

A Pilot for Improving Depression Care on College Campuses: Results of the College Breakthrough Series–Depression (CBS-D) Project

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Abstract. **Objective:** To implement a pilot quality improvement project for depression identification and treatment in college health. **Participants:** Eight college health center teams composed primarily of primary care and counseling service directors and clinicians. **Methods:** Chronic (Collaborative) Care Model (CCM) used with standardized screening to identify, treat, and track depressed students for 12 weeks to monitor predetermined process and clinical outcomes. **Results:** Of all students receiving primary medical care services between January 2007 and May 2008, 69% ($n = 71,908$) were screened for depression. A total of 801 depressed students were treated and tracked; most predetermined treatment process and clinical outcome targets were achieved. **Conclusion:** The CCM for depression shows promise for improving depression identification and care for college students.

Keywords: community health, counseling, mental health, primary care, secondary prevention

Depression and other mental disorders present common and significant health and educational risk factors for university students. Several reports indicate that high prevalence and negative sequelae remain a perennial problem.^{1–3} Additionally, rates of college students who

reported receiving a diagnosis of depression within the last 12 months increased from 10% in Spring 2000 to 15% in Spring 2008.⁴ Treatment rates amongst students who have clinical depression or other mood disorders remain low, with only 34% reporting any form of treatment in a recent national survey.⁵ The impact of depression, suicide attempts, and completed suicides not only have serious consequences for these affected students, but also friends, family, faculty, and the campus community. Failure to identify depression, lack of adherence to treatment, and inadequate coordination among health and counseling services on college campuses may increase the risk of violent or suicidal episodes on campuses.⁶

The need for high-quality mental health services for college students is readily apparent, yet many campuses struggle to cope with the growing needs of students for services. For example, in the Spring 2008 National College Health Association Survey, 9.0% of students reported seriously considering ending their lives during the preceding 12 months.⁴ The data are even more worrisome when one considers the numbers of students who complete suicide who have reportedly never received any specialty mental health treatment on campus. The 2009 National Survey of Counseling Center Directors reported that only 19% of 103 reported student suicides in the past year occurred among current or former counseling center clients, suggesting that the vast majority of completed suicides are by students who had *never* visited the university counseling center.⁷

It is unclear whether students who have completed suicide ever presented themselves in any campus health setting such as medical services, although most studies of completed suicide in the general population indicate that as many

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as 40% saw a primary care provider at least once within 1 month of the lethal suicide attempt.⁸ Although national data are not available for the prevalence of depression in college students who seek primary care medical services, it is likely similar to that found in the general population,^{9,10} since many residential campus medical services, compared to campus counseling services, have contact with a larger proportion of enrolled students on a routine basis over the course of an academic year. Thus, a primary goal for the College Breakthrough Series–Depression (CBS-D) project was to develop primary care and specialty mental health collaborative models that could work together effectively to identify and treat depressed students. In fact, the US Preventive Services Task Force (USPSTF) now recommends depression screening for all adults in primary care practices and recently extended this recommendation to patients aged 12 to 17 so long as treatment or referral systems are in place to assure accurate diagnosis, effective treatment, and follow-up.^{11,12} In addition, Healthy Campus 2010 has cited the need to improve access to quality mental health services and also increase primary care structured screening and treatment for mental disorders.¹³ These recommendations are particularly relevant for college students at a time when need for clinical intervention is rising and detection efforts must be maximized.

Medical and counseling directors from the 6 residential campuses involved in this project reported a range of annual utilization percentages of medical services between 60% to 85% by their students in a single academic year, compared with their counseling utilization percentages of 5% to 15%. The opportunity for identifying depressed students through primary care, or reinforcement of depression care for those who have been seen in counseling but remain significantly symptomatic, remains a largely untapped opportunity. To our knowledge, very few college health and mental health systems have systematically implemented the recommended screening and evidence-based care processes for depression care. In addition, given the unique demands of college life (driven by a condensed academic schedule), the limits on counseling visits in short-term models on many campuses, and the planned separations of care due to academic calendar schedules, it remains to be seen whether some established benchmarks for quality care for depression are achievable.^{14–17}

This pilot project was designed to support the development of a systematic and public health oriented approach to depression care for college students, with a primary emphasis on collaboration between medical and counseling services, adapting for college health a well-established model of quality improvement, the Chronic (Collaborative) Care Model (CCM). Our main goals were to demonstrate (1) that CCM for depression taught with the Breakthrough Series (BTS) Learning Model could be used to implement an evidence-based approach to depression care in college health settings, and (2) that quality benchmarks for depression treatment could be attained among participating sites despite significant variation in settings and resources.

METHODS

Participants

University health leaders in medical services and/or counseling services from 8 campuses agreed to implement a 19-month quality improvement project between November 2006 and May 2008. This included a 2-month training period of the CCM prior to implementation and a 17-month data collection period from January 2007 through May 2008. The campuses were a mixture of urban (5), rural (2), and suburban (1) locations in northeastern United States with total student enrollment ranging from 2,000 to 40,000. The settings represented both administratively merged and administratively distinct medical and counseling centers. Each leader chose a minimum of 4 practice team members from their settings to participate in 3 learning sessions during the 19-month project period and formed a larger quality improvement team within their respective practices to spread, intentionally and incrementally, system changes for depression care. Teams from 6 sites included a senior health leader, medical and counseling clinicians, and support personnel. The other 2 sites had teams comprised of counseling and support staff only. Of the 8 teams recruited into the project, 5 received funding for data collection activities whereas the remaining 3 teams joined the project without any funding support. One site terminated participation midway through the project and did not submit any project data.

Intervention

The CCM has been used to improve treatment for many chronic health conditions including depression.^{18,19} It was developed to increase clinician application of evidence-based treatments, to facilitate effective continuing education for professionals through peer-based learning, and to foster sustainable improvements in health care practice.²⁰ Through application of the CCM for depression quality improvement and the BTS learning methodology for training and rapid implementation,²¹ the project taught senior leaders, clinicians, and support personnel how to implement and share best practices over a 19-month period. Content knowledge in specific areas of the Depression CCM (Figure 1), and coaching by faculty trained in the CCM and BTS learning methods, helped teams at each site foster incremental and rapid evidence-based improvements before they were intentionally and incrementally spread to include other clinicians in the system. Once success was demonstrated in both initial outcomes and workflow adjustments, the goal shifted to wider implementation.

The BTS learning methodology adapted for this project brought together participating teams for 3 separate learning sessions occurring 3 to 4 months apart. The sessions were structured to introduce practices to strategies for improving depression care through application of the CCM focused on quality improvement methodology, leadership, and depression treatment skills training.^{18,19,21} Sites were also encouraged to use the Plan–Do–Study–Act (PDSA) pilot cycles

Clinical Information Systems

Establishing a patient registry for proactive follow-up. Feedback from the registry helps inform care for individual patients and for the population of focus, to benchmark aggregate outcomes.

Practice Redesign:

Systems are **redesigned to be proactive** and as barrier-free as possible for patient engagement (ie, facilitated referrals to counseling, to minimize delay in starting evidence-based treatment). It involves clearly defined roles for all providers of care. Providers usually work as a team to decrease the risk that patients of concern are lost to follow-up.

Decision Support:

Participating clinicians are provided evidence-based treatment guidelines, ongoing interactive continuing education activities and opportunities for active collaboration between specialists and primary care providers.

Self-Management:

Clinicians engage patients in defining problems, setting priorities, establishing goals, and creating treatment plans that target troublesome symptoms or barriers to improvement.

Community Resources and Policies: Can support or expand a health system's care, i.e. preferred arrangements for community referrals, to include feedback on extent of student engagement in treatment. May include community policies such as redesigning insurance benefits and improving access to counseling services on and off campus.

Organization of Health System: Includes senior leadership support for the model and its emphasis on quality improvement; support will typically include resource allocation to assure sustainability of the program.

FIGURE 1. Six components of the Chronic Care Model. (Modified from the Chronic Care Model developed by Ed Wagner, MD, MPH, Director of the MacColl Institute for Healthcare Innovation, Group Health Cooperative of Puget Sound, and colleagues of the Improving Chronic Illness Care Program with support from The Robert Wood Johnson Foundation.²⁰)

when testing small system changes in a rapid fashion. When successful, this process led to permanent workflow adjustments to support evidence-based depression care. Working flexibly, sites had to (1) develop systematic implementation of depression screening in primary care, (2) obtain baseline depression severity scores (in counseling and primary care) when initiating treatment, (3) plan and implement proactive follow-up using reminder systems, (4) monitor severity of symptoms in depressed students and adjust treatment as needed, and (5) develop and document self-management goals (behavioral activation) in order to engage the student in activities that promote recovery. A more detailed description of similar interventions in other settings has been described previously.^{18,19,21}

Periods between learning sessions (action periods) allow teams to pilot system changes while receiving faculty coaching and feedback from all teams via an active listserv and monthly telephone or Web-based conferences to share best practices, receive skills training (eg, care management tasks, self-management, psychopharmacology), and apply project data to guide further improvements. The CCM and BTS approach posits that sustainable change in health care services

requires support from senior leadership, sustained motivation, team-based learning, analysis of available data, and shared experiences to develop best practices and overcome inertia and barriers to change. This type of learning has been cited as key to helping clinicians and health systems to deliver evidence-based care in a systematic and sustainable manner.²²

Use of a Depression Measurement Tool

Collection and evaluation of process and clinical outcomes are central to the successful implementation and sustainability of the CCM. It was necessary to use one common measure to support depression screening, diagnosis, and severity monitoring because the focus in this project is integration of depression diagnostic and treatment approaches for both medical and counseling services. The Patient Health Questionnaire-9 (PHQ-9), a patient self-administered tool for diagnosis and severity monitoring of depression, was chosen for its established validity, reliability, and ease of use. It consists of 9 questions, each tied to a single *Diagnostic and Statistical Manual of Mental Disorders Fourth Edition (DSM-IV)* criterion for a major depressive episode

INCLUSION

A candidate for the depression registry is a student with a diagnosis of Major Depression, Dysthymia, or Depressive disorder NOS (as defined in DSM-IV) who has:

1) Scored 10 or greater on the PHQ-9

AND

2) Scored 2 (very difficult) or 3 (extremely difficult) on the final PHQ-9 functional item.

EXCLUSION

Any student who has a primary diagnosis of bipolar disorder, schizophrenia, eating disorder, alcohol or substance dependence.

FIGURE 2. CBS-D registry entry criteria.

and 1 unscored global impairment item.^{23–25} The PHQ-9 has good reliability in primary care medical settings. In one study of 5,053 racially diverse primary care patients, Cronbach's α ranged from .79 to .86 in.²⁴ In addition, PHQ-9 has sensitivity and specificity of 88% for major depression when utilizing a total score cutoff of 10 in 2 validation studies including 6,000 participants.²³

Respondents select the frequency of the depressive symptoms that they experienced in the 2 weeks prior to survey administration. Scores for each item range from 0 (*not at all*) to 3 (*nearly every day*). Total scores greater than or equal to 10 correlate with high sensitivity and specificity to the diagnosis of a major depressive disorder. The PHQ-9 was used successfully in the very first CCM-BTS depression collaborative in 1998 involving community health centers and academic medical centers¹⁸ and more recently by psychiatrists and other mental health professionals in diverse practice settings.²⁶

Inclusion and Exclusion Criteria

Figure 2 details the inclusion and exclusion criteria for depressed students who were tracked for 12-week outcomes at project sites. Depressed students were tracked regardless of whether they received their treatment in the college medical service, counseling service, or both. Inclusion criteria not only required a PHQ-9 score of greater than or equal to 10 (at least moderate symptoms) but also a self-report of impaired functioning due to the presence of depressive symptoms (*very difficult* or *extremely difficult*) on the unscored 10th item. Finally, before depressed students were enrolled for treatment and follow-up, clinicians in the project were required to clinically confirm the depression diagnosis as well as to make a clinical judgment on whether students met any criteria for exclusion. Comorbid secondary diagnoses were generally allowed (with the exception of psychosis, suspected bipolar illness, eating disorder, or substance dependence).

Setting Quality Goals for the Project

Table 1 defines the 7 depression process and outcome measures used in the project.

Since there are currently no published studies that document quality benchmarks for depression care and outcomes in college health in the United States,²⁷ targets for these measures were set in advance in a consensus meeting attended by project faculty and leaders from each participating site. Relevant literature, research evidence, federal agency rec-

TABLE 1. Preset Depression Treatment Process and Outcome Goal Definitions

CBS-D treatment process goals

Percentage of students screened for depression in primary care with the PHQ-2 or PHQ-9 at least once during the academic year	80%
Percentage of students who initiated treatment, defined as any student who has filled and begun antidepressant medication or attended an initial counseling session with a licensed mental health specialist (not a care manager) within 4 weeks of enrollment	50%
Percentage of students with at least 1 follow-up PHQ-9 reassessment within 4 weeks of enrollment	80%
Percentage of students who have a documented self-management goal within 8 weeks of enrollment	60%

CBS-D treatment outcome goals

Percentage of students with a 5-point reduction in PHQ-9 within 8 weeks of enrollment	40%
Percentage of students with a PHQ-9 score of <10 within 12 weeks of enrollment	40%
Percentage of students who report "not difficult at all" or "somewhat difficult" problems meeting daily social, academic, and occupational responsibilities within 12 weeks of enrollment	35%

ommendations, and targets designated in previous depression BTS collaboratives conducted in other settings were reviewed to achieve consensus about reasonable benchmarks of care and patient improvement, while accounting for the unique factors involved in treating college students (eg, expected breaks from care due to academic calendars).^{14–18,26,28} As shown, the group also chose outcome goals with a slight bias towards shorter time frames because of the need to enhance functional recovery for students through the short-term treatment models used at all the collaborating sites.

Data Collection

All sites were provided a document template that listed each primary clinical process and outcome measure. Each site then created or maintained its own paper or electronic tracking data file for the collection of measures on students during the 12-week period. Teams were responsible for tracking, over preset time periods, specified components of care and outcome measures. Each site submitted data monthly (including self-reported sex and ethnicity, excluding all patient identifiable data) by fax to the coordinating center.

The results were then aggregated at the project level using a Microsoft Excel spreadsheet. Consistent with a public health approach, all data were submitted based on an intent-to-treat (ITT) method. This meant that unless a site confirmed that a depressed student entered in their tracking file had either fully transferred their depression care outside of the college/university or had withdrawn from the institution for any reason, or explicitly indicated that they refused additional follow-up care, the student was considered in active treatment and included in the site's final outcome results. As an illustration of the ITT method, if a student remained active in the tracking file at the 12-week time point but a follow-up measure was not obtained at week 12, then the most recent depression severity score obtained, which could have been as early as week 4, was *carried forward* or assumed to be the final measure at the 12-week time point for that student. Therefore, all data reported by sites reflect the last outcome assessment obtained *carried forward*, regardless if there are missing data points at the specified time frames. The ITT approach is in contrast to reporting *completer* data where only students who were adherent to treatment are included in the outcomes analysis. This conservative approach is consistent with the approach taken in national CCM and treatment outcome projects^{18,26,28–31} and reflects the proactive emphasis of the project in which teams are strongly encouraged to maintain contact with students during the 12-week treatment period.

Analytic Methods

All aggregate analyses were performed by the coordinating center using Microsoft Excel and SPSS software. Basic percentages were calculated for each of the outcome indicators in the manner described above. Because data were aggregated at the site level, not at the patient level, subanalyses

of the process and outcomes measures were not possible in this pilot project.

Institutional Review Board

All 8 participating sites received institutional review board (IRB) approval from their respective institutions to share project data with the coordinating center. All sites received determinations of exempt status or received expedited review and approval because data shared were completely de-identified and aggregated. No patient-level data were shared with the coordinating center. One site was required by their IRB to obtain informed consent from patients to allow their data to be shared with the coordinating center. That site modified its general consent for treatment with additional language stating that if a student had depression, then de-identified data would be used for a national quality improvement project on depression. A student could decline to sign this consent with no change in their delivery of care by that site.

RESULTS

Depression Screening

The 6 sites with medical services screened for depression in their respective primary care services. Of these, 4 sites used a 2-step screening method: Using the first 2 questions on mood and anhedonia from the PHQ-9, if students endorsed having at least 1 of these symptoms, then these students received the full PHQ-9. The other 2 sites decided that using the full PHQ-9 for the screening process best fit their workflow. Both screening methods are considered valid approaches for screening of depression using the PHQ-9.^{23,32} Site leaders were not concerned that these different but valid approaches to depression screening would bias project outcomes, since positivity rates in screening were not collected in the project and outcomes measures were tracked only for students who had clinically confirmed depression. The aggregate depression screening rate for all sites with medical services ($N = 6$) was 69% of all eligible unique students receiving medical care during the academic year. The site rates varied from 21% to 91%, with 71,908 students screened for depression in medical services during the data collection phase of the project.

Aggregated Project Outcomes

A total of 801 students with clinical depression (identified by medical or counseling services) met inclusion criteria and were treated and systematically tracked for process and outcomes assessment at 4, 8, and 12 weeks. Table 2 illustrates the site variability in enrollment of depressed students by project site, with totals ranging from 12 to 297.

Attrition rates due to withdrawal from the university, explicit refusal of care, or referring the student to community care during acute-phase treatment (12 weeks) were relatively low. Of 801 students, 755 (94%) students were in active treatment at the 8-week reassessment time period and 695

TABLE 2. Depression Registry Totals by Site

Team	No. of registry students
1	12
2	52
3	63
4	74
5	78
6	225
7	297

students (86%) at 12 weeks. As discussed in Methods, even students who did not return for care were included in the final symptom severity and functional outcome measures using prior scores *carried forward* for any missing data points.

Demographics

Table 3 lists the demographic composition of the students treated for depression in the project. Of note, 32% of the project sample was self-identified as a racial or ethnic minority group member.

The aggregate results of the 3 preset treatment process measures are shown in Figure 3, comparing the aggregate CBS-D performance against predetermined project goals.

Project sites were highly successful in initiating treatment within the 4-week allotted time frame, with over 90% of students beginning treatment in a timely manner after clinical confirmation of depression. Documentation of a mutually agreed-upon self-management goal between student and clinician occurred for 58% of depressed students, narrowly missing the goal of 60%. At project end, 66% of depressed students had received a 4-week follow-up PHQ-9 reassessment, falling short of the project goal of 80%. Figure 4 illustrates the aggregate performance on the 3 clinical outcome

measures for the project sites. The aggregate project results show that combined results for all 3 outcome measures were comparable to the predetermined targets.

COMMENT

This project demonstrates the results of a multicampus quality improvement approach using the CCM combined with a Breakthrough Series learning model. This approach enhances depression care through implementation of standardized depression screening in medical care, severity monitoring, and proactive outreach as shared activities between medical and counseling services. Since many college medical services typically see more individual students than college counseling centers, this approach may also assist in identifying depressed students who might not otherwise access counseling treatment. Notably, screening for depression in medical settings has been recommended by the USPSTF since 2002 for adults (18 years and over) and for young adults (12 to 17 years) since 2008.^{11,12} The significant number of racial and ethnic minority students treated in this project sample is encouraging, since they traditionally underutilize counseling services.^{33,34}

Encouraging appropriate utilization of mental health services and treatment of depression amongst racial and ethnic minority students should be an important goal on college campuses. More than 32% of the depressed students in the project were self-identified as racial/ethnic minority students. At the start of the project, counseling centers in the project reported that these students underutilized counseling services when compared to their proportional enrollment, even though they may have similar prevalence of depression symptoms compared to peers and tend to have fewer counseling sessions.^{34,35} These findings have also been recently noted by D. Eisenberg, PhD (unpublished data, 2010).

Demographic data collected from the 6 sites that had at least 50 depressed students in their tracking file were analyzed to investigate if the number of minority students entered into the project was more representative of the *actual proportion* of minority student enrollment groups at each college. This would give at least a proxy of potential utilization. Our data (not shown) demonstrated that project enrollment of African American and Hispanic/Latino(a) students was proportionally representative of overall minority enrollment at 4 of the 6 sites, but enrollment of Asian Pacific Islander students remained unchanged. In a recent report to a Presidential commission assessing mental health services in the United States, adolescents and racial-ethnic minorities were identified as the groups most likely to be underidentified and treated for mental illnesses.³⁶ We do not know whether primary care screening or other factors associated with the CCM assisted in enrollment of racial minority students in the project. Nevertheless, the redesign of depression care using CCM to include structured screening and assertive follow-up may benefit such students who are prone to higher dropout rates and poorer outcomes.^{33,37}

The process outcomes data illustrate that college primary medical services and counseling services can be system-

TABLE 3. Characteristics of Participants in the CBS-D Registry

Characteristics	All depressed patients followed (N = 801)	
	n	%
Gender		
Male	256	32
Female	545	68
Ethnicity		
African American/Black	73	9.1
American Indian/Native American	8	1.0
Asian American/Pacific Islander	101	12.6
Hispanic/Latino(a)	75	9.4
Multiracial/Other	4	0.5
Caucasian/White	445	55.5
Unknown	95	11.9

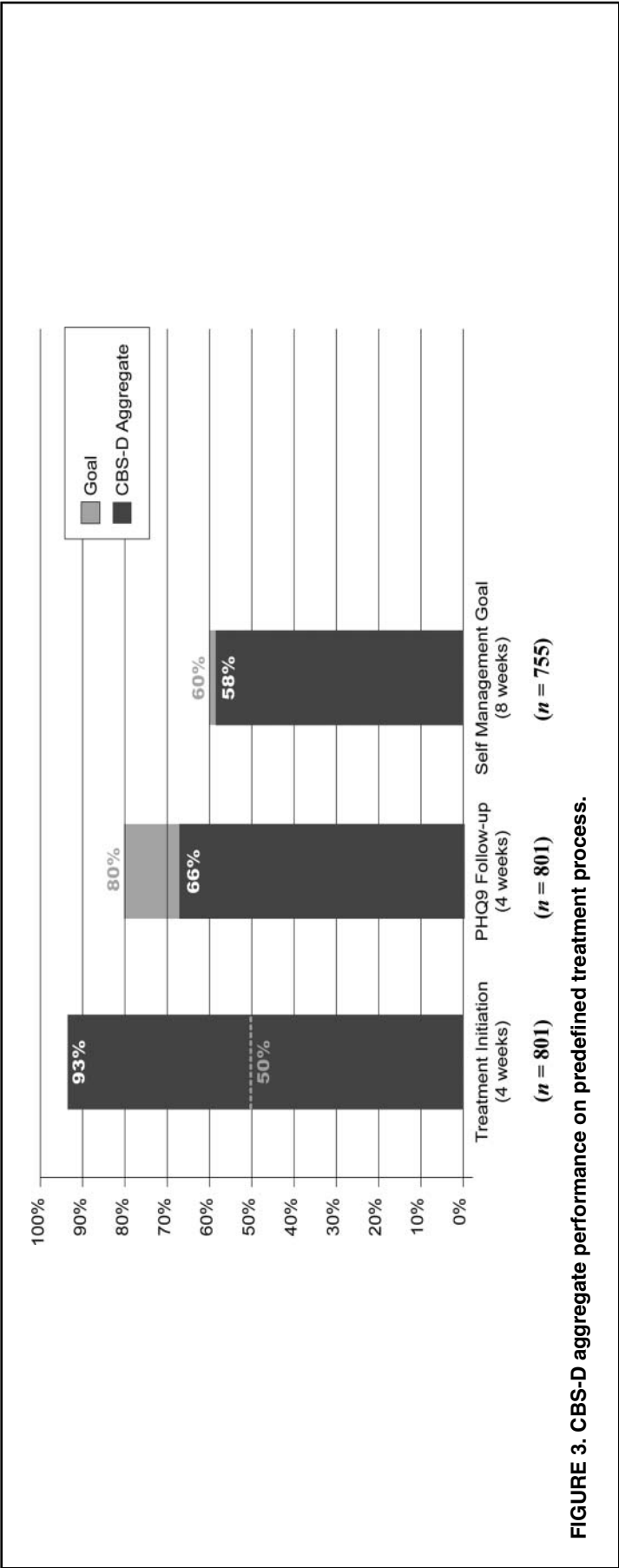
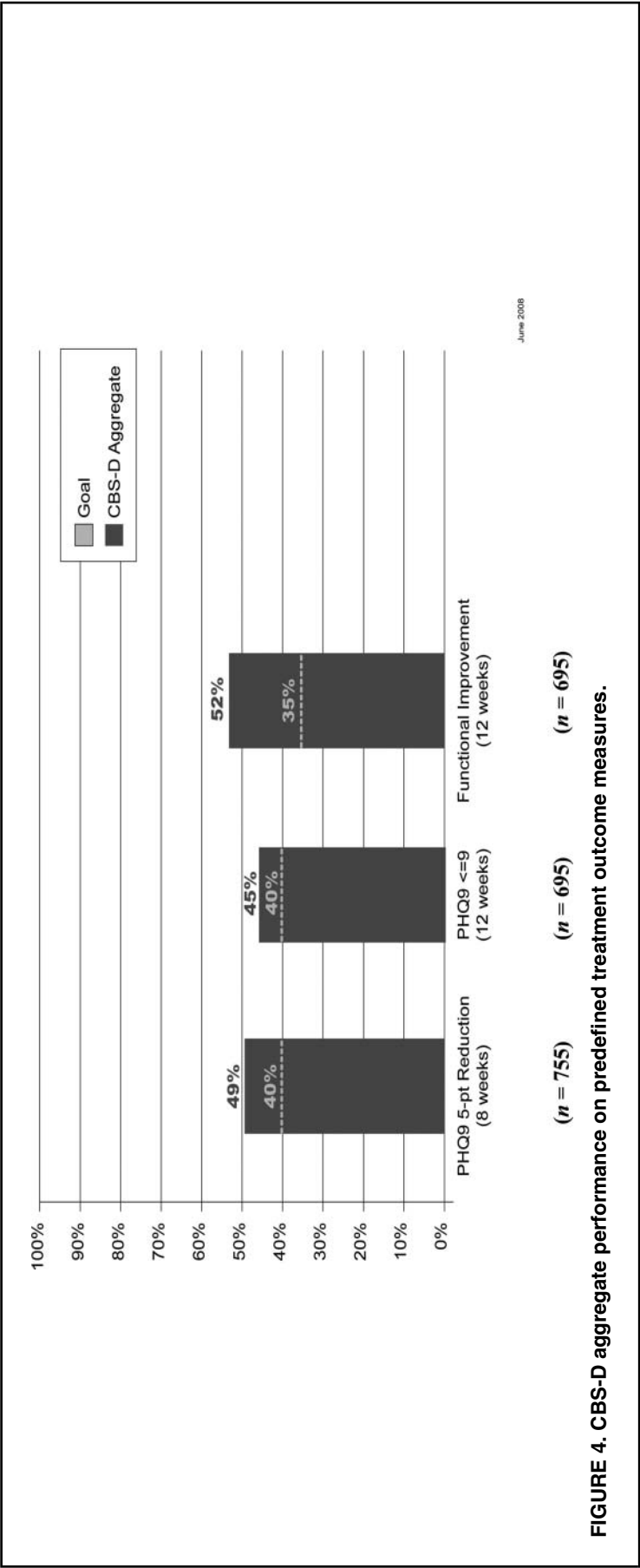


FIGURE 3. CBS-D aggregate performance on predefined treatment process.



atically redesigned to enhance engagement and follow-up of students receiving depression treatment. As expected, project sites reported that the predetermined treatment process goals were initially difficult to achieve, especially since sites had no prior experience with the process goals or with systematic measurement of outcomes in depression care. Implementation of process measures required significant pilot testing, sharing of best practices among project sites, and faculty coaching before it began to take hold at sites.

Nevertheless, the project fell short of the 80% goal for the screening of students in primary care encounters, indicating the need for thoughtful and strategically planned system redesign, even when senior leader (medical directors and counseling directors) motivation is high. It is important to overcome time concerns by primary care clinicians and ensure that counseling support stands ready for those students with severe symptoms who need urgent mental health assessment. It is encouraging that the coordinating center received anecdotal reports that students' responses to screening were positive, with clinicians often reporting successful interventions for students whose depressive symptoms might not have been identified without the systematic screening approach. These "success stories" appeared to foster adoption of screening by other clinicians at the project sites.

The treatment initiation goal of 90% at 4 weeks was met as sites quickly developed fast track methods for referring depressed students to initial counseling sessions or improved primary care physician training to begin appropriate antidepressant treatment. The success on this measure cannot be overstated. Depression confers suicide risk, and significant impairment in function may result in poor grades and withdrawal from college.³⁸ Prompt initiation of treatment, especially for students in moderate to high distress (PHQ-9 score 10 or more), is central to quality depression care, and may require redesign of processes, including rapid referral and student engagement from medical to counseling services.³⁹

Project sites found the 80% target for follow up PHQ-9 measurement within 4 weeks a challenge. Although early follow-up has been associated with earlier response and remission in depression research trials and CCM projects^{17,18,28–30} and is a critical part of system redesign for quality improvement, it was difficult during peak demand periods for sites to meet this goal. This was particularly the case when students were ambivalent about treatment or had difficulty returning for care (because of holiday or vacation breaks). It appeared that sites that used systematic care coordination strategies vested in 1 or 2 people whose primary function it was to perform assertive outreach for students who did not keep their follow-up appointments did better in meeting the goal of 80% follow-up. This observation will require further study in a larger replication.

In retrospect, our target of 80% follow-up by 4 weeks, although well intentioned to decrease the risk of students "falling through the cracks," may have been overly ambi-

tious. Recent published outcomes in other community-based studies using Depression CCM indicate that a 60% follow up goal at 4 to 8 weeks would have still been challenging but possibly more realistic for some sites.^{18,26,28,30,31} It is important to note that like other CCM-BTS projects, most of these sites had never used standardized measures for depression screening, severity rating, and systematic patient tracking during acute depression treatment. In fact, sites had to substantially redesign workflow to incorporate systematic PHQ-9 administration, which ultimately yielded timely data to help direct process and clinical outcome improvement efforts.

In spite of falling short on the 4-week follow up measure, the project sites met the overall predetermined response and partial remission goals set for depressed students. These treatment outcomes, particularly the improvement in function reported by over 50% of depressed students in only 12 weeks, were impressive given the short time frame, the entry of students in the project who could have more chronic depressive disorders, and the allowance of heterogeneity for comorbid disorders such as anxiety, panic, attention-deficit hyperactivity disorder, etc. Other CCM- and treatment algorithm-based projects performed in real world settings with primarily older adults struggled to achieve these target outcomes despite allowing for longer time frames for response and remission.^{29–31} College students might be expected to respond to early intervention and treatment better than older populations, since there should be fewer individuals with chronic relapsing depression and medical comorbidities in this age group.

Slightly more students had significant improvement in function at 12 weeks than had partial remission. This suggests that some college students may tolerate residual depressive symptoms at a moderate level and yet report improved function. We do not know how many more students may have continued to improve beyond the 12-week period. Given the high levels of academic pressure many students experience, it will be important for future studies to follow students over longer periods to assess rates of sustained response and remission.

This project has significant implications, because it demonstrates the successful application to college health of several key components of a community-based approach to depression care. These include (1) collaboration between medical and counseling services, (2) screening of at-risk students who may not self-identify, (3) outcomes-driven care to achieve greater quality and benchmarking to identify gaps in treatment, and (4) to support appropriate resourcing and to reinforce the safety net for vulnerable students with clinical depression and potential suicidality. There are few published longitudinal treatment outcomes in community settings, but in those that have been reported, process and clinical outcomes in usual care may only be half that of the goals achieved by the CBS-D collaborative.^{29–31} The process and clinical outcomes achieved in this pilot project have the potential to serve as initial benchmarks for quality improvement efforts for depression in college health settings.

Limitations

The main limitation of this pilot project is the small number of sites involved. Furthermore, 1 of the 8 original pilot colleges dropped out midway through the project and did not submit data. That college had only counseling center involvement and did not have the support of the primary care unit. In addition, student affairs leadership at the college were wary of using the PHQ-9 during depression treatment and the sharing of data with the coordinating center even though the counseling center received IRB approval for the project. This situation illustrates a well-established principle in the literature on CCM: Senior administrative support is critical to sustained system improvements for depression care.^{18,19,21,28,40}

The extent to which the project can say that depression care significantly improved at project sites is worthy of further discussion. Because sites were not asked to benchmark any outcomes prior to project initiation, we cannot confirm that significant improvement in depression care actually occurred for a given site. However, any attempt to gather baseline data would have been futile for some of the project outcomes because screening and measurement were not being performed in any systematic way. In addition, many of the pilot sites did not have in place any systems for early initiation of treatment or outcome tracking. Even if we allow the possibility that outcomes may not have improved for some sites, the documentation of these process and treatment outcomes is an important accomplishment, as it allows these sites to analyze benchmark data, which could prove quite useful for their own future quality improvement efforts.

Although the project's emphasis on screening is highly evidence based, data collection was not designed to gather precise prevalence data of depression. Furthermore, we report on the 801 students who were correctly screened, identified, triaged, and added to a clinical tracking registry. This illustrates the difficulty of systematic redesign. It is almost certain that some students screened were not sufficiently followed early in the project cycle prior to completing system redesign plans.

Another limitation is the lack of patient case-level data. Only site-specific data analyses were performed before submission to the coordinating center database. As in most quality improvement projects, the coordinating center relied on each site to compile their own statistics on a monthly basis to guide site-specific improvements. However, the aggregation of all site data served as benchmarks from which faculty and site leaders could identify gaps in treatment processes of care that could be used to pilot approaches for overall system improvement.

The proportion of enrolled subjects varied substantially by project site, which could have had the effect of biasing the aggregate results by overweighting the outcomes of the sites with larger enrollment. However, a review of the site enrollments and project outcomes did not reveal any obvious relationship. For example, although the 2 sites with the largest project enrollment represented 65% of the sample,

their combined process and outcome results revealed few differences from schools that had lower project enrollment.

Although system redesign focused on helping sites improve evidence-based processes of care, the project relied on clinical diagnosis after structured screening and did not enforce any specific treatment protocols or algorithms. With the exception of training all sites to use the PHQ-9 and strong encouragement to use self-management (behavioral activation) approaches to augment the treatment, clinicians provided treatment based on their own clinical judgment. When students were not responding to acute treatment in a timely manner, clinicians were urged to reconsider the initial treatment plan and/or use appropriate consultation or referral strategies. Using this more flexible approach is consistent with the approach taken by CCM quality improvement projects and is likely to be more sustainable.^{18,22}

Conclusion

The Depression CCM and BTS approach to shared learning and quality improvement appears to offer a promising approach to increasing access to and quality of depression care for college students. Initial CBS-D data on depression screening in medical settings suggest an important opportunity for early identification of depression, with promise for reaching members of racial minorities and others who might eschew traditional behavioral health channels. Coordinated transition into treatment and systematized efforts aimed at treatment engagement, early follow-up, and self-management goal-setting may improve treatment outcomes. More study will be necessary to assess the generalizability and feasibility of this model to improve depression care in college health settings.

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NOTE

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