive diabetes-related classes

Multivariate Analysis

Table 4 presents the unadjusted and adjusted means at baseline and follow-up, mean differences, and DiD in Hassles scores and their corresponding 95% CIs for the non-coached and coached clinics. Both the coached and non-coached clinics experienced pre-post reductions in hassle counts over the course of the study period (− 0.42 (− 0.76, − 0.08) for non-coached and − 0.40 (− 0.75, − 0.06) for coached). However, the DiD (0.02 (− 0.47, 0.50)) was not statistically significant; i.e., there was insufficient evidence that coaching could improve patient experience of care coordination. Because 260 participants had longitudinal data (i.e., at both baseline and at follow-up), we conducted two sensitivity analyses: one that excluded these participants and another that only used these participants. Both yielded results similar to those found with the entire sample (see Supplementary Appendix).

DISCUSSION

In our analysis comparing a lower-intensity care coordination intervention using an online toolkit with a higher-intensity intervention involving both the online toolkit and distance coaching, we found that the frequency of patient-reported hassles improved in both groups to a similar extent. This general improvement could reflect the implementation strategies employed by CTAC at both coached and non-coached clinics (e.g., leadership engagement, requiring the nomination of a champion, feedback of baseline patient experience survey results, and provision of the toolkit with coaching manual). Since our study did not include a "usual care" control group, we do not know whether the observed improvements were the result of the intervention versus secular trends unrelated to the interventions.

Table 4 Difference-in-Difference in Patient-Reported Hassles for Non-Coached and Coached Clinics

	Hassles count Baseline*	Hassles count Follow-up*	Difference (post-pre)	Difference-in-difference (coached–non-coached)
Unadjusted results (n = 4815)	Mean (SD)	Mean (SD)	Unadjusted M	Unadjusted M
Non-coached	5.25 (4.85)	4.83 (4.64)	− 0.42	-
Coached	4.62 (4.51)	4.31 (4.41)	− 0.31	0.11
Base model† (n = 4815)	Mean (CI)	Mean (CI)	Adjusted M (CI)	Adjusted M (CI)
Non-coached	5.23 (4.96, 5.50)	4.83 (4.57, 5.09)	− 0.39 (− 0.76, − 0.03)	-
Coached	4.61 (4.36, 4.86)	4.33 (4.09, 4.57)	− 0.28 (− 0.62, 0.05)	0.11 (− 0.38, 0.60)
Full model‡ (n = 4696)	Mean (CI)	Mean (CI)	Adjusted M (CI)	Adjusted M (CI)
Non-coached	5.20 (4.95, 5.46)	4.78 (4.53, 5.04)	− 0.42 (− 0.76, − 0.08)	-
Coached	4.71 (4.47, 4.96)	4.30 (4.04, 4.56)	− 0.40 (− 0.75, − 0.06)	0.02 (− 0.47, 0.50)

Respondents who failed to report that they had received VA healthcare in the prior 12 months (i.e., they either left the item blank or indicated that they saw non-VA providers or no providers, or did not know if they saw any providers), those who completed fewer than 13 of the 16 Hassles items, covariate subgroups 10 or fewer patients (i.e., other sex), and those with missing covariates were excluded from the DiD. Numbers by coached and non-coached arms provided in Figure 1
†The base model adjusts for clinic fixed effects and clustering of survey responses
‡The full model includes the base model and adjusts for patient characteristics: age, gender, race, education, marital status, self-rated physical health, self-rated mental health, and use of VA providers only vs. VA and non-VA providers

During CTAC, all six coached and five of the six non-coached clinics attempted one or more QI projects. Although coached clinics attempted more complex QI activities and incorporated more tools from the toolkit than non-coached clinics, this did not translate to a differential improvement in patient experience for coached clinics. Clinics were explicitly told that they were not required to use a tool from the toolkit. Accordingly, one coached clinic and two non-coached clinics either created their own tool or adapted other tools for their QI projects. Three tools in the CTAC toolkit were used regularly, within two domains: Provider Contact Information for Patients and Medication Management. Five clinics incorporated tools from the first domain into care coordination QI projects designed to reduce unnecessary walk-ins. These were relevant to one of the most frequent patient-reported baseline hassles (i.e., difficulty getting questions answered or getting medical advice between scheduled appointments). QI projects using these tools were feasible to implement without additional personnel, resources, or policy changes. More challenging problems for which the toolkit provided tools, such as coordination of referrals across primary care and specialty settings, were not pursued by either coached or non-coached clinics.

Our analysis has several limitations. First, our analytic approach assumed similar time-dependent secular trends in patient experience between the study groups.[37] Because patient experience measurements used different cohorts at the two time points, we cannot verify the validity of this assumption. Second, patient experience measures were imbalanced at baseline, with non-coached clinics reporting more hassles. This could lead to increased opportunity for hassles to improve over time in non-coached clinics, biasing results in favor of non-coached clinics. Third, because participation in CTAC was not mandated, participating clinics might have been more highly engaged than average, such that findings may not generalize to VA primary care nationwide. Finally, the total hassles count reflecting overall patient experience may not have been sensitive to changes resulting from specific QI projects.

In conclusion, both coached and non-coached CTAC clinics achieved similar improvements in patient-reported hassles in the context of ongoing national VA efforts to improve primary care quality. These results are consistent with systematic reviews showing that both toolkits and practice facilitation can be effective in implementing guideline-concordant care processes.[14,18,20] This may be especially true for complex challenges associated with care coordination, which cannot be reduced to a specific set of care processes. While the addition of higher-intensity coaching did not improve patient experience more than lower-intensity toolkit dissemination alone, recent work has shown other benefits of distance coaching, such as sustainment of complex interventions and skill mastery.[21,38] Ongoing CTAC analyses are examining whether distance coaching enhanced team functioning or completion and spread of QI projects, while future work should explore the optimal bundle of implementation strategies and tools to improve patient experience of care coordination. Our current findings suggest that most clinics making a commitment to do so will engage in care coordination QI activities when given access to an online toolkit supported by lower-intensity implementation strategies. Although higher-intensity coaching may not be needed in all circumstances, it may encourage the pursuit of more complex QI projects.

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