

## Performance Improvement

# Applying Depression-Specific Change Concepts in a Collaborative Breakthrough Series

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**R**andomized efficacy trials followed by numerous effectiveness studies<sup>1-6</sup> have shown that dramatic improvement in depression care is possible. Studies have also demonstrated that best practices depression treatment can be implemented in routine clinical practice.<sup>7-9</sup> Yet these findings have yet to be put into practice in most health care systems.

Depression care in the United States is as fragmented as care for other chronic illnesses—a major gap exists between guideline recommended and actual care: “Most adults with a probable depressive or anxiety disorder do not receive appropriate care for their disorder. Of those who visited primary care providers, only 19% received appropriate care.”<sup>10(p. 55)</sup> A recent study of patients starting an antidepressant in one of 300 health plans indicated that only 42% of the patients filled a minimum of 6 months of antidepressant medication.<sup>11</sup> Even health systems that have participated in successful randomized depression trials have had difficulty sustaining depression quality improvements.<sup>6,12</sup>

Another challenge is the underrepresentation of minority groups in depression treatment research.<sup>13</sup> For example, Young and colleagues found that appropriate depression treatment was less likely for men and those who were black, less educated, or younger than 30 or older than 59 years.<sup>10</sup>

Of paramount importance in depression and all chronic illnesses is the question of how to disseminate innovations proven in randomized controlled trials to real-world health care systems. There is much that can be learned

## Article-at-a-Glance

**Background:** Twenty ethnically and geographically diverse health care organizations, including 15 Bureau of Primary Health Care centers, participated in an Institute for Healthcare Improvement (IHI) collaborative Breakthrough Series (BTS) project on depression. Teams attended three learning sessions that emphasized the chronic illness care model, key depression change concepts, and how to initiate plan-do-study-act cycles.

**Results:** Seventeen of the 20 organizations completing the BTS achieved a faculty assessment of at least a 4 (5 indicates significant improvement). More than 2,000 patients initiated depression treatment and were registered in the plan’s depression registries. Patients in the centers who used the recommended measures had the following outcomes: 56% had significant change in their depressive symptoms at 12 weeks, 87% completed follow-up assessments, 54% continued antidepressant medication for at least 10 weeks, and 90% completed a structured diagnostic assessment before treatment.

**Discussion:** On the basis of the feedback from ten successful teams, the essential change concepts for depression were establishing and maintaining a patient registry, care coordination, diagnostic assessment, and proactive follow-up. Many of the BTS centers have continued to expand their depression treatment programs. The IHI BTS appears to be a viable method of disseminating evidence-based depression care.

from successes and failures in disseminating successful chronic illness innovations. The Breakthrough Series (BTS) model of change has been successful in improving systems of care for chronic illnesses.<sup>14</sup> Collaborative BTS for congestive heart failure and diabetes have provided successful models for reorganizing chronic illness care to generate sustainable quality improvement via comprehensive system change.<sup>15</sup> For example, in the diabetes initiative, the percentage of patients who had a recent glycohemoglobin (A1C) level of < 8 % (a marker of adequate glucose control) increased from 37% to 58% in 3 months.<sup>15</sup>

This article reports how participating centers implemented depression-specific change concepts to improve care.

## Methods

### Organization of the Depression BTS

The depression BTS was initiated in February 2000 and formally continued for 13 months. Twenty-three ethnically and geographically diverse health care organizations agreed to participate in the depression BTS (Table 1, page 388–389). Three teams dropped out early in the project. Fifteen of the remaining 20 teams were community health centers funded by the Bureau of Primary Health Care. The bureau teams serve low-income and ethnically diverse populations. Teams paid \$12,500 each to participate in the BTS and provided resources for their teams to participate in learning sessions. Many teams received subsidies or scholarships from the Bureau of Primary Health Care (BPHC) and the Substance Abuse and Mental Health Services Administration (SAMHSA).

The BTS brings together health care organizations that share a commitment to making major, rapid system changes to improve health care. In the prework phase the teams were asked to identify a pilot site with a minimum of 200 depressed patients likely to initiate depression care during the collaborative. The BTS had three 2-day learning sessions spread out over the 13-month collaborative. At the learning sessions, faculty presented evidence-based approaches to improving depression care, and each participating organization worked on an improvement plan tailored to its unique circumstances and goals. Specific change concepts were recommended on the basis of evidence from effectiveness trials.

In the action periods between learning sessions, participants were linked to faculty via e-mail, monthly reports, and conference calls. The teams worked on a series of plan-do-study-act (PDSA) cycles during the action period building on the results of the last PDSA cycle (Figure 1, page 390). Run charts were created and updated each month by each team with data on key depression care outcome measures from patient registries. An example of a run chart is shown in Figure 2 (page 390). The collaborative also included a different group of 23 centers working on asthma care improvement using the same Chronic Care Model to emphasize the commonalities of good chronic illness care across different chronic conditions. A national conference was held at the end of the collaborative to share the results with outside organizations.

A major focus of the collaborative was for teams to incorporate the six components of the Chronic Care Model<sup>16</sup> into their process of caring for depressed patients. The model's six components are described in Table 2 (page 391). (Additional information on the Chronic Care Model can be found elsewhere<sup>17</sup>).

The depression BTS faculty included two cochairs [D.J.K., M.V.K.], four additional faculty members [including H.C.], a collaborative chair [E.H.W.] and collaborative director, and a technical expert [L.P.P.]. The depression faculty included psychiatrists, psychologists, and primary care clinicians. During the planning phase of the collaborative, the depression faculty created a list of key change concepts that had been incorporated in successful depression randomized clinical trials (Table 3, page 392). The change concepts are depression-specific actions recommended for improving care for all six components of the Chronic Care Model. The faculty recommended that centers make the changes incrementally. The faculty did not act as consultants to individual centers. Plans could adapt the change concepts to their unique circumstances and were encouraged to make local modifications as appropriate guided by experience gained through PDSA cycles.

### Depression-Specific Tools

Specific tools provided to the team by the BTS faculty included the major depression diagnostic subsection

**Table 1. Depression Team Demographics (from Storyboards)\***

Team	Population Demographics
Abbottsford & Schylkill	<ul style="list-style-type: none"> <li>Nurse-managed facility at public housing community in Philadelphia providing primary, prenatal, behavioral health care</li> </ul>
Ammonoosuc	<ul style="list-style-type: none"> <li>Small network of community health centers in three rural communities of Northern New Hampshire</li> <li>Uninsured on a sliding-fee scale, insured in varying economic and social circumstances</li> <li>Involved in many regional health initiatives and social support programs</li> </ul>
Bedford Stuyvesant	<ul style="list-style-type: none"> <li>Operating out of a Brooklyn storefront in New York City since 1982</li> <li>50,000 patient visits in 1999</li> <li>Receives up to \$400,000 a year in federal grants to treat uninsured patients</li> <li>Patients: 60% on Medicaid, 15% uninsured, 40% below poverty level, 85% black, 12% Hispanic, 2% other</li> <li>Staff is reflective of patient population and community (125 staff members from 15 different countries)</li> </ul>
Care Management Group of NY	<ul style="list-style-type: none"> <li>Integrated system serving Long Island and Staten Island, N.Y.: 13 hospitals, 6000+ physicians, 1,900,000+ outpatient encounters</li> <li>Medicare, Medicaid, and commercial contracts</li> <li>Adjusts to accommodate ongoing inclusion of new patients</li> </ul>
CareSouth Carolina	<ul style="list-style-type: none"> <li>Four centers in South Carolina communities</li> <li>Patient population: adults starting new episode of depression care as of November 1999</li> </ul>
Charter Oak Terrace	<ul style="list-style-type: none"> <li>72% Medicaid, 4% Medicare, 9% private insurance, 15% uninsured/self pay, urban, 65% adult, 35% pediatrics</li> <li>45 patients with 5 cognitive-behavioral therapy groups</li> </ul>
Clinica Campesina	<ul style="list-style-type: none"> <li>Population-based health care: "the underserved in southeast Boulder and W. Adams Counties, Colorado"</li> <li>PHQ-9 for evaluation of depression available at clinics in Spanish and English</li> </ul>
Columbia Valley	<ul style="list-style-type: none"> <li>Migrant/community health center in Cascade Mountains of north central Washington</li> <li>10 provider medical clinics; 34,000+ visits a year</li> <li>Patients: 50% on Medicaid, 40% uninsured, 99% below 200% level of poverty, 89% Hispanic, 11% white</li> </ul>
Economic Opportunity	<ul style="list-style-type: none"> <li>Major primary care provider for segment of Miami-Dade County (population, 300,000)</li> <li>73,179 annual patient visits at 8 locations</li> <li>Women's residential program was first of its kind in Florida</li> </ul>
Family Care Health Centers	<ul style="list-style-type: none"> <li>Two full-service primary care centers in St. Louis</li> <li>Commitment to community service since 1969, with emphasis on the medically underserved</li> </ul>
Flint Hills	<ul style="list-style-type: none"> <li>Promotes health and well-being of entire community of Emporia, Kansas</li> </ul>
Great Brook Valley	<ul style="list-style-type: none"> <li>Free/reduced care available to uninsured, low-income patients in Worcester, MA</li> <li>Language interpreters or bilingual staff available for all services</li> <li>Patients: 68% age 45-64, 63% Latino, 14% other, 13% white, 8% African American, 1% Asian, 1% Native American</li> <li>60,000+ patient visits every year</li> </ul>

**Table 1. Depression Team Demographics (from Storyboards)\* (continued)**

Team	Population Demographics
Lake City Medical Center	<ul style="list-style-type: none"> <li>Part of Mayo Health System; 30,000 annual patient visits</li> </ul>
Mayo Clinic Rochester	<ul style="list-style-type: none"> <li>Provides primary care services for people with chronic conditions</li> </ul>
Multnomah County pilot site East County Health Center	<ul style="list-style-type: none"> <li>Patients: 29% uninsured, 78% below poverty level, 98.5% below 200% of poverty, 72% Hispanic, 24% white, 71% female, 90% under age 45; 48% client private pay, 46% Medicaid/Oregon Health Plan, 68% language interpreted visits</li> </ul>
Northeast Valley	<ul style="list-style-type: none"> <li>Targets San Fernando, CA, adolescents, primarily Latino and low-income</li> <li>13–19 year olds in 9th–12th grade, approximately 96% Hispanic</li> </ul>
People's	<ul style="list-style-type: none"> <li>Located in Boulder, CO</li> <li>Focus on adult patients (21–60)</li> </ul>
Rocky Mountain HMO	<ul style="list-style-type: none"> <li>Four physician group serving 10,000 patients in Grand Junction, CO</li> <li>Independent, nonprofit, IPA-model health maintenance organization</li> <li>Commercial (employer group and individual plans), Medicare and Medicaid</li> </ul>
Southcentral Foundation	<ul style="list-style-type: none"> <li>Nonprofit organization serves Anchorage-based Alaska Native population and 26 remote villages</li> </ul>
Union Grainger	<ul style="list-style-type: none"> <li>Serves rural communities north of Knoxville, TN (highest medically underserved counties in the state)</li> <li>Accepts all insurance, TennCare plans, sliding-payment schedules based on income</li> </ul>

\* Storyboards are posters that sites create to share information with other teams at a learning session; PHQ-9, Patient Health Questionnaire; IPA, independent practice association

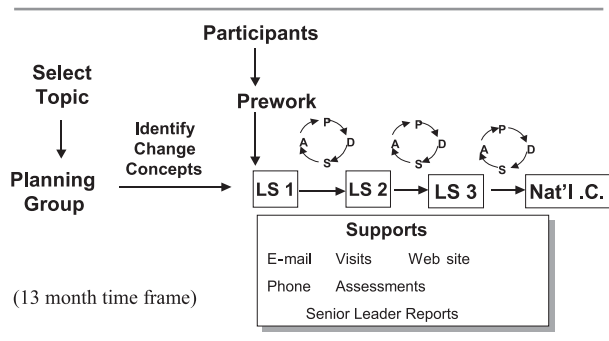
of the PRIME-MD Today (PHQ-9), the revised diagnostic questionnaire for major mood, anxiety, alcohol, and somatoform disorders commonly seen in primary care.<sup>18</sup> The questionnaire is both sensitive and specific for the detection of mental disorders in primary care and is easy to administer and score. Because the change concepts require that a structured diagnostic assessment be given, the faculty chose the depression subsection—the nine diagnostic criteria framed as questions with Likert-type responses (0 for no symptoms of the specific criteria to 3 for symptoms nearly every day). For uniformity in reporting, sites were urged to select the first two criteria (depressed mood and lack of pleasure) as screening questions. If there was a positive screen based on an affirmative response or high index of clinical suspicion for depression, then patients were to receive the full nine questions. If the patient met criteria for depression (at least five items and one item must be depressed mood or anhedonia, and symptom severity of at least half the

days in the past two weeks for specific items), the patient also received a clinical assessment by the assigned primary care provider.

Because the Chronic Care Model also requires regular follow-up assessments for clinical response, the faculty recommended use of PHQ-9 scoring as a follow-up symptom severity measure. In general, scores > 10 were indicative of clinically significant depressive symptoms. In the pivotal studies of the PRIME-MD Today, scores of 0–5 indicated absence of clinical depression; 6–10, mild depression; 10–15, subsyndromal depression; and ≥ 15, moderate to severe depression.<sup>18</sup> In addition, a separate effort to study PHQ-9 severity scoring indicates that the instrument has a strong correlation with the Hamilton Depression Rating Scale,<sup>19</sup> the most commonly used measure of depression severity in randomized controlled trials for major depression.<sup>20</sup>

Participating organizations received training on the use of the MacArthur Foundation depression tool kit

## Chronic Conditions Breakthrough Series



**Figure 1.** The BTS consisted of three 2-day learning sessions (LSs) spread out over the 13-month collaborative and a national congress. Developed by and used with permission of the Institute for Healthcare Improvement.

developed at Dartmouth Medical School by a collaborative team of psychiatrists and primary care clinicians. The tool kit is composed of the following components:<sup>21</sup>

- Screening measures for depression
- PHQ-9
- AHRQ depression guidelines
- Medication management information
- Patient education and self-management materials

Finally, sites were educated with a train-the-trainer program for primary care clinician education in depression. This two-hour training program was interactive and included two patient/clinician role plays of the first interview using the PHQ-9 and MacArthur tool kit. The role of the care coordinator and self-management program were introduced.

### Data for BTS Teams

Data were based on faculty ratings and the team's own data collected as part of the collaborative, which represented a process evaluation rather than an objective controlled evaluation. Each team in the collaborative was responsible for collecting and organizing data on key change indicators during the collaborative. Summary statistics

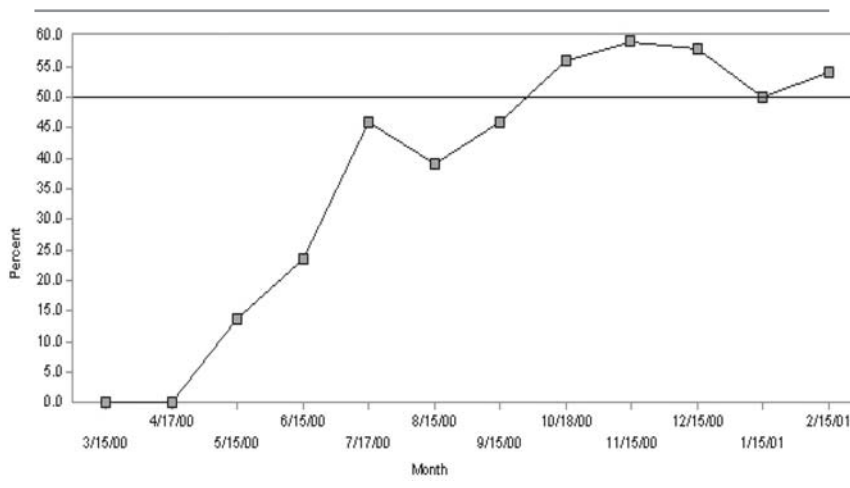
were calculated each month from the data available in their registries and loaded onto IHI's extranet system, where run charts of each measure were created. At the end of the collaborative, weighted averages were calculated for the standard measures recommended in the collaborative for the teams that used the common definitions.

### Data Analysis

The data analysis for the IHI Breakthrough Model is based on a replicated interrupted time-series design.<sup>22</sup> Each team began implementation of the Chronic Care Model immediately after the first learning session in February 2000. As patients were diagnosed with depression, they were added to a registry, which was used to develop measures to assess improvement. Therefore, this work does not represent a formal evaluation of outcomes relative to an independent control group.

Teams were asked to develop five to seven process and outcome measures at the beginning of the collaborative. They summarized these measures using their real-time cumulative registry of the population of depression patients and graphed them on run charts each month throughout the collaborative. Testing and implementation of the Chronic Care Model using PDSA cycles<sup>23</sup> was

## Example of Run Chart for Depressive Systems at 12 Weeks Postinitiation of Active Treatment



**Figure 2.** This run chart documents improvement in depressive symptoms at 12 weeks postinitiation of active treatment.

**Table 2. Six Components of Chronic Care Model\***

**Clinical Information Systems:** Establishing a patient registry is essential for longitudinal follow-up. The registry needs to provide data on both patient and population levels. Feedback from the information system helps inform care for individual patients.

**Practice Redesign:** Systems that are reactive are redesigned to be proactive keeping the patient as healthy as possible. It involves clearly defined roles for all providers of care. Providers usually work together as a team.

**Decision Support:** This starts with explicit treatment guidelines and ongoing interactive continuing medical education activities. It also includes collaboration between specialists and primary care providers.

**Self-Management:** This includes more than patient education. The goal is for clinicians and patients to work together to define problems, set priorities, establish goals and create treatment plans.

**Community Resources and Policies:** Can support or expand a health system's care. Also includes community policies such as insurance benefits and pharmaceutical samples.

**Health System:** Includes senior leadership support and inclusion of the model into business plans and financial planning. Important that system incentives support the model.

\* Adapted Improving Chronic Illness Care: A National Program of the Robert Wood Johnson Foundation. <http://www.improvingchroniccare.org> (last accessed May 18, 2005).

begun at the same time that the measures were being developed. It was not possible to collect baseline data before the BTS collaborative because centers began enrolling only shortly before the first learning session. The health center teams implemented the various components of the Chronic Care Model in different orders and at different times throughout the collaborative, depending on local circumstances.

For most of the teams, this project represented the first time they had measured the outcomes for their care of patients with depression. Because new patients were being added to their registries every month during the collaborative, the number of patients included in the measures increased throughout the study.

## Results

Using a standard 1–5 scale developed by IHI, the faculty evaluated each team on their results and progress monthly during the collaborative and at the final national congress meeting in March 2001. The evaluations were based on the information and data submitted by the teams in their monthly reports and on information gained during conversations and presentations at the learning sessions and the congress. Summaries of the monthly assessments and the distribution of final faculty team evaluations are provided in Figure 3 (page 393). An evaluation of “4” indicates significant progress in implementing the Chronic Care Model for the pilot population and improvement in patients’ outcome measures. An evaluation of “5” means outstanding sustainable results, that is, the team has successfully implemented all components of the Chronic Care Model in the pilot population, all goals in the team’s aim have been accomplished, and work to spread the care model to other patient populations was underway.

The faculty retrospectively assessed how many teams incorporated the recommended change concepts into their depression care system (Table 4, page 394–395). The information was gathered from team presentations and group reporting at the third learning session. Each of the changes was discussed before the teams made a final assessment of their degree of utilization of the change idea.

Many of the teams reported four outcome measures (Table 5, page 395). By the end of the collaborative, most depressed patients received initial PHQ-9 assessments (90.1%) and follow-up PHQ-9 scores (86.7%). Significant improvement in depression symptoms, defined as at least a 50% decrease in PHQ-9 score, was achieved by 56.1% of patients.

Near the end of the collaborative IHI held a one-day meeting in Denver with 10 of the teams who had received a faculty evaluation of at least a “4.” The teams reported on the benefits of participating in the collaborative, barriers they experienced, and ways they overcame those barriers. They also reported on what they thought were the key change concepts—establishing and maintaining a patient registry, care coordination, diagnostic assessment, and proactive follow-up. Detailed summary of findings from the Denver meeting are available elsewhere.<sup>24</sup>

**Table 3. Faculty-Recommended Depression Change Concepts**

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|--|--|
| <ol style="list-style-type: none"> <li>1. Primary care providers will receive interactive education on the depression guideline, patient identification and structured diagnostic assessment, patient education techniques and materials, implementing an active follow-up program, and identifying patients at increased risk of having major depression.</li> <li>2. Primary care physicians will be alert for depression "red flags" or clinical hints that strongly suggest a patient should be assessed for depression. Examples of red flags include recent major stressor or loss, multiple somatic complaints, chronic pain, frequent visits to a clinician, recent hospitalization, and difficulties with sleep or fatigue.</li> <li>3. Before initiating treatment, a structured diagnostic assessment of patients suspected of being depressed will be completed and recorded in the medical record.</li> <li>4. Following diagnostic assessment, patients will be triaged into one of four groups that define appropriate treatment intensity. The four levels are (1) not clinically depressed; (2) subthreshold depression; (3) major depression—treated in primary care; and (4) major depression with complications such as suicidality with recommended specialty mental health involvement.</li> <li>5. Patients will receive evidence-based treatments based on the AHCPR Depression Guideline.*</li> <li>6. Depression care will involve collaboration between the physician and the patient in setting treatment goals and engaging in problem solving for barriers to</li> </ol> | <p>treatment adherence and life problems contributing to the depressive illness.</p> <ol style="list-style-type: none"> <li>7. Depressed patients will receive patient education materials, a community resources list, and self-help materials.</li> <li>8. A member of the practice team will be designated to be responsible for active follow-up (that is, will be a care manager). Active follow-up will occur at scheduled intervals and will include a formal assessment of symptom severity (using a depression symptom scale) and will assess adherence to the agreed upon treatment plan.</li> <li>9. Patients being treated for major depression will be tracked using a "follow-up file" or patient registry to facilitate and monitor active follow-up.</li> <li>10. At a minimum, patients being treated for major depression will be followed up three times within the first four months of treatment, and will have be assessed at about six months to determine whether maintenance treatment is appropriate</li> <li>11. An arrangement will be made with a mental health specialist to provide as needed consultation services to the primary care physician and care manager for difficult to treat cases.</li> </ol> |
|--|--|
- \* Schulberg H.C., et al.: Treating major depression in primary care practice: An update of the Agency for Health Care Policy and Research practice guidelines. *Arch Gen Psychiatry* 55:1121-1127, Dec. 1998.

Another goal of the Denver meeting was to learn what site and patient characteristics ("segments") the teams believed needed to be recognized, with appropriate modifications for the program to be successful. The following six depression segments were identified:

1. Presence or absence of care manager position
2. Availability of technology for directing and maintaining tracking and outcome databases
3. Availability of mental health specialty
4. Support for primary care
5. Organizational size and complexity such as size of clinical unit (number of providers, patient panel)
6. Patient characteristics such as age, culture, language, ethnicity, mobility, and payer class fee-for-service/capitation-insurance/no insurance

Teams were asked at the end of the collaborative to anonymously answer an electronic survey concerning satisfaction with the BTS. Data from depression and asthma teams were analyzed together to maintain confidentiality of the survey results and because the asthma and depression teams were all considered to be part of the same BTS. The data analysis indicated that four (19%) of the 20 teams reported the collaborative as excellent, nine (46%) as very good, five (23%) as good, and two (11%) as fair. Two case studies (see Sidebar, page 396) present successes and challenges of 2 of the 20 BTS teams.

### Discussion

Twenty of the 23 teams completed the BTS, with 17 of the remaining 20 teams accomplishing major steps

toward improving their depression care. On the basis of the feedback from 10 of the successful teams, the essential change concepts for depression were establishing and maintaining a patient registry, care coordination, diagnostic assessment, and proactive follow-up. These change concepts were instituted in real-world primary care settings, many of which faced substantial challenges. Yet the average site found that 56.1% of depressed patients had a 50% improvement in depression severity after the acute treatment phase, similar to the 60%–65% improvement typically seen in randomized controlled depression effectiveness studies.<sup>1–6</sup> Fifty-four percent of depressed patients were continuing on antidepressant versus 42% receiving continuation-phase treatment, as reported in the 2000 Health Plan Employer Data and Information Set (HEDIS) measures.<sup>11</sup>

The patient outcome data have limitations. Because this project was a dissemination effort, not a randomized clinical trial, teams had substantial flexibility in choosing patient populations to participate and defining outcome measures. Baseline values for outcome measures were not collected and there were no control groups. Still, there are reasons to believe that baseline patient depression outcomes were no better than usual care in most plans in the United States. The demographics of patient population of many of the plans would suggest that baseline outcomes were probably worse than average. Many participating patients were members of ethnic minority groups, had limited resources for transportation or medication, did not have insurance, and did not speak English. Study limitations include the lack of common outcome measures across sites. Randomization of sites to BTS versus usual care would have been necessary to quantify the extent the BTS improved patient depression outcomes.

An important feature of this project was the fact that teams used a common depression severity measure (PHQ-9) to identify depressed patients and follow their improvement. Unlike diabetes, where glucose monitoring and A1C monitoring are agreed-on gold standard measures, depression symptom severity measures are diverse (Hamilton Depression Rating Scale,<sup>20</sup> Beck,<sup>25</sup> Montgomery-Asberg Depression Rating Scale<sup>26</sup>). The advantages of using a valid, patient self-report measure that is rapid to use, easy to administer, and understood

### Distribution of Final Team Assessments, March 2000 Congress

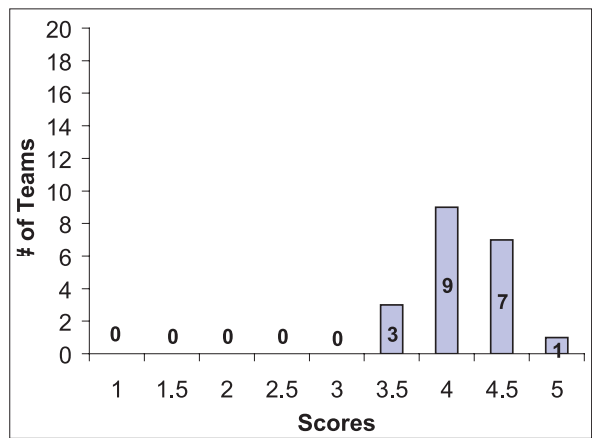


Figure 3. Summaries of the monthly assessments and the distribution of final faculty team evaluations are shown.

by primary care clinicians was seen by the participants and the faculty as a major innovation in this collaborative. For example, care managers would ask patients to administer the instrument in between regularly scheduled patient visits. If scores were increasing, the care manager would inform the clinician, and the patient could be seen sooner than planned for a possible adjustment to the treatment plan (for example, medication change, specialty consultation, psychotherapy).

Another important feature of the program was the extensive collaboration between teams, which is common to the BTS. This allowed teams to share resources such as computerized databases and translations of patient materials and helped them avoid independently learning the same lessons about what does not work. The collaborative process also allowed teams to survive inevitable challenging phases of the change process.

There was substantial variability among teams in the roles played by mental health specialists in the BTS. Many of the teams had a psychiatrist or psychologist as core team members. Some of the teams had on-site mental health specialists, while others arranged for collaboration with off-site mental health specialists, and a few sites had no access to mental health specialists. Improving the liaison with community mental health specialists was one of the major outcomes of the collaborative.

**Table 4. Number of Sites Using Recommended Change Concepts**

Changes	No. of Centers
<i>Self-Management</i>	
Education on disease and problems with adherence	16
Collaborative goal setting	15
Prescribe pleasurable activity	10
Medication management training	10
Community resource list is given to patients	9
Activity calendar	5
Engage family in care	5
Teach patients self-assessment	5
<i>Delivery System Design</i>	
Red flag screener is administered by staff to patients	17
Clinician routinely does diagnostic assessment after positive screen	17
System connects depressed patients to appropriate provider	15
Nurse of care manager follows up at regular intervals	15
Depressed patients are identified when they have nondepression visits	15
Method to ensure patients are connected to behavioral health when needed	13
Depression status information available while maintaining confidentiality	13
Provider available for problem solving therapy	10
Method for team members to communicate patient status and care plans	9
<i>Clinical Information</i>	
Registry established for patients with major depression	20
Registry identifies patients for follow-up	18
Registry generates reminders on visits, treatments, and diagnostic studies	11
Registry identifies subgroups for proactive care	11
Care effectiveness assessed using registry	7
<i>Decision Support</i>	
Structured assessment used to assess severity of all depressed patients	19
Guidelines used for medication and treatment	15
Primary care providers have access to specialists on difficult cases	15
Routine education programs for other staff	14
Flow sheets or checklists used to embed guidelines in daily practice	13
Routine education for primary care providers	13
Criteria for referral of patients to specialists	10
Patients alerted to guidelines for their care	7
<i>Community Resources</i>	
Linkages with local mental health providers for comanagement	16
Linkages with local mental health advocacy or support groups	13
Linkages to local case management and social services	12
Linkages to pharmaceutical companies to defray costs of medication	11
Community education on depression: Fairs, health days, etc.	9
Connections to local hospital emergency departments established	6
Linkages to employers and employee assistance programs	4
Rhythms self-help program	1

**Table 4. Number of Sites Using Recommended Change Concepts, *continued***

Changes	No. of Centers
<i>Organization of Health Services</i>	
Reports on progress are on agenda of senior management meetings	17
Resources set aside to support active follow-up	12
Senior leader promotes project	12
Senior management has made improvement of depression care a strategic goal	11
Senior leadership visits the team to learn about progress	11

The key change concepts independently identified by the teams for successful change were almost identical for the depression and the concurrent asthma collaboratives. This is not surprising, because most of the change concepts in the Chronic Care Model are not disease specific. Many of the depression teams expressed interest in expanding to additional chronic illnesses beyond depression to make the process more sustainable. The teams said that the investment in time and resources that was needed to adapt their practices to the Chronic Care Model and to create patient registries may be more cost-effective when used for multiple chronic medical disorders.

Many of the BTS centers have continued to expand their depression treatment programs, although some of

the teams that did not achieve major improvements in the BTS have not sustained their programs. BPHC is now conducting its third BTS on depression, with a total of 125 centers having participated. BPHC is also integrating depression modules into other chronic illness programs such as coronary artery disease.

The IHI BTS appears to be a viable method of disseminating evidence-based depression care in diverse medical settings. Further controlled research that estimates the extent and durability of changes in the process and outcome of care resulting from BTS participation is needed. **1**

This study was supported by Robert Wood Johnson's National Program to Improve Chronic Illness Care (ICIC).

**Table 5. Primary Patient Outcomes\***

Standard Measures at the End of the Collaborative	Standard Definition of the Measure	No. of Teams with Data for This Measure	Total No. of Patients	Weighted Average Value of Measure (%)
Significant improvement in depression	Percent of patients experience a 50% increase in the PHQ-9 score after 12 weeks of treatment	12	865	56.1
Patients with follow-up assessment	Percent of patients in the follow-up list with a follow-up assessment within 8 weeks	13	1298	86.7
Patients continuing antidepressant	Percent of patients in the follow-up list with active medications prescribed who are continuing to use them	11	976	54.1
Patients with structured assessment (PHQ-9)	Percent of active population in the follow-up list with recorded depression assessment	17	1746	90.1

\* PHQ-9, Patient Health Questionnaire-9.

## Sidebar 1. Case Studies

### Case Study A. A "Successful Center"

The team at Center A, a community health center serving more than 10,000 patients annually, spent several months developing a system to support clinicians treating patients with depression. The team began by developing a diagnostic tool and a progress note, both based on the latest psychiatric guidelines, tailored for ease of use in the primary care setting.

The team also developed a simple, highly reliable referral system, which enabled clinicians to telephone the case manager during the visit to arrange for follow-up. A local psychiatrist supported the work by assisting with the development of the progress note and screening tool and by serving as a resource for clinicians as needed. Primary care physicians now provide depression screening and treatment, referring only the most difficult cases to the case manager.

The most significant challenge for the team is to maintain the improvements, especially in light of the high turnover rate among nursing staff. The team holds a monthly forum to provide education in different topics in depression care. The comedical directors

monitor referrals and meet one-on-one with providers regularly. In addition, the team regularly reports outcomes of the program.

### Case Study B. A Center with Significant Barriers

Center B, which serves approximately 11,000 patients through 62,000 visits annually, attempted to significantly improve self-management by focusing on the patient's role in self-assessment, interventions, care planning, and problem solving.

The team developed a variety of self-management educational materials and guidelines for care. Patients regularly provide feedback on these tools to ensure their usefulness. These efforts resulted in a marked increase in patients' adherence to medication and taking an active role in the management of their depression.

Although able to achieve these goals, Center B also experienced barriers in improving self-management. In some cases, providers and patients were slow to buy into the self-management approach. Some patients resisted self-management for cultural reasons. The team also found it difficult to develop effective self-management tools; many of the center's patients speak languages other than English, and adequately translating the tools and patient education materials was a challenge.

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