

Research

Key activities used by community based primary care practices to improve the quality of diabetes care in response to practice facilitation

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ABSTRACT

Background recent systematic review suggests that practice facilitation (PF) is a robust intervention for implementing evidence-based preventive care guidelines in primary care, but the ability of PF to improve chronic illness care remains unclear.

Aims To examine the specific activities and chronic care model (CCM) components that primary care practices implemented and sustained in response to a 12-month PF intervention.

Methods The ABC trial tested the effectiveness of PF to improve care for diabetes in 40 small community based primary care practices that were randomised to 'initial' or 'delayed' intervention arms. A trained facilitator met with each practice over 12 months. Facilitators used interactive consensus building to help practices implement one or more of quality improvement activities based on the CCM. Facilitators prospectively recorded implementation activities reported by practice teams during monthly meetings and confirmed which of these were sustained at the end of the intervention.

Results Thirty seven practices implemented and sustained a total of 43 unique activities (range 1–15, average 6.5 [SD = 2.9]). The number (%) of practices

that implemented one or more key activities in each CCM component varied: patient self-management support: 37 (100%); clinical information systems: 24 (64.9%); delivery system design: 14 (37.8%); decision support: 13 (35.1%); community linkages: 2 (5.4%); healthcare system support: 2 (2.7%). The majority of practices (59%) only implemented activities from one or two CCM components. The number of sustained activities was associated with the number of PF visits, but not with practice characteristics.

Conclusion In spite of the PF intervention, it was difficult for these small practices to implement comprehensive CCM changes. Although practices implemented and sustained a remarkable number and variety of key activities, the majority of these focused on patient self-management support, as opposed to other components of the CCM, such as clinical information systems, decision support, delivery system redesign, and community linkages.

Keywords: chronic disease, general practice, practice facilitation, primary healthcare, type 2 diabetes mellitus

How this fits in with quality in primary care**What do we know?**

Evidence suggests that practice facilitators who provide support services to primary care practices during quality improvement initiatives are effective in promoting the adoption of evidence-based preventive care guidelines. The ability of practice facilitation to improve chronic illness care, however, is not clear.

What does this paper add?

The findings indicate that primary care practices implemented and sustained a variety of quality improvement activities to improve diabetes care and outcomes in response to practice facilitation, but the majority of these were more likely to focus on patient behaviour than practice behaviour. Although motivated to improve care, small primary care practices most likely require additional resources and payment models that align practice support with performance measurement and feedback and incentives to achieve more complex and comprehensive changes to improve chronic illness care.

Introduction

Organising and delivering effective care to patients with one or more chronic illnesses in busy primary care settings is challenging. The Chronic Care Model (CCM) describes an approach to deliver high-quality chronic illness care in ambulatory care settings.¹ CCM implementation and other primary care redesign efforts such as the Patient-Centred Medical Home suggest that practice change or redesign is difficult.^{2,3} Change can be especially challenging in small, autonomous primary care practices where resources are scarce and where the environment external to the practice is not supportive of change.⁴ Efforts to transform primary care practices (PCPs) have employed many activities including learning collaboratives, academic detailing, performance measurement, or audit and feedback.^{3,5,6} A more recent trend has utilised practice facilitation (PF) to support primary care redesign.⁷⁻⁹

PF occurs when a trained facilitator provides support services to a primary care practice for an improvement initiative. The PF approach enables teams to overcome challenges encountered when implementing changes in the office setting by building their internal capacity to engage in redesign or improvement efforts.¹⁰ Facilitators assist practice teams to identify and prioritise areas of change as well as help them develop tailored action plans for improvement. PF has also been referred to as quality improvement coaching or practice enhancement assistance.⁸ Although a recent systematic review suggests that PF is a robust intervention for improving the adoption of evidence-based preventive care guidelines in primary care,⁷ the ability of PF to change how primary care teams organise to improve chronic illness care outcomes remains unclear.

The ABC trial tested the effectiveness of PF to improve diabetes chronic illness care and control of three risk factors (haemoglobin A1c, blood pressure, and cholesterol) for diabetes-related complications in

community based primary care clinics.¹¹ Unlike larger integrated healthcare systems, these small, independent practices did not have the staff or resources to support formal performance measurement or quality improvement activities. External practice facilitators worked with the providers and staff of each practice over a one-year period to assist them in implementing strategies based on the CCM to improve diabetes care. Initial results indicate that PF resulted in significant and sustained improvement in the delivery of chronic illness care consistent with the CCM as reported by practice members who provided direct patient care.¹² This article examines the specific activities and CCM components that participating clinics implemented and sustained in response to the PF intervention, as well as practice characteristics that were associated with the number of sustained activities and CCM components.

Methods

Study design

The study design of this cluster-randomised controlled trial and details of the intervention have been previously reported.¹¹ Briefly, the study was conducted in 40 small, autonomous primary care clinics or 'practices' in South Texas. These urban, suburban and rural practices, each with one to three clinicians, serve a population of primary care patients diverse in demographic characteristics, insurance coverage and healthcare needs. A stepped wedge study design was used with block randomisation of practices in groups of 10 to either an 'initial intervention' or 'delayed intervention' arm of the study.¹¹ Stepped wedge designs are increasingly used in implementation research because the prospect of being randomised to a no-intervention control arm may discourage participation

among real-world practices that are interesting in receiving quality improvement assistance.¹³ The random allocation sequence was generated by computer after each group of ten clinics was recruited. For this study, 20 intervention practices were randomised to receive the PF intervention for one year, while the remaining 20 delayed intervention practices served as controls. Following the completion of the one-year intervention and withdrawal of facilitators from the initial intervention practices, the control practices were crossed-over to receive one-year of delayed PF intervention. As previously reported, comparison of baseline and follow-up assessments revealed significant changes in chronic illness care in the initial intervention practices, but not the delayed intervention practices, during the first year when the initial intervention practices received the PF intervention.¹² This analysis focuses on the activities that the clinicians and staff at all practices in both the initial and delayed intervention arms reported implementing and sustaining after receiving the 12-month PF intervention.

Intervention

The PF intervention was delivered during a minimum of six one-hour team meetings within each practice over a 12-month period of time. As is common with many previous PF efforts, data from baseline assessments, including chart audits, provider and staff surveys assessing chronic illness care, and patient satisfaction surveys, was used to identify potential change points for improving diabetes care.⁷ During the first one to two facilitation visits, the facilitators reviewed the baseline chart audit and survey results with practice members at each clinic and then led a group discussion to reflect on findings and identify priorities for improvement. Within the context of this discussion, the facilitators introduced the concept of the CCM and presented an evidence-based 'toolkit' comprised of five activities to improve diabetes outcomes that corresponded to four of the CCM components: point of care (POC) testing for HbA1c and clinical reminders (decision support systems), resources/approaches to patient education/activation (patient self-management support), diabetes registry (clinical information systems), and diabetes group visits (delivery system redesign). Although all six components of the CCM were emphasised, these five specific activities were selected for presentation in the toolkit based upon available evidence in the literature for their potential effectiveness.^{14–23} The facilitators used the toolkit as a 'conversation starter' about strategies for improving diabetes care. Using a process of interactive consensus building and goal-setting in each practice, the facilitators used guided discussion

to stimulate and encouraged practice team members to adapt or implement one or more of the five activities, or to develop their own innovative activity to improve risk factors, or both, based upon local resources, organisational culture and values, and priorities.

In addition, because baseline assessments indicated that only about 50% of the practices routinely met to discuss clinical improvement activities or problem-solve issues related to patient care activities, all practices were encouraged to initiate or increase routine staff meetings. The facilitators taught practices how to hold productive meetings and also modelled effective meeting techniques during the monthly PF visits. Facilitators also encouraged the use of daily 'huddles', which are quick 3–5-minute meetings of practice staff during the day for the purpose of planning for changes in workflow, anticipating and solving problems, and making adjustments to ensure everyone is on the 'same page'.^{24,25} These two additional activities were felt to promote teamwork that is an important prerequisite for the creation of 'prepared, proactive teams' within the CCM framework,² and is consistent with findings from a large national trial of PF that have found that practice transformation is more successful in practices that have healthy relationships, communication, and a shared commitment to protect a regular time for reflection.²⁶ During each subsequent facilitation visit, the facilitator assisted the team in tailoring and implementing chosen activities, assessing progress in meeting goals, problem-solving barriers to implementation, and/or selecting new goals when prior chosen activities had been successfully implemented or abandoned.

Data collection

Practice characteristics: A practice environment checklist (PEC) was completed by the lead physician or office manager to capture descriptive information about the characteristics and operations of each practice in a structured format. The PEC was adapted from similar checklists utilised in studies of preventive service delivery in primary care practices.^{27–29} Information collected at each practice included the number of providers and staff and use of computerised health records, as well as characteristics of the patient population including percent of Medicare patients, Medicaid or uninsured patients, and non-Hispanic white patients.

Implementation activities: Initial data on implementation activities were prospectively collected by the facilitators during the monthly facilitation meetings at each clinic during the 12-month implementation intervention. The facilitators queried clinicians and staff about the status of activities that had previously

been targeted for implementation, as well as any new activities that had been implemented since the last team meeting. The facilitators recorded reported activities and related observations in ethnographic field notes during the clinic visits, and then transferred this information into post-facilitation notes after each visit. At the end of the intervention, the facilitators prepared a written report that included an initial compilation of all implementation activities reported by practice members over the prior 12 months and presented these back to the practice, asking team members to confirm which activities had been sustained (i.e. were still being implemented by the clinic). A final list of sustained activities was recorded for each practice.

Analysis

Descriptive statistics assessed practice characteristics. The lists of sustained implementation activities were abstracted across practices into a spreadsheet, and this compilation was independently reviewed by the authors, who grouped them into similar activities. For example, any system implemented to prompt staff to make telephone calls to remind patients of upcoming appointments, whether a box with index cards or computerised software, were grouped together as 'appointment reminder system' activity. The authors then independently mapped the activities onto the six components of the CCM. Discrepancies were discussed and resolved by consensus at each stage. Frequency counts for each unique sustained implementation activity and CCM component were compiled across clinics. Bivariate analyses were conducted to explore the relationship between practice characteristics, the number of PF visits that each practice received, and

the total number of activities and CCM components that practices implemented and sustained during the PF intervention.

Results

Forty practices were recruited for participation in the study and randomised. Nineteen of the 20 practices completed the initial intervention. In one practice assigned to the initial intervention, problems due to practice relocation, implementation of an electronic medical record, and staff turnover delayed study participation by almost two years. As a result, this practice was reassigned to the delayed intervention group. Within the delayed intervention arm, two practices failed to complete both baseline and one-year follow-up assessments and a third practice discontinued the intervention after the first PF visit. A total of 37 practices, 19 practices in initial intervention, and 18 practices in the delayed intervention, received 12 months of the PF intervention and had complete data for analysis. Characteristics of practices and their patient populations are shown in Table 1. These 37 practices received an average of 7.0 (SD 1.5) facilitation visits during the 12-month intervention period.

Table 2 summarises activities that were pursued by the practices in response to the facilitation intervention. A total of forty-three unique activities were implemented and sustained across the 37 practices. The number of activities that were implemented and sustained by individual practices ranged from a low of one to a high of 15, with an average of 6.5 (SD = 2.9) activities per practice. The 43 activities were categorised within the CCM components (Table 2), and among these, the greatest number of activities were

Table 1 Practice characteristics (*n* = 37)

	Mean	Standard deviation	Range
Number of providers*	1.7	0.9	0–4
Number of non-provider staff	5.9	4.5	2–26
Percent of Medicaid/uninsured patients	24.0	24.4	1–100
Percent of Medicare patients	32.5	22.1	0–80
Percent of non-Hispanic white patients	31.7	18.2	0–60
Practices with computerised health record (%)	54		

* Includes physicians, nurse practitioners, and physician assistants

Table 2 Sustained activities by CCM component

CCM component	<i>n</i> (%) practices implementing at least one activity within component	Mean (SD) # of activities implemented within component	Range of activities implemented within component
Decision support	13 (35.1)	0.41 (0.60)	0–2
Patient self-management support	37 (10)	4.62 (2.19)	1–11
Community linkages	2 (5.4)	0.05 (0.23)	0–1
Clinical information systems	24 (64.9)	1.03 (0.96)	0–3
Delivery system design	14 (37.8)	0.76 (1.11)	0–4
Healthcare system support	1 (2.7)	0.05 (0.33)	0–2
Proactive, prepared teams	27 (72.9)	0.81 (0.57)	0–2

implemented and sustained within the patient self-management support component ($n = 15$), followed by clinical information systems ($n = 11$), delivery system design ($n = 8$), decision support ($n = 4$), health system support ($n = 2$) and community linkages ($n = 1$). Two proactive, prepared team-related activities were also implemented and sustained.

The 14 most frequently used activities implemented by five or more clinics are listed in Table 3. Self-management support activities dominated these, and the most frequently used activity was distributing written patient education materials about diabetes, which was implemented and sustained by all but one of the 37 practices. The most frequently used activities within any of the other CCM components were sustained by relatively fewer clinics (e.g. less than 25%). Huddles, however, were implemented and sustained by 73% of the practices to create prepared, proactive teams.

Eight of the 37 practices (21.6%) implemented and sustained activities from only one CCM component, which was always patient self-management support. Fourteen (37.8%) of the practices sustained activities from two CCM components; most usually patient self-management support and clinical information systems. Five (13.5%) of the clinics implemented activities from three of the CCM components, while ten (27%) of the clinics implemented activities from four of the CCM components. None of the clinics implemented activities from five or more CCM components.

The number of PF visits was significantly correlated with the total number of sustained strategies. In

contrast, the total number of sustained activities was not significantly correlated with practice characteristics such as practice size, e.g. number of providers (0.06; $P = 0.72$), staff (0.19, $P = 0.26$, or total number of practice members (0.18; $P = 0.30$), or percent of Medicare patients (0.22; $P = 0.19$), Medicaid or uninsured patients (-0.07 ; $P = 0.70$), or non-Hispanic white patients (0.19; $P = 0.24$). The total number of strategies implemented and sustained by practices with electronic medical records (EMRs) also did not differ significantly from the number of strategies that were implemented and sustained by practices without EMRs (6.7 vs 6.4; $P = 0.72$). Bivariate analyses also indicated that the number of sustained CCM components was not associated with either the number of PF visits or practice characteristics.

Discussion

In response to a one-year PF intervention designed to improve chronic illness care for diabetes within the framework of the CCM, these primary care practices initiated a remarkable number and variety of key activities to improve the care they provide to patients with diabetes. All participating primary care practices initiated and sustained key activities related to Patient self-management support. In contrast, approximately two-thirds implemented clinical information system activities and at least one-third implemented decision support and delivery system design activities. The facilitation toolkit emphasised strategies with some

Table 3 Number (%) of practices that implemented and sustained the most frequently used activities

Activity	CCM component	n (%)
Written patient education materials	SMS	36 (97.3)
Huddles	PPT	27 (73.0)
Patient self-monitoring logbooks	SMS	25 (67.6)
Staff lapel buttons to activate patients*	SMS	21 (56.8)
Patient education posters	SMS	20 (54.1)
Revision of team roles & responsibilities	DSD	9 (24.3)
Patient education sessions	SMS	8 (21.6)
EMR modification	CIS	8 (21.6)
EMR implementation	CIS	7 (18.9)
Group visits	DSD	7 (18.9)
Clinic performance reports	CIS	7 (18.9)
Implementation of point of care HbA1c testing	DS	6 (16.2)
Flow sheets	DS	5 (13.5)
Change in clinic layout to improve patient flow	DSD	5 (13.5)

* Buttons prompted patients to 'Ask me about the Diabetes ABCs'

Abbreviations: SMS = patient self-management support; PPT = prepared, proactive teams; DSD = delivery system design; CI = clinical information systems; DS = decision support

evidence of effectiveness. At the time of the study, and even today, there is more evidence to support activities in these 4 domains than in community linkages or healthcare system support.^{3,14–23} Therefore, it is not surprising that these components were more likely to be used than community linkages or healthcare system support, even though the PF intervention emphasised the importance of all six components of the CCM for optimising chronic illness care.

The predominance of key activities related to patient self-management support is consistent with previously reported findings from a content analysis of semi-structured interviews conducted at baseline with 56 practice members in 16 of the participating practices.³⁰ Although most acknowledged a need to improve processes of care for diabetes, many perceived patient non-adherence to be a major barrier to quality improvement, and the desire to improve patient knowledge, self-management skills, adherence, and activation was a prominent theme.³⁰ It is also possible, however, activities related to patient-self management support tended to be more popular because they were relatively easy to execute in that they typically required fewer staff, and were less time- and resource-intensive, especially since these activities

were more likely to involve the passive dissemination of printed education materials than skills training or patient activation. Implementation and quality improvement research suggests that practices select and tailor activities to meet the perceived needs of their patient population, based upon not only local culture and priorities, but also available resources.³¹

Although a few practices were able to implement and sustain more complex activities, such as implementing a diabetes registry or group visits, these were not pursued by most of the practices, given competing demands and resource limitations. The lack of financial incentives to make substantive changes in the delivery of chronic illness care is a major barrier for these practices. These practices are small businesses and as such must consider the possible 'return on investment' in any change effort they undertake.¹²

As previously noted, implementing practice change in primary care is difficult. In their ground-breaking 2004 article, Greenhalgh and colleagues note that strategies that are successfully implemented are more likely to be: 1) compatible with the intended adopters' values, norms, and perceived needs (compatibility); 2) perceived by key players as simple to use (complexity); 3) ones with which the intended users can

experiment on a limited basis (trialable); and 4) ones where the benefits of an innovation are visible to intended adopters (observable).³² Activities engaged in by 40% or more of the clinics in this study clearly meet these criteria: they were compatible with the values of the practices (let's change patient behaviours, not ours), they were not complex or difficult to implement, they could be implemented on a trial basis without committing major resources or time, and the benefits of the activity were easily observable such as watching a patient flip through patient education material while waiting on a provider. More complex interventions that required considerable planning and commitment of additional time and resources such as developing patient registries or implementing group visits were less frequently implemented.

Our findings, however, indicated that the number of PF visits was significantly associated with the number of activities that were implemented and sustained, which may have also affected the complexity of activities that were undertaken. Although the original intent of the study design was to have monthly facilitation visits over the 12-month intervention period, competing demands and challenges resulted in the delay or suspension of facilitation visits in some practices.¹² These challenges included the implementation of EMRs in seven practices, staff turnover such as the loss of the staff 'champion' for improving diabetes care in one practice, and disruptions to clinic operations due to the physical relocation of six practices. Practice accessibility (i.e. challenges in scheduling meetings) has been identified as a common key barrier to PF; which requires persistence and flexibility among facilitators.³³

In light of the limited staffing and resources of these small practices and the challenges that they faced, it is somewhat surprising that only two of them initiated activities associated with community linkages, such as referring patients to outside resources (e.g. diabetes education programmes). These staffing limitations, however, may also limit practices' ability to identify and update a list of community resources, coordinate referrals to these resources, and evaluate their effectiveness. It is also possible that the communities where these smaller practices were located have a paucity of relevant resources to support patients with diabetes. Systematic reviews indicate that community linkages are utilised less often than the other CCM components.^{3,34} Given the increased interest in linking primary care clinics with community resources, more research is needed to understand the barriers to such partnerships and make it feasible for practices to link patients who may most benefit from such arrangements to community resources.³⁵

In addition to activities that specifically focused on improving diabetes care, the majority of practices also implemented huddles, an activity specifically

encouraged by the facilitators to enhance a practice's ability to function as a prepared, proactive team. Activities such as huddles that improve communication are integral to promoting team work and are increasingly being used in the primary care setting to facilitate team-based care.^{36,37} Huddles can facilitate problem-solving conversations among primary care team members and help teams understand how to better implement changes in work flow or tasks.³⁷ They are also consistent with the role of the facilitator and extend the work of the facilitator since relationship building and communication strategies are commonly employed in PF.³⁸

This study is limited by the geographic restriction to a narrow region of the United States. In addition, different results might have been obtained using larger primary care practices, especially those embedded within integrated healthcare systems. The potential for selection bias favoring practices that are eager to improve also exists. The study also has a number of strengths, including a diverse sample of 'real-world' practices, the use of theory to inform the intervention design, and the low rate of attrition of practices from the study. Although these practices implemented a remarkable number and variety of activities in response to PF, the clinical impact of PF on patient outcomes is uncertain at this time. Future analyses from the ABC trial will compare the initial and delayed intervention practices on improvement in the control of risk factors for diabetes-related complications.

Our findings, however, suggest that PF is a promising approach to support quality improvement initiatives. These practices responded to PF by pursuing activities that were compatible with their beliefs, capable of being trialled, and that resulted in changes that were easily observable. More complex and challenging practice re-design will most likely require additional resources and payment models that align practice support with performance measurement and feedback and incentives such as the national multi-payer Comprehensive Primary Care Initiative or those implemented in state health reform efforts such as the Vermont Blueprint for Health.^{39,40}

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ETHICAL APPROVAL

The study was reviewed and approved by the Institutional Review Board for the University of Texas Health Science Center at San Antonio. The clinicians and staff at the participating primary care practices provided informed consent.

PEER REVIEW

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CONFLICTS OF INTEREST

None.

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