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Effective Implementation of Collaborative Care for Depression: What is Needed?

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Abstract

Objective—To identify the care model factors that were key for successful implementation of collaborative depression care in a statewide Minnesota primary care initiative.

Study Design—We used a mixed-methods design incorporating both qualitative data from clinic site visits and quantitative measures of patient activation and 6-month remission rates.

Methods—Care model factors identified from the site visits were tested for association with rates of activation into the program and remission rates.

Results—Nine factors were identified as important for successful implementation of collaborative care by the consultants who had trained and interviewed participating clinic teams. Factors correlated with higher patient activation rates were: strong leadership support (0.63), well-defined and implemented care manager roles (0.62), a strong primary care physician champion (0.60), and an on-site and accessible care manager (0.59). However, remission rates at six months were correlated with: an engaged psychiatrist (0.62), not seeing operating costs as a barrier to participation (0.56), and face-to-face communication (warm handoffs) between the care-manager and primary care physician for new patients (0.54).

Conclusions—Care model factors most important for successful program implementation differ for patient activation into the program versus remission at six months. Knowing which

implementation factors are most important for successful implementation will be useful for those interested in adopting this evidence-based approach to improve primary care for patients with depression.

Keywords

collaborative care; depression; implementation; mixed methods

There is extensive randomized controlled trial evidence that collaborative care for depressed adults in primary care improves patient outcomes.¹⁻⁵ Key elements in evidence-based collaborative care programs include consistent measurement and monitoring of depression severity, close proactive follow-up by a clinic-based care manager, and regular psychiatric consultation focused on treatment changes for patients who are not improving with initial treatment. Based on these studies, the U.S. Preventive Services Task Force recommends that routine screening of adults for depression is justified only when systems for collaborative depression care are in place.^{6,7} Not only can collaborative care produce better patient outcomes (with rates of remission and response that are approximately twice those of usual care), but it can also produce net cost-saving over four years.⁸⁻¹⁰

Despite these findings, however, little is known about which implementation factors are most important for achieving these outcomes. For example, prior studies of collaborative care have employed care managers with wide varieties of education and experience without providing information about comparative benefits on outcomes.^{1,11} It is also unclear what supports a care manager needs to function most effectively or whether it is important for the psychiatrist to come on-site to provide consultation and supervision. Similarly, it is unknown whether an effective local primary care champion or face-to-face communication between the primary care provider (PCP) and care manager are important.

Between 2008 and 2012, an initiative led by a regional quality improvement collaborative, the Institute for Clinical Systems Improvement (ICSI), systematically provided standardized training in implementing collaborative depression care and consultative support for primary care clinics throughout Minnesota and western Wisconsin. The initiative, DIAMOND (Depression Improvement Across Minnesota – Offering a New Direction), included payment redesign through a partnership with nearly all commercial health plans in the state.^{12,13} While maintaining fidelity to the core aspects of the model was required, local tailoring was considered important, so there were significant variations in implementation. The initiative also collected standardized process and outcome data as part of the quality improvement (QI) support system, as well as information about each clinic's approach to the care model. This quantitative information was supplemented with a round of site visits to all participating groups, providing a unique opportunity to document differences in care processes and implementation strategies. This information allowed examination of which approaches to implementation might be important for high levels of enrollment and good patient outcomes.

Methods

Background

The DIAMOND initiative was created in 2006 by a diverse stakeholder group convened by ICSI that included health plans, medical clinics, patients, and employers to plan a new approach to depression care. After extensive reviews and discussions, it became clear that both the collaborative care model and payment redesign were needed. The group recommended that payers provide a monthly fee to DIAMOND-certified sites for eligible patient-members enrolled in the care model.

The structure of the initiative was based largely on the collaborative care model as it was tested in the Improving Mood-Promoting Access to Collaborative Treatment for Late-Life Depression (IMPACT) study.^{10,14-18} It focused on six components: 1) use of the Patient Health Questionnaire-9 (PHQ-9)¹⁹ for assessment and ongoing monitoring; 2) use of a registry for systematic tracking of patients; 3) use of evidence-based guidelines to provide stepped care treatment modification/intensification; 4) relapse prevention education; 5) a care manager located in the clinic to provide education, care coordination, behavioral activation, and support of medication management; and 6) a consulting psychiatrist to meet with the care manager for weekly case review and treatment change recommendations.

ICSI conducted training for five sequences of clinics participating in the new model over the course of two years; every 6 months a new sequence started the 6-month training and implementation program, beginning in September 2007 and continuing until the final sequence started implementation in March 2010. Each sequence consisted of 10 to 26 clinics. In Minnesota nearly all PCPs are organized into single or multispecialty organizations termed “medical groups” that include a number of clinics or practice sites; small, independent practices are rare. A total of 99 clinics representing 21 different medical groups implemented the program.

Design

Each clinic provided standardized monthly data reports through a common internet portal about the number of patients seen by the care coordinator, the number enrolled in DIAMOND (activation rate), and the PHQ-9 scores (needed to calculate response (change in PHQ-9) and remission (PHQ-9 <5) rates at 6 and 12 months). These quantitative data were supplemented with interview data from a round of site visits in 2009-2010 to all medical groups. For this analysis, we focused on medical groups who had completed all site visits and had at least 50 patients in their DIAMOND program (7 had <50) for a total of 42 clinics from 14 medical groups. The local Institutional Review Board reviewed and approved this study.

Activation and Remission Data

Activation rate was defined as the number of eligible patients (PHQ-9 ≥ 10) who entered DIAMOND per PCP full-time equivalent per month (PCP FTE/M). Remission rates (defined as PHQ-9 <5) were calculated at 6 months post-activation. To calculate the overall

activation and remission rates for each medical group, the monthly rates were averaged for the period of March 2008-September 2010.

Qualitative Data Collection

At least two ICSI staff attended each site visit and all clinics were provided with materials prior to the site visit meeting. Materials included sequence-specific outcomes data, an overall DIAMOND data report, and a discussion guide focused on barriers and facilitators, and strategies each group used in implementation. The latter included questions about practice culture; team approach; care manager role and duties; medical/ psychiatric complexities of patients; psychiatry consults; care coordination; registry use; and approach to financial issues (see Appendix 1). Site visit meetings included the core team participating in training and implementation, which included the project lead, care manager, and PCP champion. Other staff encouraged to attend were other physicians, the consulting psychiatrist, and the quality improvement lead.

Following each site visit, ICSI staff completed a structured qualitative narrative to document their assessment of factors affecting implementation. This narrative focused on their perceptions of the implementation strategies, barriers and facilitators, noting information about team dynamics, staff concerns, clinic staff response to the program, and their overall impression of program implementation at the site. Summaries were then prepared by the ICSI site visit teams and were reviewed by the entire study team.

Implementation Factors

Twenty-three factors were initially identified in the structured qualitative narratives. The analysis team and ICSI staff (n=8) then used a modified Delphi method to identify, multi-vote, and rank factors believed to be most related to successful implementation of DIAMOND (see Table 1).

Following identification of these factors, a Likert scale rating system was used to determine the extent to which each factor was present in each medical group, from 0 (absent implementation) to 4 (full implementation). ICSI staff rated each medical group on each of the nine top implementation factors.

Data Analysis

To assess the association between implementation factors and activation and remission rates, we calculated Pearson correlation coefficients between each implementation factor and activation and remission rates. Scatter plots were used to understand the form of the relationship for all associations. Simple linear regression was used to estimate the effect of each one point increase (on a scale of 0-4) in implementation on activation and remission rates at 6 months. All reported p-values are 2-sided and considered significant at $p < 0.05$.

Results

This analysis focuses on the 14 medical groups implementing DIAMOND that had 50 or more patients in their program. The majority were multi-specialty medical groups (79%)

located in the Twin Cities metropolitan area (57%). The number of clinics implementing the program in each group, their primary care physician full-time equivalent per month (PCP FTE/M), and activation and remission rates are shown in Table 2. On average, about one patient was activated per PCP FTE per month, and 23% of patients activated into the program were in remission at 6 months. In keeping with the approach of allowing local tailoring, features of the care manager role varied across program sites. There were 32 care managers in these medical groups who were predominately registered nurses (n=15, 47%), licensed practical nurses/ certified medical assistants (n=11, 34%), or licensed social workers /psychologist (Bachelor's) (n=6, 19%). The majority (72%) had their DIAMOND care manager role as their primary duty, while 28% had other shared clinical duties. Most care managers (59%) worked with patients from a single clinic, with the remaining (41%) working with patients from several clinics.

Implementation Factors and Patient Activation and Remission

Correlation analysis showed statistically significant and moderately strong positive correlations for five of the implementation factors with patient activation into the program: strong leadership support, strong care manager, care manager role well-defined and implemented, care manager on-site and accessible; and strong PCP champion (see Table 3). We conducted simple linear regression of significant correlations to estimate the effect of increases in scale rating (rating scale 0-4) of implementation factors. Each of these factors was associated with about a 0.4 increase in activation rate.

Correlation analysis also showed statistically significant and moderately strong positive correlations between three implementation factors and patient remission rates at 6 months: engaged psychiatrist, warm handoffs, and operating costs not seen as a barrier (see Table 4). Simple linear regression to estimate the effect of an additional increase in scale rating (rating scale 0-4) on remission showed that the less likely a medical group experienced operating costs as a barrier, the more likely their patients were to experience remission. Similarly, the more engaged a psychiatrist was and the more often warm handoffs occurred, the more likely patients experienced remission from their depression.

Discussion

Nine factors were considered important for implementation of the DIAMOND collaborative care model broadly including areas of leadership, care management, physician engagement, and financial issues. Our findings show that the implementation factors significantly correlated with patient activation were different from the factors correlated with six-month remission. Having strong leadership support, a strong PCP champion, a strong care manager whose role is both well-defined and implemented, and a care manager that is on-site and accessible were significantly correlated with activating patients into the program. On the other hand, having an engaged psychiatrist, face-to-face communication between care-managers and PCPs, and not seeing operating costs as a barrier were significantly correlated with depression remission at six-months.

Program implementation is a vital component of building effective collaborative care for depression, although much of the research to date has focused on outcomes, sustainability,

and cost-effectiveness.^{1,20-22} A review of multisite studies outlined specific implementation steps and decisions needed to tailor collaborative care for local needs.²³ A study of collaborative care in the Netherlands identified factors that facilitated implementation, including continuous supervision of care managers, a supportive web-based tracking system, and a reimbursement system allowing payment for mental health practitioners.²⁴ A qualitative analysis of implementation activities in 42 organizations found sites averaged 30 different implementation efforts with modest intensity.²⁵ There are no studies identifying specific factors in implementation and how they relate to patient activation and remission outcomes.

Remission of depressive symptoms has long been the primary focus for successful programs receiving significant attention, but activation (enrollment) of patients into the program is equally important. Across the entire DIAMOND initiative, enrollment of eligible patients with depression averaged about 15%, or less than one out of six eligible patients, with activation rates varying among medical groups and only a few exceeding 20%.²⁶ Thus, while improved remission rates were good, the overall impact of the program was limited by relatively low activation rates of eligible patients. A focus on both activation and remission could provide a stronger foundation for success and ongoing program support.

Our data show that strong organizational leadership was the most important factor in patient activation; it has long been identified with program success. Providing ongoing institutional support and direction helps lay the foundation on which programs can build.²⁷

Organizational structure and leadership support are the most common facilitators of success for improving the treatment of depression in primary care.²⁸ Expert team leadership and support from local management also strongly influence the success of programs for improving depression care.²⁹ We found that a strong PCP champion for depression care is important for overcoming barriers in the clinic setting and can encourage PCPs to refer their depressed patients to the care manager.³⁰ Resistance by individual physicians to sharing the care of their patients with a care manager can be a significant barrier to patient activation.

The care manager is a critical element in any collaborative care program.^{3,31} Our data show that important components for patient activation are having a care manager whose role is clearly defined and well-implemented, and who is onsite. Recognizing that collaborative care is a specific model of care with systematic processes is essential, as it sets a clear process for how the care manager role is implemented in the clinic setting.³² Clearly defining the care manager role supports the care manager and clarifies how they will be interacting with both patients and other clinic personnel. This provides an important foundation for communication and interaction and the basis for a successful team.

While having the care manager on site and available was associated with activation, in-person communication with the PCP was more highly correlated with remission. Theoretically, in-person communication might have been expected to be more likely to affect patient activation than remission, since it develops the relationship between the PCP and care manager and facilitates patient acceptance of the care manager. However, it may be that it has a greater effect on remission instead because it provides a foundation for stronger working relationships between providers regarding ongoing patient care. Previous studies

have similarly found that collaborative mental health care is most successful when clinicians are co-located in the clinic setting.³³

Having an engaged psychiatrist was also strongly associated with patient remission. Engagement by a psychiatrist can provide important and ongoing support for the patient, care manager, and treating PCP. Engaged psychiatric consultants can help address concerns about psychiatric diagnosis or treatment as they arise, make recommendations about adjusting treatments if patients are not improving, and help problem-solve challenging care situations. This consultation builds the expertise of the care manager and PCP and it can evolve into effective long-term working relationships. Collaborative care managers working with high-risk mothers with depression found they highly valued psychiatric expertise and needed increased psychiatric support with patients of higher complexity to improve care and outcomes.³⁴

Not seeing operating costs as a barrier was also highly correlated with remission rates. Similar to face-to-face communication, this factor may initially appear more directly related to the activation of patients, given reimbursement for DIAMOND care was contingent on whether a patients' health plan provided this coverage. Many clinics, however, provided DIAMOND care for patients even without payment coverage, potentially decreasing the association of cost considerations with activation. Costs for ongoing care provided by care managers were absorbed into overall program costs in these clinics and covered by the clinic or medical group. It may be that clinics which took this approach and provided ongoing services to all patients, regardless of coverage or ability to pay, demonstrated higher remission rates because of that commitment to better outcomes.

There are limitations to this study that warrant caution in interpretation of these results. The identification of implementation factors was based on subjective ratings, albeit by the people most familiar with the operational issues of this model. The sample size for the analysis is small and focused on medical groups comprised of individual heterogeneous clinics. Finally, we have little information about other factors that may have contributed to activation or remission rates, such as patient characteristics or other organizational factors. While we acknowledge these limits, we also note that there are strengths to mixed-method approaches like this, such as the unique opportunity to study real-world settings in all their complexity and to take advantage of the expertise and skill of both the program and clinic staff.

Collaborative care has been shown to be both effective and cost-effective in randomized trials for improving depression.^{1,4,5} Implementing and sustaining these interventions in real-world settings, however, has presented significant challenges.^{20,21,26,33,35} In randomized trials, investigators are highly motivated to achieve strong results, creating “ideal” circumstances with highly-trained staff who are closely supervised by expert clinicians and protocols that maximize treatment adherence. This is not the case for program implementation in real clinical settings, so there is often incomplete fidelity to the trial-tested model and significant variation across sites. Implementation can be constrained by current practice patterns, staff availability, competing demands, and financial concerns, which can lead to program results that don't match those of the carefully constructed clinical

trials. Thus understanding which elements of the care model are of greatest importance may be essential for spread and generalizability.

These results highlight essential elements of implementation for collaborative care of depression, and provide useful guidance for clinics or health care systems considering adoption of the model. This is particularly critical as organizations consider where to focus their limited resources and attention, and attempt to answer the question: What is needed for effective implementation of collaborative care for depression?

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Take-Away Points

Nine implementation factors were most important for the success of the collaborative care model for depression and differed for patient activation into the program versus achieving remission at six months:

- Strong leadership support and a strong physician champion are essential for patient activation into the program
- The more well-defined and implemented the care manager role, the higher the patient activation
- The more engaged a psychiatrist was and the more often in person communication occurred, the more likely patients experienced remission from their depression
- The less likely a group experiences operating costs as a barrier, the more likely their patients were to experience remission

Table 1
Factors Considered Important for Implementation of DIAMOND

Ranking	Implementation Factor	Definition
1	Operating costs of DIAMOND not seen as a barrier	The clinic has adequate coverage or other financial resources for most patients to be able to afford the extra operational costs
2	Engaged psychiatrist	The consulting psychiatrist is responsive to the care manager and to all patients, especially those not improving
3	Primary care provider buy-in	Most clinicians in the clinics support the program and refer patients to it
4	Strong care manager	The care manager is seen as the right person for this job and works well in the clinic setting
5	Warm handoff	Referrals from clinicians to the care manager are usually conducted face-to-face rather than through indirect means
6	Strong top leadership support	Clinic and medical group leaders are committed and support the care model
7	Strong PCP champion	There is a PCP in the clinic who actively promotes and supports the project
8	Care manager role well-defined and implemented	The care manager job description is well defined with appropriate time, support, and a dedicated space
9	Care manager onsite and accessible	The care manager is present and visible in the clinic and is available for referrals and patient care problems

Table 2
Activation per PCP FTE and Remission Rate at 6 Months for 14 Medical Groups, March 2008-September 2010

Medical group	# of clinics	# of PCP FTEs	# of Patients 6-month follow up	Activation rate (PCP FTE/M)	Remission rate
1	1	7.0	67	0.4	20.7
2	5	26.5	496	1.0	23.3
3	7	35.7	1192	1.2	22.3
4	3	18.0	182	0.4	15.7
5	3	21.5	177	0.4	9.0
6	1	22.1	118	0.4	42.9
7	2	16.0	136	0.7	29.8
8	4	18.9	606	1.2	42.1
9	2	9.0	109	1.0	22.0
10	2	23.0	1099	1.9	45.4
11	1	6.5	92	0.7	18.5
12	2	22.0	242	0.4	21.8
13	5	16.0	130	0.4	5.6
14	4	9.0	612	2.8	6.6
Total	42	251.1	5258		
Mean	3.0	17.9	376	0.9	23.2
Median	2.5	18.5	180	0.7	22.3
Min	1	6.5	67	0.4	5.6
Max	7	35.7	1192	2.8	45.4

* PCP FTE indicates primary care provider full-time equivalent. Primary care provider is any primary care provider for adults (18 years age) such as Medical Doctor (MD), Doctor of Osteopathy (DO), Physician Assistant (PA), Nurse Practitioner (NP) and Advanced Practice Nurse (APN) that can bill for medical services.

Table 3

Correlation of Implementation Factors with Patient Activation into the DIAMOND Program.

Implementation Factor	Correlation Coefficient	CC 95% CI
Operating cost not seen as a barrier	0.35	(-0.22 to 0.74)
Engaged psychiatrist	0.23	(-0.35 to 0.68)
Wide-spread PCP buy-in	0.43	(-0.13 to 0.78)
Strong care manager	0.58 *	(0.07 to 0.85)
Warm handoff	0.38	(-0.19 to 0.75)
Strong leadership support	0.63 *	(0.15 to 0.87)
Strong PCP Champion	0.60 *	(0.10 to 0.86)
Care manager role well defined & implemented	0.62 *	(0.14 to 0.87)
Care manager on-site and accessible	0.59 *	(0.08 to 0.85)

* Statistically significant result, p-value<0.05.

Table 4
Correlation of Implementation Factors with Remission Rates at 6 Months in the DIAMOND Program

Implementation Factor	Correlation Coefficient	CC 95% CI
Operating costs not seen as a barrier	0.56 *	(0.04 to 0.84)
Engaged psychiatrist	0.62 *	(0.13 to 0.87)
PCP buy-in	0.50	(-0.04 to 0.81)
Strong care manager	0.48	(-0.06 to 0.81)
Warm handoff	0.54 *	(0.01 to 0.83)
Strong leadership support	0.43	(-0.15 to 0.78)
Strong PCP Champion	0.40	(-0.16 to 0.77)
Care Manager role well defined	0.35	(-0.22 to 0.74)
Care manager on-site and accessible	0.32	(-0.26 to 0.73)

* Statistically significant result, p-value<0.05