

# Evidence Base for Collaborative Care

## Implementation and Practice-Based

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1. Bauer AM, Azzone V, Goldman HH, Alexander L, Unutzer J, Coleman-Beattie B, et al. Implementation of collaborative depression management at community-based primary care clinics: an evaluation. *Psychiatr Serv.* 2011;62(9):1047-53.

**Summary:** This implementation evaluation showed variability in clinical outcomes across six community health centers implementing Collaborative Care.

**Scientific Abstract:**

**Objective:** This study evaluated a large demonstration project of collaborative care of depression at community health centers by examining the role of clinic site on two measures of quality care (early follow-up and appropriate pharmacotherapy) and on improvement of symptoms (score on Patient Health Questionnaire-9 reduced by 50% or  $\leq 5$ ).



**Methods:** A quasi-experimental study examined data on the treatment of 2,821 patients aged 18 and older with depression symptoms between 2006 and 2009 at six community health organizations selected in a competitive process to implement a model of collaborative care. The model's key elements were use of a Web-based disease registry to track patients, care management to support primary care providers and offer proactive follow-up of patients, and organized psychiatric consultation.

**Results:** Across all sites, a plurality of patients achieved meaningful improvement in depression, and in many sites, improvement occurred rapidly. After adjustment for patient characteristics, multivariate logistic regression models revealed significant differences across clinics in the probability of receiving early follow-up (range .34-.88) or appropriate pharmacotherapy (range .27-.69) and in experiencing improvement (.36 to .84). Similarly, after adjustment for patient characteristics, Cox proportional hazards models revealed that time elapsed between first evaluation and the occurrence of improvement differed significantly across clinics ( $p < .001$ ).

**Conclusions:** Despite receiving similar training and resources, organizations exhibited substantial variability in enacting change in clinical care systems, as evidenced by both quality indicators and outcomes. Sites that performed better on quality indicators had better outcomes, and the differences were not attributable to patients' characteristics.

## 2. Whitebird RR, Solberg LI, Jaeckels NA, et al. Effective implementation of collaborative care for depression: what is needed? *Am J Manag Care.* 2014;20:699-707.

**Summary:** This report described evaluation of effective Collaborative Care implementation and found 9 important factors for successful Collaborative Care implementation including strong leadership support, and strong key personnel including a primary care champion and engaged psychiatric consultant, and well-defined care manager roles.

### Scientific Abstract:

**Objectives:** 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, and rated according to a Likert Scale. 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 6 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 6 months. Knowing which implementation factors are most important for successful activation will be useful for those interested in adopting this evidence-based approach to improving primary care for patients with depression.

## 3. Bao Y, Druss BG, Jung HY, et al. Unpacking Collaborative Care for depression: examining two essential tasks for implementation. *Psychiatr Serv.* 2016;67:418-424.

**Summary:** This study involved analysis of observational data collected from community health centers in two counties in Washington State that had implemented Collaborative Care. The authors found that the care processes of care manager follow-up within four weeks of initial contact and psychiatric consultant case review were associated with greater likelihood of depression improvement, and care manager follow-up within four weeks of initial contact shorter time until improvement.

#### **Scientific Abstract:**

**Objective:** This study examined how two key process-of-care tasks of the collaborative care model (CCM) predict patient depression outcomes.

**Methods:** Registry data were from a large implementation of the CCM in Washington State and included 5,439 patient-episodes for patients age 18 or older with a baseline Patient Health Questionnaire-9 (PHQ-9) score of  $\geq 10$  and at least one follow-up contact with the CCM care manager within 24 weeks of initial contact. Key CCM tasks examined were at least one care manager follow-up contact within four weeks of initial contact and at least one psychiatric consultation between weeks 8 and 12 for patients not responding to treatment by week 8. Clinically significant improvement in depression symptoms was defined as achieving a PHQ-9 score of  $< 10$  or a 50% or more reduction in PHQ-9 score compared with baseline. Bivariate and multivariate (logistic and proportional hazard models) analyses were conducted to examine how fidelity with either task predicted outcomes. All analyses were conducted with the original sample and with a propensity score-matched sample.

**Results:** Four-week follow-up was associated with a greater likelihood of achieving improvement in depression (odds ratio [OR]=1.63, 95% confidence interval [CI]=1.23-2.17) and a shorter time to improvement (hazard ratio=2.06, CI=1.67-2.54). Psychiatric consultation was also associated with a greater likelihood of improvement (OR=1.44, CI=1.13-1.84) but not with a shorter time to improvement. Propensity score-matched analysis yielded very similar results.

**Conclusions:** Findings support efforts to improve fidelity to the two process-of-care tasks and to include these tasks among quality measures for CCM implementation.

4. Moise N, Shah RN, Essock S, et al. Sustainability of collaborative care management for depression in primary care settings with academic affiliations across New York State. *Implement Sci.* 2018;13:128. doi: 10.1186/s13012-018-0818-6.

**Summary:** The authors evaluated collaborative care implementation in 32 primary care clinics and found that clinics with higher care manager time and other investments in staffing FTE, and clinics meeting key process measures such as number of contacts per patient, had better depression improvement rates in patients and were more likely to sustain collaborative care after two years.

#### **Scientific Abstract:**

**Background:** In a large statewide initiative, New York State implemented collaborative care (CC) from 2012 to 2014 in 32 primary care settings where residents were trained and supported its sustainability through payment reforms implemented in 2015. Twenty-six clinics entered the sustainability phase and six opted out, providing an opportunity to examine factors predicting continued CC participation and fidelity.

**Methods:** We used descriptive statistics to assess implementation metrics in sustaining vs. opt-out clinics and trends in implementation fidelity 1 and 2 years into the sustainability phase among sustaining clinics. To characterize barriers and facilitators, we conducted 31 semi-structured interviews with psychiatrists, clinic administrators, primary care physicians, and depression care managers (24 at sustaining, 7 at opt-out clinics).

**Results:** At the end of the implementation phase, clinics opting to continue the program had significantly higher care manager full-time equivalents (FTEs) and achieved greater clinical improvement rates (46% vs. 7.5%,  $p = 0.004$ ) than opt-out clinics. At 1 and 2 years into sustainability, the 26 sustaining clinics had steady rates of depression screening, staffing FTEs and treatment titration rates, significantly higher contacts/patient and improvement rates and fewer enrolled patients/FTE. During the sustainability phase, opt-out sites reported lower patient caseloads/FTE, psychiatry and care manager FTEs, and physician/psychiatrist CC involvement compared to sustaining clinics. Key barriers to sustainability noted by respondents included time/resources/personnel (71% of respondents from sustaining clinics vs. 86% from opt-out), patient engagement (67% vs. 43%), and staff/provider engagement (50% vs. 43%). Fewer respondents mentioned early implementation barriers such as leadership support, training, finance, and screening/referral logistics. Facilitators included engaging patients (e.g., warm handoffs) (79% vs. 86%) and staff/providers (71% vs. 100%), and hiring personnel (75% vs. 57%), particularly paraprofessionals for administrative tasks (67% vs. 0%).

**Conclusions:** Clinics that saw early clinical improvement and who invested in staffing FTEs were more likely to elect to enter the sustainability phase. Structural rules (e.g., payment reform) both encouraged participation in the sustainability phase and boosted long-term outcomes. While limited to settings with academic affiliations, these results demonstrate that patient and provider engagement and care manager resources are critical factors to ensuring sustainability.

#### 5. Beck A, Boggs JM, Alem A, et al. Large-Scale implementation of collaborative care management for depression and diabetes and/or cardiovascular disease. *J Am Board Fam Med.* 2018;31:702-711.

**Summary:** The authors conducted semi-structured interviews with clinicians from 8 health systems to understand factors influencing implementation of Collaborative Care. Factors influencing Collaborative Care implementation included clinician (physician and care manager) engagement and experience, team cohesion/trust, health system organizational challenges, use of a patient registry, Collaborative Care process measures such as frequency of care manager contact, and use of quality improvement reports.

#### **Scientific Abstract:**

**Background:** Collaborative care models have been shown to improve mental and physical health, but their effectiveness varies. Implementation science frameworks identify measures at the structural (eg, sociocultural context, public policies), organizational, provider, innovation, and patient levels that may facilitate or impede collaborative care effectiveness.

**Objective:** To describe commonalities and variation in multilevel measures associated with the implementation of Care of Mental, Physical, and Substance-Use Syndromes (COMPASS), a large-scale collaborative care intervention for depression, diabetes, and cardiovascular disease.

**Design:** Qualitative study using semi-structured descriptive data obtained from annual site visit reports and supplemental site surveys.

**Participants:** COMPASS care teams from 8 health care systems serving 3854 patients with active depression and poorly controlled diabetes and/or cardiovascular disease.

**Intervention:** COMPASS included weekly case reviews with a consulting physician and psychiatrist, a patient-tracking registry, and monitoring of hospital and emergency department use.

**Main measures:** Site visit reports were analyzed with Atlas.ti software to qualitatively describe implementation measures and their variation across sites.

**Key results:** Nine measures were identified that impacted implementation efforts across health systems: (1) challenges in health systems' organizational environments, (2) prior care coordination experience, (3) physician

engagement, (4) care team trust and cohesion, (5) care manager training and experience, (6) patient enrollment length, attainment of clinical targets, and frequency/content of care manager contacts, (7) patient-tracking registries, (8) quality improvement and outcomes monitoring reports, and (9) patients' social needs.

**Conclusions:** Understanding multilevel measures impacting COMPASS implementation could increase the success of future collaborative care implementation efforts.

## 6. Powers DM, Bowen DJ, Arao RF, et al. Rural clinics implementing collaborative care for low-income patients can achieve comparable or better depression outcomes. *Fam Syst Health*. 2020;38:242-254.

**Summary:** Eight rural clinics implemented Collaborative Care and demonstrated that approximately 15% of the total clinic populations were treated with Collaborative Care, and that patients receiving Collaborative Care experienced clinically significant improvements in depression and reduction in suicidal ideation.

### **Scientific Abstract:**

**Introduction:** The gap between depression treatment needs and the available mental health workforce is particularly large in rural areas. Collaborative care (CoCM) is an evidence-based approach that leverages limited mental health specialists for maximum population effect. This study evaluates depression treatment outcomes, clinical processes of care, and primary care provider experiences for CoCM implementation in 8 rural clinics treating low-income patients.

**Method:** We used CoCM registry data to analyze depression response and remission then used logistic regression to model variance in depression outcomes. Primary care providers reported their experiences with this practice change 18 months following program launch.

**Results:** Participating clinics enrolled 5,187 adult patients, approximately 15% of the adult patient population. Mean PHQ-9 depression score was 16.1 at baseline and 10.9 at last individual measurement, a statistically and clinically significant improvement (SD6.7; 95% CI [4.9, 5.3]). Suicidal ideation also reduced significantly. Multivariate logistic regression predicted the probability of depression response and remission after controlling for several demographic attributes and processes of care, showing a significant amount of variance in outcomes could be explained by clinic, length of time in treatment, and age. Primary care providers reported positive experiences overall.

**Discussion:** Three quarters of participating primary care clinics, adapting CoCM for limited resource settings, exceeded depression response outcomes reported in a controlled research trial and mirrored results of large-scale quality improvement implementations. Future research should examine quality improvement strategies to address clinic-level variation and sustain improvements in clinical outcomes achieved.

## 7. Carlo AD, Jeng PJ, Bao Y, Unützer J. The learning curve after implementation of collaborative care in a state mental health integration program. *Psychiatr Serv* 2019;70:139-142.

**Summary:** The authors found variation in depression outcomes in 8 clinics that implemented and provided collaborative care over 8 years. Improvements in process of care measures such as follow-up patient contacts generally preceded improvements in depression outcomes, across clinics.

### **Scientific Abstract:**

**Objective:** This study examined organizational variability of process-of-care and depression outcomes at eight community health centers (CHCs) in the years following implementation of collaborative care (CC) for depression.

**Methods:** The authors used 8 years of observational data for 13,362 unique patients at eight CHCs that participated in Washington State's Mental Health Integration Program. Organization-level changes in depression and process-of-care outcomes over time were studied.

**Results:** On average, depression outcomes improved for the first 2 years before improvement slowed, peaking at year 5. Significant organization-level variation was noted in outcomes. Improvements in depression outcomes tended to follow process-of-care measures.

**Conclusions:** Findings suggest that it may take 2 years after implementation of CC to fully observe depression outcome improvement at an organization level. Substantial variation between organizations in depression outcomes over time suggests that sustained attention to processes of care may be necessary to maintain initially achieved gains.

#### 8. Solberg LI, Glasgow RE, Unützer J, et al. Partnership research: a practical trial design for evaluation of a natural experiment to improve depression care. *Med Care.* 2010;48:576-582.

**Summary:** The authors described the process for implementing Collaborative Care in 85 primary care clinics including strategies for communication and timeline for implementation across clinics.

#### **Scientific Abstract:**

**Background:** Translational research is increasingly important as academic health centers transform themselves to meet new requirements of National Institutes of Health funding. Most attention has focused on T1 translation studies (bench to bedside) with considerable uncertainty about how to enhance T2 (effectiveness trials) and especially T3 (implementation studies).

**Objective:** To describe an innovative example of a T3 study, conducted as partnership research with the leaders of a major natural experiment in Minnesota to improve the primary care of depression.

**Methods:** All health plans in the state have agreed on a new payment model to support clinics that implement the well-evidenced collaborative care model for depression in the Depression Improvement Across Minnesota: Offering a New Direction initiative. The Depression Improvement Across Minnesota: Offering a New Direction study was developed in an ongoing partnership with the Initiative leaders from 7 health plans, 85 clinics, and a regional quality improvement collaborative to evaluate the implementation and its impacts on patients and other stakeholders. We agreed on a staggered implementation, multiple baseline research design, using the concepts of practical clinical trials and engaged scholarship and have collaborated on all aspects of conducting the study, including joint identification of patient and clinic survey recipients.

**Results:** Complex study methods have worked well through 20 months because of the commitment of all stakeholders to both the Initiative and the Study. Over 1500 subjects have been recruited from health plan information delivered weekly, and 99.7% of 316 physicians and administrators from all participating clinical organizations have completed the Study surveys.

#### 9. Rossom R, Solberg LI, Magnan S, et al. Impact of a national collaborative care initiative for patients with depression and diabetes or cardiovascular disease. *Gen Hosp Psychiatry.* 2017;44:77-85.

**Summary:** A series of articles on the COMPASS initiative described methods and results of a 3 year Collaborative Care implementation effort in 172 primary care clinics for patients with depression and diabetes and/or cardiovascular disease. This article describes outcomes of the 3609 patients who received Collaborative Care treatment, which included approximately 40% of patients showing significant improvement in depression, and approximately one-quarter and over one-half meeting criteria for blood glucose and blood pressure control.

**Scientific Abstract:**

**Objective:** The spread of evidence-based care is an important challenge in healthcare. We evaluated spread of an evidence-based large-scale multisite collaborative care model for patients with depression and diabetes and/or cardiovascular disease (COMPASS).

**Methods:** Primary care patients with depression and comorbid diabetes or cardiovascular disease were recruited. Collaborative care teams used care management tracking systems and systematic case reviews to track and intensify treatment for patients not improving. Targeted outcomes were depression remission and response (assessed with the Patient Health Questionnaire-9) and control of diabetes (assessed by HbA1c) and blood pressure. Patients and clinicians were surveyed about satisfaction with care.

**Results:** Eighteen care systems and 172 clinics enrolled 3609 patients across the US. Of those with uncontrolled disease at enrollment, 40% achieved depression remission or response, 23% glucose control and 58% blood pressure control during a mean follow-up of 11 months. There were large variations in outcomes across medical groups. Patients and clinicians were satisfied with COMPASS care.

**Conclusions:** COMPASS was successfully spread across diverse care systems and demonstrated improved outcomes for complex patients with previously uncontrolled chronic disease. Future large-scale implementation projects should create robust processes to identify and reduce expected variation in implementation to consistently provide improved care.

