

Leveraging Remote Behavioral Health Interventions to Improve Medical Outcomes and Reduce Costs

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Despite tremendous progress in improving morbidity and mortality in patients with high-risk medical conditions such as cardiovascular disease, healthcare expenditures continue to rise at a dramatic pace.^{1,2} Innovative population health strategies that focus not only on disease but also on sustainable improvements in health and well-being are sorely needed. The anticipated benefits include happier, healthier patients, ultimately leading to lower healthcare costs. Unfortunately, existing strategies to improve health have not adequately focused on addressing the behavioral determinants of health, which when adequately treated, may lead to tangible optimization of medical health and reductions in medical utilization.

For many individuals with medical conditions such as cardiovascular disease, concomitant behavioral health issues—such as depression, stress, and anxiety—are common, and pose substantial challenges to recovery from medical illness.³ Even in those individuals who do not meet the clinical criteria for behavioral health concerns, inadequate resiliency to cope with the challenges posed in the face of a medical or life event can significantly impact health. In patients with a recent cardiovascular event (eg, myocardial infarction [MI], coronary artery bypass surgery, or congestive heart failure), major depression is known to affect as many as 1 in 4 individuals and can lead to adverse cardiac outcomes, greater all-cause mortality, and significantly greater healthcare utilization.⁴⁻¹¹ Addressing these behavioral health issues and helping patients to develop the life skills needed to overcome barriers to self-care and self-management are necessary prerequisites to improving medical health and lowering healthcare costs.

Aetna, a national health benefits company, enhanced its care management programs in 2011 by collaborating with AbilTo, a network of behavioral health providers, to provide structured, condition-specific behavioral health programs to its members identified with specific medical

ABSTRACT

Objective

The dramatic rise in healthcare expenditures calls for innovative and scalable strategies to achieve measurable, near-term improvements in health. Our objective was to determine whether a remotely delivered behavioral health intervention could improve medical health, reduce hospital admissions, and lower cost of care for individuals with a recent cardiovascular event.

Study Design

This retrospective observational cohort study included members of a commercial health plan referred to participate in AbilTo's Cardiac Health Program. AbilTo is a national provider of telehealth, behavioral change programs for high risk medical populations.

Methods

The program is an 8-week behavioral health intervention delivered by a licensed clinical social worker and a behavioral coach via phone or secure video.

Results

Among the 201 intervention and 180 comparison subjects, the study found that program participants had significantly fewer all-cause hospital admissions in 6 months (293 per 1000 persons/year vs 493 per 1000 persons/year in the comparison group) resulting in an adjusted percent reduction of 31% ($P = .03$), and significantly fewer total hospital days (1455 days per 1000 persons/year vs 3933 per 1000 persons/year) with an adjusted percent decline of 48% ($P = .01$). This resulted in an overall savings in the cost of care even after accounting for total program costs.

Conclusions

Successful patient engagement in a national, remotely delivered behavioral health intervention can reduce medical utilization in a targeted cardiac population. A restored focus on tackling barriers to behavior change in order to improve medical health is an effective, achievable population health strategy for reducing health costs in the United States.

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conditions. We hypothesized that an intervention that successfully engages patients to address the behavioral health issues that commonly accompany high-risk medical conditions, such as cardiovascular disease, would lead to improved health resource utilization and lower healthcare costs. Accordingly, we conducted a retrospective study to assess the impact of AbilTo's Cardiac Health program, a remotely delivered behavioral health intervention, on all-cause hospital readmissions and total hospital days during the 6-month follow-up period in a commercially insured population of individuals with cardiovascular disease.

METHODS

Study Design

A retrospective, observational study design was used to compare individuals who had completed at least 7 weeks of the 8-week AbilTo program with those who had completed the initial assessment and 2 or fewer weeks of the program. Individuals with partial program completion (ending anytime between week 3 and week 6) were not included in this analysis.

Study Groups

Commercially insured patients were included in the study if they met the following inclusion criteria: 1) referral from Aetna to AbilTo's Cardiac Health Program based on evidence of a recent cardiovascular event; 2) completion of an initial consultation with an AbilTo therapist; and 3) availability of continuous enrollment with Aetna 6 months prior to and 6 months post AbilTo program intake. This approach was selected so that baseline behavioral health symptom scores were available for all individuals, as these symptoms can independently affect the utilization and cost outcome measures. All participants had Aetna as their primary healthcare benefits provider. Cardiovascular events were defined on the basis of hospitalization or outpatient claims submitted with a principal diagnosis code from the *International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM)* for myocardial infarction (410.xx), intermediate coronary syndrome (411.xx), or cardiac dysrhythmia (427.xx), or with a principal procedural code from Current Procedural Terminology-10 (CPT-10) for coronary artery bypass surgery, valve surgery, coronary stenting, or angioplasty.

Participants

Between September 2011 and May 2013, 552 participants were referred to AbilTo's Cardiac Health program

and completed an initial consultation. Of these, 251 individuals completed 7 weeks or more, 241 completed 2 weeks or less of the program, and 60 participants were excluded on the basis of partial program completion (completing between 3 and 6 weeks). After applying the requirement for 6 months pre-intake and 6 months post intake eligibility for Aetna medical benefits, there were 201 individuals remaining in the intervention group and 180 individuals in the comparison group.

Intervention

AbilTo's programs are based on widely accepted behavior change tools, including cognitive behavioral therapy (CBT), acceptance and commitment therapy (ACT), mindfulness, motivational interviewing, and other related, evidence-based best practice approaches. All protocols are crafted by AbilTo's clinical team in collaboration with an advisory group consisting of psychiatrists, psychologists, and other medical professionals. All programs are delivered remotely by telephone or secure video, and the care is administered by a specially trained provider team consisting of a behavioral health provider (a licensed clinical social worker [LCSW] or equivalent) and a behavioral coach. All providers receive Association of Social Work Board–certified training administered specifically by AbilTo in order to ensure delivery of AbilTo's best practices treatment protocols.

The programs are all 8 weeks in duration and consist of 16 sessions in total. Program participants undergo a one-time clinical intake session ("initial consultation") with an LCSW followed by separate weekly one-on-one sessions with both an LCSW and a behavioral coach for a total of 8 weeks. Providers participate in case conferences under the guidance of an LCSW clinical supervisor during the course of each program to review the participant's progress. The clinical supervisor also reviews all case notes on a weekly basis to ensure high quality and adherence to the treatment protocols. A proprietary content management system ensures consistent delivery of program content and provides a secure platform in compliance with the Health Insurance Portability and Accountability Act (HIPAA) to allow sharing of clinical notes among the LCSW, behavioral coach, and clinical supervisor.

Primary Outcome Measures

The primary outcome measures were all-cause hospital admissions and total hospital days in the 6-month period from the date of initial consultation. Additional outcome measures included: total emergency department

(ED) visits; outpatient visits, including behavioral health (BH) visits; and cardiac-specific hospital readmissions and hospital days. Outcome measures were derived from Aetna medical claims data that included facility and professional services. Claims for AbilTo sessions were adjudicated as behavioral health visits by the participants' health plan, and were included in the overall BH outcome metric.

Secondary Outcome Measures

Severity of depression, anxiety, and stress were evaluated using the Depression Anxiety Stress Scale 21 (DASS-21), a scale to measure these behavioral health dimensions that has been widely validated in multiple clinical populations.¹²⁻¹⁴ The DASS-21 was administered by an LCSW at baseline (for both groups) and at program completion (intervention group only). Baseline demographics and presence of clinical conditions were collected from Aetna's administrative databases. Scores representing each participant's risk of future healthcare usage were calculated using Ingenix Episode Risk Group software.¹⁵

Statistical Methods

The descriptive analyses of baseline differences used *t* tests for continuous variables and χ^2 tests for categorical variables. Multivariable logistic regression was used to test the odds of binary outcomes—such as likelihood of an inpatient admission or ED visit—controlling for demographic and baseline differences between the groups. Poisson or negative binomial multivariable regression was used to test the differences in count data such as inpatient admissions, ED visits, and office visits between the groups. All analyses were conducted using SAS 9.2 software (SAS Institute Inc, Cary, North Carolina).

RESULTS

Patient Population and Engagement

Participant identification for the AbilTo program intervention was made on the basis of a triggering cardiac event. The participants included in this study were primarily referred by nurses evaluating individuals as part of care management programs led by the health plan. Participants were additionally identified by targeted outreach to at-risk eligible individuals known to have a recent cardiovascular event identified on the basis of relevant ICD-9-CM or CPT-10 codes as described above. Of these, 552 individuals were referred for participation, completed an initial consultation, and were judged

eligible for this analysis. As shown in **Figure 1**, of the 552 individuals referred who completed an initial consultation, 394 (71%) enrolled (ie, completed week 1), and of these 394, 242 (61%) completed the program. To ensure completeness of data for analysis, individuals were required to have been enrolled in the health plan for the 6-month pre and post periods. Therefore, we were left with 201 individuals in the intervention group and 180 individuals in the comparison group for the final study population.

Baseline Characteristics

The baseline characteristics were very well balanced between the 2 study groups (**Table 1**). The average age was 56 years in both groups, and a similar proportion of both groups were male (70% in the intervention group and 67% in the comparison group). Although there were slightly more individuals in the intervention group from the northeast region and fewer from midwest ($P = .04$), the groups were well balanced with respect to the proportion of participants residing in rural, suburban, and urban community settings. The prevalence of baseline comorbid clinical conditions was similar in the 2 groups, including rates of diabetes, hypertension, and hyperlipidemia (**Table 1**). There were no significant differences in average baseline maximal DASS-21 scores for depression, anxiety, and stress (**Table 1**), and more than 60% of participants in each group fell into the normal subclinical depression range on the DASS-21 scale (**Figure 2**). In addition, there was a nonsignificant trend toward more individuals in the comparison group (43.3%) falling in the normal range on all 3 dimensions of the DASS-21 scale compared with the intervention group (32.2%). There was no significant difference in the prospective risk scores between the 2 groups (6.39 ± 5.2 in the intervention group vs 6.85 ± 6.2 in the control group; $P = .43$), and baseline medical utilization (in the 6-month period prior to clinical intake) showed no significant differences between the 2 groups with similar rates of pre-period total medical expenditures, total inpatient expenditures, inpatient admissions, cardiac-specific inpatient admissions, ED visits, and total outpatient services (**Table 2**). The only difference noted was higher utilization of outpatient behavioral health services in the comparison group at baseline (1544 per 1000 persons per year vs 842 per 1000 persons per year in the intervention group; $P < .0001$).

Outcomes

Individuals in the AbilTo intervention group had significant reductions in the severity of all components

of the DASS-21 score, including depression, anxiety, and stress (Figure 3). During the 6-month follow-up period, the intervention group had 38% fewer total hospital admissions (386 admissions per 1000 persons per year vs 622 per 1000 persons per year in the comparison group) (Table 3). After multivariable adjustment for demographic variables, baseline risk score, and baseline depression score, as well as pre-period medical utilization, the intervention group had a statistically significantly 31% fewer hospital admissions ($P = .03$) during the 6-month follow-up period (Figure 4). Interestingly, a similar proportion of individuals in each group were hospitalized during the 6-month period (15% in the intervention group vs 21% in the comparison group; $P = .19$). However, there was a trend ($P = .16$) toward more individuals in the comparison group with multiple (2 or more) admissions (7.2%) compared with fewer multiple admissions in the intervention group (3.5%).

Individuals in the AbilTo intervention group had 63% fewer total inpatient hospital days in the 6-month follow-up period (1455 days per 1000 persons per year in the intervention group compared with 3933 days per 1000 persons per year in the comparison group). These data were statistically significant with an adjusted reduction of 48% ($P = .01$) even after accounting for demographics, baseline risk, baseline depression scores, and pre-period medical utilization.

There was no significant difference in utilization of ED services in the 2 groups, although there was a trend toward fewer ED visits in the intervention group (505 per 1000 persons per year vs 689 per 1000 persons per year in the comparison group; adjusted $P = .40$). The intervention group had significantly more behavioral health visits—almost entirely accounted for by participation in the AbilTo program itself (19,713 visits per 1000 persons per year vs 2822 per 1000 persons per year in the comparison group; adjusted $P < .0001$). Excluding behavioral health visits, there were no differences in utilization of all outpatient services (34,634 visits per 1000 persons per year vs 31,167 per 1000 persons per year; adjusted $P = .19$), nor were there any differences in cardiac-specific outpatient visits ($P = .33$).

Healthcare Expenditures

To determine the potential cost savings derived from program participation, we calculated the potential cost savings attributable to the significant reduction in total days in the hospital. To estimate the potential savings, we first determined the average total cost of an inpatient hospital day (including facility, professional, and ancil-

lary charges) for the comparison group in the 6-month follow-up period using claims data for this population. Individuals in the comparison group averaged 1.88 inpatient hospital days in the 6-month follow-up period, and the average cost was \$4500 per hospital day. Using the adjusted percent difference in total inpatient hospital days of 48% between the comparison group and the AbilTo intervention group, each individual completing the AbilTo program would be expected to avoid an average of 0.95 inpatient hospital days. Thus, the 202 individuals in the intervention group were estimated to have saved 191.9 hospital days. Applying the average cost per hospital day of \$4500, we estimated that the individuals who fully participated in the AbilTo program saved \$864,000 in the 6-month follow-up period. Comparing this cost saving with the estimated total program cost demonstrated an overall cost savings as early as 6 months.

DISCUSSION

We demonstrated that an 8-week remotely delivered behavioral change intervention was associated with cost savings, driven by an adjusted 48% reduction in total inpatient days and a 31% reduction in all-cause hospital admissions in the 6-month follow-up period. These substantial reductions in healthcare utilization and associated cost savings were attributable to the delivery of a high-quality behavioral health program for this high-risk group of patients with cardiovascular disease. This study shows that focused targeting of patients with high-risk clinical conditions, coupled with highly successful engagement strategies, can lead not only to meaningful behavioral health improvements, but also to improved medical outcomes and lower healthcare expenditures.

It has been long recognized that behavioral health issues can be both a cause and a consequence of medical disease.¹⁶ In individuals with cardiovascular disease, comorbid behavioral health concerns are common—affecting up to 25% of patients^{11,17}—and result in poorer adherence to medications and lifestyle recommendations as well as worse overall clinical outcomes, including increased hospital readmissions and higher mortality.^{4,8,18-20} Taken together, inadequate management of behavioral health issues can lead to unnecessarily greater medical utilization and as much as a doubling in the cost of care.²¹

It stands to reason that a program that successfully influences behavioral health could have a profound impact on overall health, medical utilization, and total health expenditures. However, prior studies to assess the effect of

behavioral health interventions in cardiovascular disease have met with mixed results. For example, the Enhancing Recovery in Coronary Heart Disease (ENRICH) trial investigated the effects of CBT, with or without pharmacologic intervention, on post MI patients with depression, and found no difference in the primary end point of event-free survival at an average follow-up of 29 months.²² On the other hand, a follow-up evaluation of the ENRICH study data showed that the intervention led to reduced late-term mortality with the benefits corresponding to the degree of improvement in depression.²³ Other studies using a purely pharmacologic intervention for depression have not shown an impact on cardiovascular outcomes or mortality.²⁴⁻²⁶ A few recent studies have employed a remote or Internet-based approach to reach patients with cardiovascular disease and have demonstrated improvements in depression, adherence, and quality of life.²⁷⁻²⁹

Our study and our intervention differ from the existing literature in several important ways. First, we did not design our intervention to focus only on improvements in behavioral health or cardiac outcomes. Instead, our goal was to demonstrate that successful targeting and engagement of high-risk cardiac patients in a behavioral health intervention would impact 2 specific outcomes: 1) medical utilization, and 2) healthcare expenditures. The impact of treating behavioral health on these critical components of the healthcare continuum has not previously been well studied in cardiovascular disease.

Second, our intervention differs from usual behavioral healthcare or pharmacotherapy in several unique ways that promote greater engagement, and ultimately more successful outcomes. The studied intervention features a collaborative care model utilizing the expertise of a licensed clinical social worker and a behavioral coach. These providers work in partnership with one another in the care of each individual patient and also receive clinical oversight by a LCSW supervisor. Moreover, the protocolized nature of the intervention using “best practices” ensures high quality and consistent program content delivery across the United States.

Finally, acknowledging that engagement itself may be a barrier to care for patients with comorbid medical and behavioral health conditions, the program uses remote care delivery by phone or video to simplify engagement and maximize participation. The success of this approach is highlighted by a high completion rate (61%) among those who enroll in the program after initial clinical intake. The importance of ease of engagement is highlighted by recent studies demonstrating the value of home-based or phone-based support in improving

quality of life in patients with cardiac disease.²⁷⁻³⁰ It has become increasingly clear that outcomes can be best optimized when utilizing a strategy that combines both successful engagement and high-quality care programs that focus on meaningful behavior change skills.

While prior studies have solely focused on individuals with depression and cardiovascular disease, our study is unique in that more than 60% of individuals in both the intervention and comparison groups had scores on the depression dimension of the DASS-21 scale below the clinical threshold for depression, and between 30% to 40% had normal scores in all 3 dimensions of the scale. This underscores the fact that even individuals who do not meet the formal criteria for clinical depression may benefit from a behavioral health intervention focused on addressing and overcoming barriers to change. As described above, this intervention utilizes a combination of evidence-based, rigorously evaluated approaches, including CBT, ACT, motivational interviewing, and mindfulness, among others. These approaches have significant benefit not only for individuals with clinical depression, but also for individuals with stress, anxiety/panic, and medical health conditions, as is the case in this cardiac population, or a variety of other situations where therapy and coaching can help build the life skills needed for better self-care and improved overall health.

By targeting individuals at a moment when they may be particularly receptive to change (ie, after a recent medical event), by focusing on achieving successful patient engagement, and by ensuring high-quality and consistent program delivery, our intervention was able to reduce all-cause hospital admissions and total days spent in the hospital, and produce a corresponding significant cost savings. The actual healthcare savings that accrue from our behavioral health intervention delivers on the promise that by virtue of improved well-being, high-quality behavioral healthcare can indeed lead to measurable improvements in medical health and lower healthcare costs. These results serve as a reminder that helping patients to overcome their barriers to change can improve overall health and well-being and reduce the cost of care simultaneously.

Limitations

There are several limitations to this study that should be considered. The study was designed as a retrospective observational study, and as such we cannot exclude the possibility of participation bias. However, the comparison population had completed the initial intake consultation and was remarkably similar to the intervention group with respect to almost all baseline measurements:

demographics; comorbid clinical conditions; baseline medical utilizations and medical expenditures; and baseline depression, stress, and anxiety scores. One significant difference noted in the baseline characteristics was a differential in utilization of outpatient behavioral health services in the 6-month period prior to intervention. We theorize that this difference might have been one of the reasons why individuals in the comparison group chose not to participate in the AbilTo intervention. However, it is important to consider the impact that this difference might have had on utilization in the follow-up period. Given that baseline utilization of behavioral health services in many medical conditions is recognized to result in greater medical utilization, we accounted for these differences in several ways in our analysis.

First, all regression analyses were adjusted for this baseline utilization data. Second, analyses also adjusted for a prospective risk score—a measure to predict current and future healthcare usage¹⁵—and this score was no different at baseline between the 2 groups. Moreover, the absolute rate of pre-period utilization (1544 per 1000 members per year) was small compared with the utilization in the post period (19,713 per 1000 members per year), which was largely accounted for by AbilTo program participation. As such, while there were statistical differences, the absolute rates may not have been large enough to have a clinically meaningful impact on outcomes. Even after adjusting for these differences, our analysis shows significant reductions in hospital admissions and total days in the hospital, even after full multivariable adjustment for many potentially confounding factors.

In addition, though the sample size allowed adequate power to see significant reductions in the primary end point, the small sample size may have limited the ability to detect differences in secondary end points. Finally, the study included only individuals with primary commercial insurance and did not include individuals with Medicaid or Medicare, or the dual-eligible population. While we anticipate that similar benefits would accrue in these populations, the study does not allow us to generalize to this wider population.

CONCLUSIONS

These data demonstrate that a high-quality, short-duration, remotely delivered population health strategy utilizing a behavioral health intervention can lead to demonstrable benefits in behavioral health, medical health outcomes, and overall cost of care. A scalable intervention of this nature has the potential to reach a wide

population of individuals in need. Successful patient engagement and the meaningful behavior change that results are necessary prerequisites to improving medical health and reducing the burgeoning costs of healthcare in the United States.

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AbilTo and Aetna were both directly involved in the design and conduct of the study, as well as in collection, analysis, and interpretation of the data. All authors contributed to study concept and design.

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Take-Away Points

- Inadequately addressed behavioral health issues commonly accompany medical conditions and account for worse medical outcomes and greater healthcare utilization.
- This study demonstrates that a remotely delivered behavioral health intervention targeted to individuals with high-risk medical conditions can indeed reduce medical resource utilization and lower healthcare costs within 6 months.
- This study confirms that a collaborative strategy to bridge the gaps between behavioral health and medical health serves as an effective and achievable population health strategy to improve quality and lower cost of care.

■ **Table 1.** Baseline Characteristics of the Study Populations

	Comparison	Intervention	P
Total population (n)	180	201	
Demographic characteristics			
Age in years, mean ± SD	56.6 ± 6.8	56.3 ± 7.3	.68
Male gender (%)	67%	70%	.45
Employee (vs spouse); (%)	72%	67%	.36
Region			.048
Northeast (%)	38%	48%	
Midwest (%)	18%	9%	
Southeast (%)	23%	20%	
West (%)	21%	23%	
Community designation			.88
Urban	31%	30%	
Suburban	33%	35%	
Rural	36%	35%	
Baseline medical conditions			
Ischemic heart disease	82.2%	84.7%	.52
Heart failure	32.8%	31.2%	.74
Diabetes	30.6%	35.6%	.29
Hyperlipidemia	82.2%	87.6%	.14
Hypertension	71.7%	77.7%	.17
Obesity	13.3%	14.4%	.77
Cerebrovascular disease	6.7%	13.4%	.03
Peripheral artery disease	9.4%	12.4%	.36
Atrial fibrillation	20.6%	14.9%	.14
Ventricular arrhythmia	14.4%	9.4%	.13
COPD	9.4%	7.9%	.60
Chronic renal failure	8.3%	7.9%	.88
Anxiety	8.3%	6.4%	.48
Depression	16.7%	13.4%	.37
Low back pain	18.9%	15.3%	.36

COPD indicates chronic obstructive pulmonary disease.

■ **Table 2.** Baseline Medical Resource Utilization (in the preceding 6-month period)

	Comparison	Intervention	P
Total inpatient admissions, n (%)	156 (86.7%)	178 (88.1%)	.67
Emergency department visits, n (%)	62 (34.4%)	56 (27.7%)	.16
Inpatient utilization (n per 1000 persons/year)			
All-cause hospital admissions	2444	2406	.81
All-cause hospital days	11,578	10,277	.30
Cardiac-specific admissions	1578	1634	.67
Cardiac-specific hospital days	7367	7198	.85
Emergency department utilization (n per 1000 persons/year)	922	762	.29
Outpatient utilization (n per 1000 persons/year)			
Total outpatient visits	21,956	20,851	.55
Behavioral health-specific outpatient visits	1544	842	<.0001

■ **Table 3.** Medical Resource Utilization in the 6-Month Follow-up Period

	Unadjusted			Adjusted ^a			P ^a
	Comparison	Intervention	% Difference	Comparison	Intervention	% Difference	
Inpatient utilization (n per 1000 persons/year)							
All-cause hospital admissions	622	386	-38%	434	293	-31%	.03
All-cause hospital days	3933	1455	-63%	1528	802	-48%	.01
Cardiac-specific admissions	144	109	-24%	91	65	-28%	.17
Emergency department utilization (n per 1000 persons/year)							
	689	505	-26%	468	394	-15%	.40
Outpatient utilization (n per 1000 persons/year)							
Total outpatient visits (excluding behavioral health)	31,167	34,634	+11%	29,918	33,959	+13.5%	.19
Cardiac-specific outpatient visits	4400	4347	-1.2%	3811	4207	+10%	.33
Behavioral health-specific outpatient visits	2822	19,515	+592%	2591	19,713	+660%	<.0001

^aAfter multivariable adjustment for age, gender, prospective Episode Risk Group score at baseline, employee versus spouse, depression risk score at baseline, Health maintenance organization versus preferred provider organization, 6-month pre-period medical utilization, and geographic designation (rural, urban, suburban).

■ **Figure 1.** Program Participation Waterfall Diagram

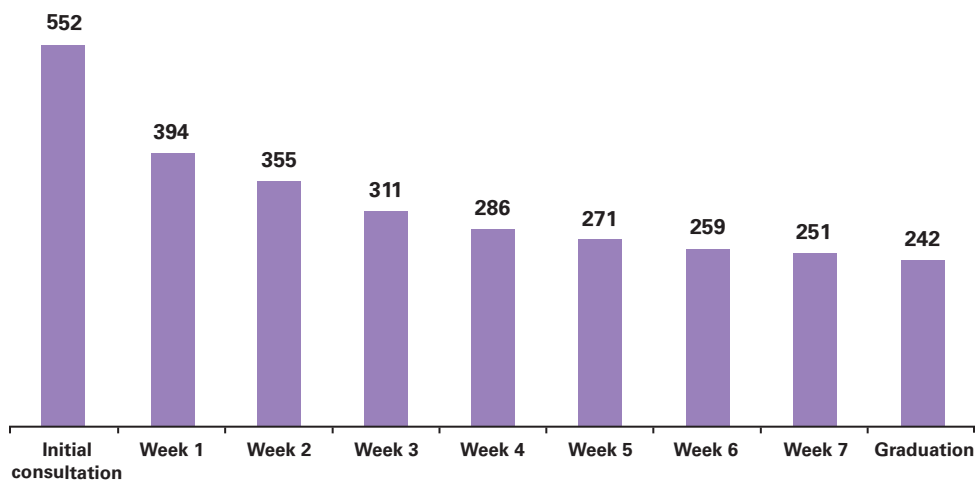
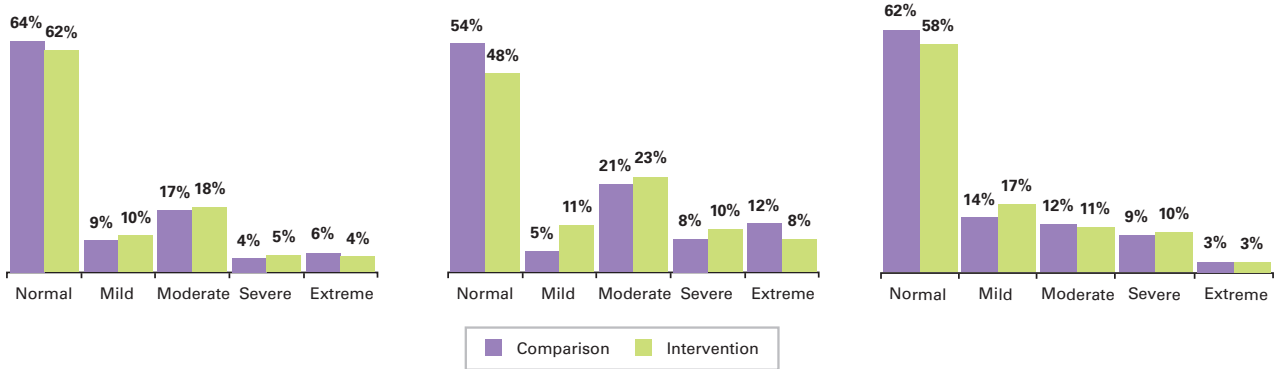
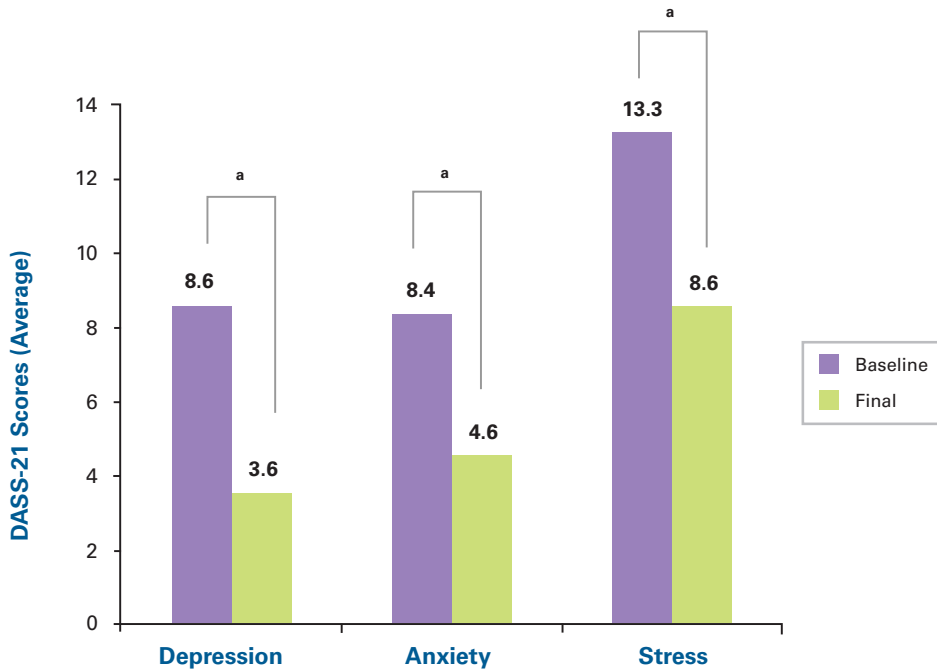


Figure 2. Baseline Depression, Anxiety, and Stress Scores (DASS-21)



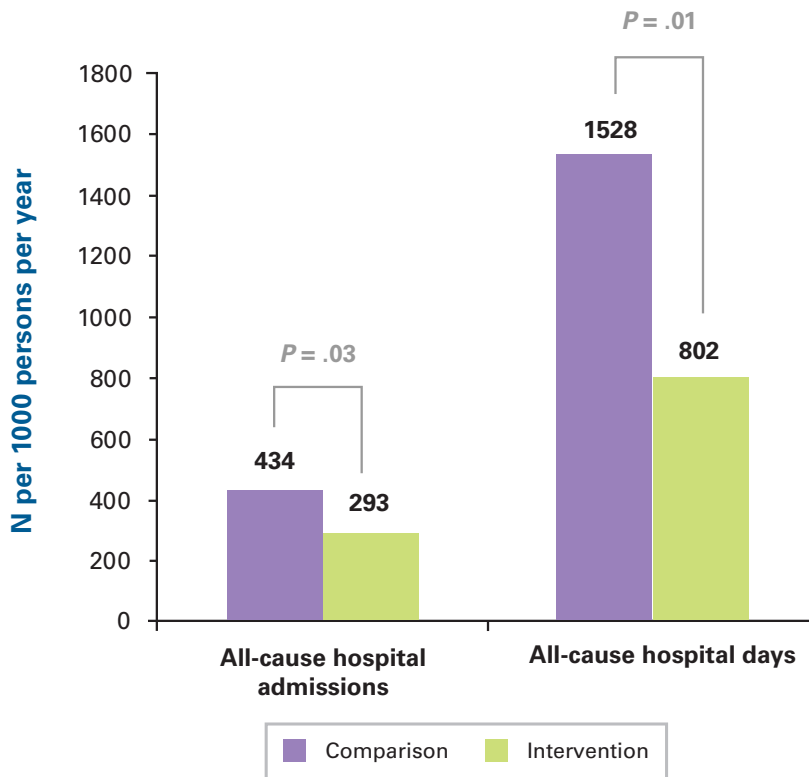
P is not significant for all comparisons.

Figure 3. Improvements in Behavioral Health Scores (DASS-21) in the Intervention Group During the Follow-up Period



^a*P* < .0001.

■ **Figure 4.** Regression-Adjusted Differences in Annualized Inpatient Utilization in the 6-Month Follow-up Period



Analyses are adjusted for age, gender, prospective Episode Risk Group score at baseline, employee versus spouse, depression risk score at baseline, health maintenance organization versus preferred provider organization, 6-month pre-period medical utilization, and geographic designation (rural, urban, suburban).