

## Psychiatry and Primary Care

Recent epidemiologic studies have found that most patients with mental illness are seen exclusively in primary care medicine. These patients often present with medically unexplained somatic symptoms and utilize at least twice as many health care visits as controls. There has been an exponential growth in studies in this interface between primary care and psychiatry in the last 10 years. This special section, edited by **Jürgen Unutzer, M.D.**, will publish informative research articles that address primary care-psychiatric issues.

# Design of the Coordinated Anxiety Learning and Management (CALM) study: innovations in collaborative care for anxiety disorders

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## Abstract

**Background:** Despite a marked increase in the number of persons seeking help for anxiety disorders, the care provided may not be evidence based, especially when delivered by nonspecialists. Since anxiety disorders are most often treated in primary care, quality improvement interventions, such as the Coordinated Anxiety Learning and Management (CALM) intervention, are needed in primary care.

**Research Design:** This study is a randomized controlled trial of a collaborative care effectiveness intervention for anxiety disorders.

**Subjects:** Approximately 1040 adult primary care patients with at least one of four anxiety disorders (generalized anxiety disorder, panic disorder, posttraumatic stress disorder or social anxiety disorder) will be recruited from four national sites.

**Intervention:** Anxiety clinical specialists (ACSs) deliver education and behavioral activation to intervention patients and monitor their symptoms. Intervention patients choose cognitive-behavioral therapy, antianxiety medications or both in “stepped-care” treatment, which varies according to clinical needs. Control patients receive usual care from their primary care clinician. The innovations of CALM include the following: flexibility to treat any one of the four anxiety disorders, co-occurring depression, alcohol abuse or both; use of on-site clinicians to conduct initial assessments; and computer-assisted psychotherapy delivery.

**Evaluation:** Anxiety symptoms, functioning, satisfaction with care and health care utilization are assessed at 6-month intervals for 18 months.

**Conclusion:** CALM was designed for clinical effectiveness and easy dissemination in a variety of primary care settings.

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**Keywords:** Anxiety disorders; Primary care; Interventions; Collaborative care; Cognitive-behavioral therapy

## 1. Introduction

About 11% of the US population will suffer from an anxiety disorder each year, and almost 29% will experience an anxiety disorder at some point in their lives [1]. Despite

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a marked increase in the proportion of individuals seeking help for anxiety disorders in the last 10 years [2], their care may not be evidence based, especially when provided by nonspecialists [3]. Since persons with anxiety disorders are most often treated in primary care settings, quality improvement interventions within those settings are needed.

One approach to improving mental health care in primary care settings is the “collaborative care” model [4–7], which is closely patterned on the “chronic disease model” [8]. Various forms of the collaborative care model have been tested, but some features are common to all [9–12]. Patients typically remain under the care of their primary care provider, who is assisted by a care manager, usually a master’s-level clinician (e.g., nurse, social worker), working in consultation with a psychiatrist. In addition to expert consultation and care managers, collaborative care interventions contain other components that are useful in chronic disease management, including techniques to help patients manage their condition (patient education, psychotherapy, motivational enhancement and approaches to identifying and reducing treatment barriers) and ongoing clinical monitoring of outcomes. Collaborative care interventions are “bundles” of practices that contribute to overall care delivery. These interventions have recently become more flexible by allowing patients a choice of treatments [13].

Most studies on collaborative care have been designed to assist primary care physicians in treating depression [11–14]. Our previous work *Collaborative Care for Anxiety and Panic* is one example of a collaborative care intervention for panic disorder (PD) [15]. Similar work has tested collaborative care models for the treatment of PD [16] and of both PD and generalized anxiety disorder (GAD) in primary care [17]. Collaborative care models are beginning to be used to improve the treatment of substance use disorders in primary care [18] and for the management of depression within specialty medical clinics, such as HIV clinics (J.S. Pyne, personal communication).

Many collaborative care models have been shown to be both clinically effective and cost-effective, yet these models are not yet widely used and are rarely sustained beyond the period of external research funding [4–7,9,19,20], although this now may be changing [21]. Because of the many barriers to funding for and the implementation of collaborative care, making these interventions as “user-friendly” as possible is key to their successful dissemination [22].

This paper describes the design and rationale of the Coordinated Anxiety Learning and Management (CALM) study, the largest randomized trial of collaborative care for anxiety disorders to date. CALM contains a number of innovations, including the following: (a) treating any one of four anxiety disorders [PD, GAD, posttraumatic stress disorder (PTSD) and social anxiety disorder (SAD)] in a single intervention; (b) accommodating multiple comorbidities, including depression, alcohol abuse and chronic

medical conditions; (c) emphasizing cognitive–behavioral therapy (CBT) and providing innovative CBT training and delivery; and (d) using clinicians rather than research personnel to perform assessments. In addition, CALM incorporates newer more flexible features initially used in the Improving Mood: Promoting Access to Collaborative Treatment for Late-Life Depression (IMPACT) study [9], including patient choice, “stepped care” (rather than a rigid treatment protocol) and real-time clinical monitoring through a structured Web site that is accessible to all key study personnel.

Based, in part, on feedback from primary care providers who wanted an optimally “user-friendly” collaborative care model, the CALM intervention was developed to maximize ease of dissemination [23] in a variety of primary care settings lacking on site mental health expertise.

## 2. Methods

### 2.1. Study sample

Patients are recruited and treated at four sites: Seattle, Los Angeles, San Diego and Little Rock. Centralized data collection (telephone baseline and follow-up assessments) by the RAND Survey Research Group offers both efficiency and uniformity, as data are collected across all sites by the same set of interviewers who are blind to the patients’ status. Each of the four treatment sites will recruit 260 subjects from a variety of primary care clinics. The institutional Review Boards at all five institutions approved the protocol.

### 2.2. Study design

CALM is a prospective, longitudinal, randomized, controlled trial of a collaborative care intervention that can provide treatment for any of the four anxiety disorders (PD, GAD, PTSD and SAD), whose treatments are similar. Each can be treated with the same first-line medications, selective serotonin reuptake inhibitors (SSRIs), typically at similar dosages. Likewise, CBT techniques such as psychoeducation, breathing retraining, cognitive restructuring and exposure are similar in structure and format across these disorders, with precise treatment tailored to the specifics of each anxiety disorder. The application of these cognitive and behavioral approaches differs across these four disorders primarily due to variations in cues that provoke anxiety [24–27]. Obsessive–compulsive disorder was not included because its recommended treatment regimen, especially pharmacological regimen, is considerably more complex [28].

The comparison condition to CALM is usual care (UC) treatment conducted under naturalistic conditions. UC is whatever treatment the provider would use in everyday practice. This typically entails primary care physician pharmacotherapy for the majority of patients and referral to outpatient mental health specialists for a smaller proportion. No restrictions were placed on providers’ UC practices. They use whatever treatment modalities they prefer or refer

patients as deemed appropriate. Providers are informed of the research diagnosis regardless of patient assignment to CALM intervention or UC. Provision of diagnostic information has not improved outcome appreciably in the UC arm of previous collaborative care studies [4–6,15].

2.3. Clinics

Each of the four sites selected clinics in their geographic area. Candidate clinics were evaluated and purposively selected based on a number of considerations, including provider interest, space availability, size and diversity of the patient population, and insurance mix. We attempted to maximize including patients from a variety of racial/ethnic groups and income levels and with a variety of insurance sources (public and private), and to include a variety of types of primary care clinics. For example, one clinic (in San Diego) was chosen because it serves primarily Spanish-speaking patients. Varied provider models across clinics meant that CALM negotiated varying agreements with each site to reimburse them for office space and, in some cases, for additional administrative overhead costs. Together, these clinics serve >350,000 individuals each year, with >780,000 visits (Table 1). Seven of 12 clinics routinely have some form of in-house mental health services on-site, primarily consultative. At each site, a clinician “champion” serves as liaison to the CALM study.

2.4. Anxiety clinical specialists (ACSs)

ACSs conduct initial assessments of referred patients and manage and deliver treatment (with the support of the primary care provider) to those patients randomized to the CALM intervention. We sought individuals with patient care experience (not necessarily in mental health) and some exposure to the primary care setting. To more closely approximate conditions faced by most primary care clinics, we did not seek individuals with expertise in anxiety management or CBT. Table 2 shows the characteristics of ACSs. Ranging in age from 25 to 59 years, most study ACSs are women with master’s degrees in social work or nursing. Eight of 14 had experience with mental health; half had previous experience with medication management; and 4 of 14 had some exposure to CBT. Most ACSs were selected by study personnel and employed by the study site academic institution, but some were selected and employed by the health care provider organization operating the clinic.

ACSs conduct initial assessments, a departure from other collaborative care studies that used research personnel to gather this information. This approach was chosen to facilitate potential dissemination outside a research setting. ACSs also provide education about anxiety, prepare patients to make treatment choices, address barriers to treatment, assist the prescribing physician with medication management and deliver computer-assisted CBT. Once

Table 1  
Clinic and patient characteristics

	Clinics											
	1	2	3	4	5	6	7	8	9	10	11	12
Clinic characteristics												
Community based												
Health maintenance organization									X			
Independent	X	X			X	X	X			X	X	
University based			X	X				X				X
Population served												
Rural (%)	0	0	0	0	12	2	6	0	0	30	60	50
Patients (n)	12,385	7399	6405	8000	75,381	49,915	27,000	26,000	78,450	40,000	20,000	4483
Visits (n)	49,981	21,762	20,321	30,000	97,987	86,937	60,000	59,294	195,000	96,000	55,000	8827
Reimbursement (%)												
Uninsured	59	43	40	4	0	0	5	0	19	15	15	2
Medicare/Medicaid	29	45	50	53	20	20	17	25	0	14	54	33
Patient characteristics (%)												
Female	58	61	41	51	51	51	50	51	51	60	55	62
Age ≥18 years	83	63	100	100	77	80	91	88	69	91	100	99
Ethnicity												
Caucasian	48	47	45	80	70	55	52	60	38	65	78	75
African American	22	6	35	7	2	8	8	10	9	30	21	17
Hispanic	21	31	6	2	24	30	10	20	38	3	0.3	<1
Asian	3	3	13	9	2	4	16	5	12	1	0.3	2
Other	6	13	1	2	2	3	14	5	3	1	0.4	5
Provider characteristics												
In-house mental health services	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No	Yes	No	No
Family practice physicians (%)	14	13	65	77	7	21	17	22 <sup>a</sup>	35	13	10	10
Primary care physicians (n)	8.4	6.9	10.9	13	7	14	15	14	35	15	5	3.3
Physician FTEs (n)	93	46	0	0	71	33	76	100	71	11	0	100

FTEs, full time equivalents.

<sup>a</sup> An additional 21 residents rotate through 0.5–1.5 days/week for 3 years.

Table 2  
ACS characteristics

Characteristics	ACSs													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Full-time equivalent (%)	50	50	50	50	50	50	50	60	80	40	20	60	100	100
Male					X		X				X			
Female	X	X	X	X		X		X	X	X			X	X
Age	37	52	38	58	39	49	59	27	49	42	25	42	59	29
Ethnicity														
Caucasian	X	X	X	X	X	X	X			X	X	X		X
Indian/Caucasian								X						
Hispanic									X					
Native American/Caucasian													X	
Education/degree														
Associate's					X	X								
Bachelor's											X			
Master's	X	X	X	X				X	X	X		X	X	X
Advanced										X				
Discipline														
Nursing		X			X	X	X		X					
Social work	X		X	X								X	X	X
Psychology								X		X	X			
Years of prior clinical experience	10	21	12	13	20	6	30	2	24	17	0	6	8	4
Prior mental health experience	Yes	No	No	No	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Prior CBT experience	No	No	No	No	No	No	Yes	Yes	No	Yes	No	Yes	No	No
Previous psychopharmacology training/experience with medication management	No	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	No	No

trained, ACSs are supervised by study clinicians (psychiatrists and Ph.D. psychologists) in weekly sessions within site and in monthly cross-site supervision conference calls. In addition, local psychiatrists and psychologists participate in a monthly conference call (without ACSs) to address medication recommendations and the supervision of CBT across sites.

### 2.5. Subject referral and recruitment

Our “facilitated referral” approach uses multiple strategies to recruit subjects. Primary care providers and clinic nursing staff directly refer potential subjects, and we actively publicize the study within each clinic. We sponsor provider lunches where we describe the study and emphasize the benefits for patients. A simple five-question screener with study contact information was provided to clinics. These screeners could be posted in waiting rooms or examination rooms, handed to waiting patients or administered directly by the physician. We continue to remind busy clinic personnel and providers about the study by distributing promotional materials (e.g., bookmarks, T-shirts and mugs).

### 2.6. Subject eligibility

An eligible subject must be a patient in one of the participating clinics; be at least 18 years old; meet *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)* criteria for GAD, PD, SAD or PTSD; be willing to participate in CALM; and be able to provide written informed consent. Exclusion criteria are minimal and intended to

exclude persons who would not likely benefit from the intervention or for whom the intervention could be risky. They include serious alcohol or drug use (specifically alcohol or marijuana dependence or any other drug abuse or dependence, including methadone), unstable medical conditions, marked cognitive impairment, active suicidal intent/plan, psychosis or bipolar I disorder. Subjects already receiving ongoing medication management or CBT are excluded. Finally, persons without routine access to a telephone or who could not speak English or Spanish are excluded.

ACSs ascertain eligibility in face-to-face interviews using the Mini International Neuropsychiatric Interview (MINI; Version 5.0) [29] sections on PD, SAD, PTSD, GAD and major depression, and other modules essential for determining ineligibility (Suicidality, Manic/Hypomanic Episode, Alcohol Abuse/Dependence, Drug Abuse/Dependence and Psychotic Disorders). We selected the MINI as the simplest, most clinically relevant and easiest-to-learn interview, anticipating that if this intervention were disseminated widely, eventual “real-world” patient evaluations would likely be conducted by a therapist/case manager who might lack extensive education in mental health and need some form of structured interview. The MINI is the shortest instrument currently available that can diagnose the four anxiety disorders along with relevant comorbidities (such as major depression and substance abuse) and important study exclusions (such as psychosis and bipolar disorder). The MINI takes about 45 min to administer. In addition to meeting criteria for the disorder, patients must score at least 8 (moderate but clinically significant anxiety symptoms on a

scale ranging from 0 to 20) on the Overall Anxiety Severity and Impairment Scale (OASIS) [30]. The Alcohol Use Disorders Identification Test (AUDIT) is used to screen for alcohol dependence, and simple queries about drug use are employed to screen for drug use [31].

### 2.7. Randomization

We considered randomizing clinics rather than randomizing patients. However, this approach would significantly reduce statistical power, and we [15] and others [4,5,9] have successfully utilized randomization of patients without incurring any significant “spillover” effects where primary care physicians treat patients in both intervention and UC arms. RAND performs randomization procedures for eligible patients at all sites using a computerized random number generator. In this way, both the ACS who enrolled the patient and the interviewer who conducted the baseline interview are blind to the assignment. We are using stratified permuted block randomization. Strata are defined by the clinics crossed with depression status, for a total of 32 strata. Within every stratum, we randomize patients using a permuted block design with a fixed block size. The block size is masked to all study members, with the exception of the statistician and the programmer who generate random allocation. Keeping the block size hidden reduces the likelihood of protocol subversions or indirect selection bias. The choice of the stratified permuted block design was dictated by several factors. Primarily, we wanted to ensure the balance of conditions (intervention and UC) within every stratum to give us the flexibility to compare at the clinic or stratum level, if needed.

### 2.8. Intervention design

CALM was modeled after Unutzer’s IMPACT intervention, which utilized a “stepped-care” approach [9]. Initial courses of treatment, either medication or CBT, require approximately 10–12 weeks. Patients meeting criteria for multiple anxiety disorders choose the most disabling or distressing disorder for treatment. (There is substantial evidence from both CBT and psychopharmacology literature that successful treatment of one anxiety disorder generalizes to other anxiety disorders, as well as mood disorders [32].) Treatment continues until the patient shows sufficient improvement either by “stepping up” (increasing) the current treatment or “stepping over” to or adding a different treatment modality [33]. In keeping with recent standards in medication trials and some psychotherapy studies, the aim of treatment is clinical remission, defined as an OASIS score of  $\leq 5$ , indicating mild or no symptoms. While depression is not the focus of treatment, subjects are also rated on a shortened version of the Patient Health Questionnaire-9, the Patient Health Questionnaire-3 [34] (J. Unutzer, personal communication), to monitor progress with frequently comorbid depressive symptoms. Patients are monitored for treatment response, and additional steps of care (pharma-

cotherapy, CBT or a combination of the two) are provided as needed. In addition to brief assessments at each patient contact, ACSs assess patient response formally at 3-month intervals. For patients not showing evidence of significant improvement, the psychiatrist arranges an in-person consultation with the patient and reviews the case with the team. Psychologist consultation is available when CBT needs to be altered or added. Once patients respond, ACSs follow them with monthly telephone calls. If symptoms reemerge within the first 9 months of the study, ACSs can refer the patient back to the next step of care. In some cases, psychiatric assessment could reveal that a patient with symptomatic improvement who had not yet reached remission but was close to achieving it would be unlikely to improve further with the treatments available (e.g., chronic ongoing stress limiting complete recovery; severe childhood abuse requiring a prolonged or more complex treatment course; poor engagement with care). These subjects enter the monthly follow-up phase and can reenter more intensive treatments if their circumstances change. To clarify more complicated or puzzling diagnostic presentations (e.g., the information given by the patient varies from his or her response to MINI questions), study clinicians (psychiatrists or Ph.D. psychologists) discuss these cases by phone or e-mail. All new patients are discussed in weekly supervision. ACSs interact regularly with the primary care physician both face-to-face and via written communication. The primary care physician remains in charge of the patient’s treatment and, as the prescriber of all psychotropic medications, is the principal study psychopharmacologist.

### 2.9. Computer-assisted CBT

CBT, a short-term directive therapy derived from learning theory and the cognitive science of emotion, has been shown to be effective for 60–100% of persons who receive a course of treatment, and attrition rates are generally low (between 10% and 25%) [24–26]. General strategies for CBT treatment (i.e., psychoeducation, self-monitoring, cognitive restructuring, somatic exercises and exposure to fear-related stimuli) do not vary across anxiety disorders but are tailored to specific triggers and manifestations or symptoms of the given disorder being treated. For example, exposure treatment entails exposure to feared situations in PD and to social situations in social anxiety, reminders of trauma in PTSD and behavior modification of overly cautious behaviors in GAD.

Although CBT is a known evidence-based treatment, it has not been disseminated widely, partly because training for clinicians is not available in many areas. One way to enhance dissemination is through computer-assisted programs delivered with a therapist present [35–37]. Computerizing CBT also facilitates the iterative learning of CBT strategies by novice therapists, who do not have to remember all the specific details and sequence of steps.

Since no computer-assisted CBT approach existed for all CALM disorders, we created this *de novo*. CALM's computer-assisted program, used by the ACS and the patient together on a stand-alone computer at the primary care clinic, includes psychoeducational materials and instructions for skills practice and exposure. It demonstrates techniques with patient actors and is interactive, so data may be entered by the ACS and a personalized workbook that includes homework assignments may be created. The ACS directs the patient to appropriate sections of the computerized treatment, assesses patient understanding of the material and assists in applying CBT principles and exercises to the patient's idiosyncratic thoughts and behaviors. The ACS is present at all times and is integrally involved in helping the patient learn the CALM program. The computerized program includes five basic modules (Getting Started, Calm Education, Calm Recording, Calm Breathing and Keep Going) and three other modules (Calm Thinking, Calm Living and Calm Feeling), which are tailored to each anxiety disorder through branching mechanisms. With some variability, patients require about eight 60-min sessions to complete the program. Some data gathered during the course of treatment sessions (e.g., homework adherence) are stored in the personal computer and periodically downloaded for analysis at the conclusion of the CALM study.

#### 2.10. Pharmacotherapy

Based on limited evidence base, an SSRI or a serotonin–norepinephrine reuptake inhibitor (SNRI) is usually selected as initial pharmacotherapeutic agent. The choice is individualized based on the patient's history of use and nonresponse, availability of a generic version, side-effect profile and potential drug interactions. Initial dosing is low, with gradual upward titration to maximally tolerated doses over 4–6 weeks, with the aim of treatment "trial" being a minimum of 10–12 weeks. Only if these agents had been tried and found ineffective in the past would a GABAergic strategy (benzodiazepine or gabapentin) be considered early on. Keeping in mind that there is no evidence base for further adaptive medication strategies, at 12 weeks, the medication would be switched from the initial SSRI to another SSRI, an SNRI or a GABAergic agent. Partial responders might receive a GABAergic agent added to their antidepressant. Additional options for poor responders would include the addition of a second antidepressant (such as mirtazapine) or a tricyclic antidepressant, with an even later option being the addition of an atypical antipsychotic. In all cases, the addition of CBT could substitute for further pharmacotherapy adjustments.

#### 2.11. Training anxiety clinical specialists

ACSs read essential information (*DSM-IV* anxiety disorders and CBT principles) and attended six didactic half-day to full-day workshops addressing CBT in general, CBT in CALM and the tailoring of CBT to each of the four anxiety

disorders. Each workshop ended with a knowledge base quiz. Workshops were interspersed with telephone-administered role plays in which ACSs were given a set of six to eight scenarios for each anxiety disorder that tapped the various aspects of CBT and were asked to role play the delivery of each aspect. We evaluated the effectiveness of ACS training based on their performance with two to six training patients. Sessions were audiotaped, reviewed by CBT supervisors and rated for proficiency (based on adherence and competence). ACSs had to demonstrate moderate or greater proficiency on at least 50% of their training cases.

ACSs also received a 2-h didactic presentation on antianxiety medications and the medication algorithm for CALM. Strategies for explaining the rationale and effects of medications were reviewed, and protocols for monitoring medications (beneficial and adverse effects) were presented. The CALM manual also provides tables of medications and side effects, specific approaches to managing side effects and specific indications for choosing one type of medication over another. The didactic presentation was followed by two proficiency quizzes testing general approaches to managing common medication concerns (nonresponse, side effects) and knowledge of medication effects and side effects. The most important aspect of training, however, is weekly supervision of medication management, during which cases are reviewed and ACSs receive further training on selecting, monitoring and evaluating suitability for the continuation or discontinuation of various medications.

#### 2.12. Web-based tracking system

CALM's Web-based tracking system was developed by Youlim Choi (senior web programmer at the University of Washington) and was a modification of the system created for Unutzer's IMPACT study [9,38]. The Web-based system offers several advantages over traditional paper-based recording systems. It allows for real-time monitoring of recruitment, enrollment, diagnoses, eligibility, patient contact information and continuous symptom assessments, and can be accessed by all key study personnel to monitor the progress of the CALM study. RAND interviewers use the system for contact information, enrollment status, diagnosis and status of assessments.

The Web-based system supports the ACS by providing clinical reminders that facilitate treatment according to the intervention protocol. (It should not be confused with the computerized CBT system ACSs use to deliver intervention to patients, which is not Web based.) Screens are highly formatted to ensure the recording of all necessary information. The note for the initial visit includes information on social history, medical history, family mental health history, current and past use of prescription psychiatric medications (dose, duration, side effects and efficacy) and current medications, allowing the supervising psychiatrist to quickly assess a patient's history. Subsequent treatment session notes capture changes in treatment, and the patient's clinical scores

on the OASIS and Patient Health Questionnaire-3 are graphically depicted over time so that trends can easily be appreciated by the ACS and supervisory personnel. This allows supervisors to monitor patient progress, identify potential problems with the treatment process and focus discussion on patients who are not progressing optimally. The system allows for “clinical judgment overrides.” When the ACS and the psychiatrist agree that the AUDIT or MINI did not accurately capture the diagnosis, the ACS can change the eligibility status and note the reasons for the change. Finally, the system cues the ACS to follow up with patients and record successful contact or unsuccessful contact attempt. The system also encourages the ACS to record contact with the primary care physician, capturing “collaborative care.” Because the system operates in real time, it is

especially useful in clinical supervision in that it allows oversight of implementation, standardization of the intervention across sites and clinical progress. All data communicated between the user’s computer and the server are two-way encrypted with a secure sockets layer protocol using 128-bit cryptography algorithms. Access to all data on the server is password protected, and user profiles limit access to parts of the database.

### 2.13. Assessments and data analysis

We will test the hypothesis that CALM intervention patients will have outcomes better than those of UC patients. Primary clinical outcomes include symptoms, functioning and satisfaction with care (Table 3). Outcomes are assessed at baseline and at 6, 12 and 18 months. Assessments are nested within patients; patients are nested within providers; providers are nested within clinics; and clinics are nested within sites. Since sites and clinics were purposively sampled, they will be treated as fixed effects. An intent-to-treat analysis will be conducted using time trend models to examine temporal effects. The study has been powered to investigate each of the four diagnostic groups separately for clinical outcomes unique to each group with effect sizes of around 0.45 for single disorders. The study has sufficient power for examining the CALM effect on general outcomes, applicable to all disorders with overall effect sizes of 0.3.

Secondary analyses will use quasiexperimental methods to examine the effect of appropriate anxiety treatment on outcomes [10]. Nonexperimental methods will be used to assess the effects of treatment, rather than the effects of the intervention per se. Since it is unlikely that case mix variables will fully control for unobserved heterogeneity, instrumental variables may be employed. Finally, although CALM is the largest randomized trial of patients with anxiety disorders to date, the study will have limited power to examine health care costs and cost-effectiveness. Therefore, cost analyses will be primarily descriptive.

### 3. Conclusions

The CALM study will test an innovative collaborative care model for anxiety disorders. The intervention has been implemented in 12 clinics in four sites in the United States. With a population of 1040 subjects, it will be the largest randomized trial to date of persons with anxiety disorders. The CALM intervention represents a step forward in collaborative care models because it is expected to be effective for multiple mental health disorders and to accommodate a range of comorbid conditions. The CALM approach to CBT training and computer-assisted therapy is especially innovative. A number of aspects of the intervention, which are included to maximize its user-friendliness in the primary care setting, are expected to serve future efforts to disseminate this model of care more widely.

Table 3  
CALM study measures

Measure	Assessment tool
Preexisting characteristics	
Demographic information	Usual items
Income	
Acculturation	National Comorbidity Survey Replication, National Survey of American Lives (Black Americans), National Latino and Asian American Study and the National Survey of American Lives [39]
Social support	Medical Outcomes Study Social Support Survey [40]
Individual vulnerabilities and outcomes	
Anxiety	Anxiety Sensitivity Index [41]
General symptoms	Brief Symptom Inventory [42]
PD	Panic Disorder Severity Scale Self-Report Version [43]
GAD	Generalized Anxiety Disorder Severity Scale [44]
Social phobia	Social Phobia Inventory [45]
PTSD	PTSD Checklist — Civilian Version [46]
Depression	Patient Health Questionnaire 9-Item Depression Scale [34,47]
Alcohol use	Three items based on AUDIT [31]
Major chronic medical conditions	Medical Outcomes Study Checklist [40]
Functioning	
General health	Twelve-Item Short-Form Health Survey [48]
Disability	Sheehan Disability Scale [49]
Healthy days	Centers for Disease Control and Prevention Health-Related Quality of Life “Healthy Days” Core Module [50]
Quality of life	EuroQol EQ-5D [51]
Satisfaction with family life	Kansas Family Life Satisfaction Scale [52]
Health behaviors (smoking, exercise)	Checklist of common health behaviors
Health care utilization and satisfaction	
Use of alternative therapies	National Comorbidity Survey Replication [53]
Stigma and help seeking	National Comorbidity Survey Replication [53]
Satisfaction with health care	Healthcare for Communities [54]

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