

Health Psychology

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The Yale Roadmap for Health Psychology and Integrated Cardiovascular Care

Allison E. Gaffey^{1, 2}, Kristie M. Harris^{1, 3}, Carlos Mena-Hurtado^{1, 3}, Rajita Sinha^{4, 5}, Daniel L. Jacoby¹, and Kim G. Smolderen^{3, 4}

¹ Department of Internal Medicine (Cardiovascular Medicine), Yale School of Medicine

² VA Connecticut Healthcare System, West Haven, Connecticut, United States


³ Vascular Medicine Outcomes Program, Yale School of Medicine

⁴ Department of Psychiatry, Yale School of Medicine

⁵ Department of Psychiatry, The Yale Stress Center, Yale School of Medicine


Objective: Cardiovascular disease remains the leading cause of morbidity and mortality in industrialized nations. Many patients living with chronic cardiovascular disease suffer from complex multimorbidities requiring high-intensity care and behavioral risk factor management, and about a third copresent with a mental health disorder. These comanifestations are extremely taxing for patients and our health care system, complicate treatment, and increase the risk of adverse health outcomes. Health psychology emerged in response to a need for specialists who could design, deliver, and test evidence-based approaches to manage behavioral risk factors and the mental health burden of chronic diseases. We aimed to conduct a state-of-the-art review as to how health psychology emerged as a key specialty in delivering integrated care for cardiovascular populations, and to review challenges and opportunities that lie ahead of further integration of the specialty for integrated cardiovascular care. **Method:** As our health care system embraces more patient-centered care and big data science to detect at-risk patients and predict outcomes, health psychologists should be at the forefront to apply their expertise and demonstrate their value in designing and applying intervention models to improve outcomes. We first review challenges, then illustrate this framework using the Wagner chronic care model, present business case considerations, and conclude with an action agenda to promote the integration of health psychology as a cotreating specialty into cardiovascular care. **Results:** To provide direction for this undertaking, we present a roadmap for the field of health psychology to sustainably extend existing holistic, integrated approaches in cardiovascular care. **Conclusions:** To lessen the burden and improve outcomes in cardiovascular disease, care must shift away from siloed delivery models that are focused on traditional atherosclerotic risk factors to holistic, integrated approaches that address biological, psychological, social, and behavioral factors relevant to cardiovascular disease. Using the presented roadmap, health psychology can play a major role to address these needs of integrated cardiovascular care.


Keywords: health psychology, behavioral, integrated care, cardiology, cardiovascular medicine


Allison E. Gaffey  <https://orcid.org/0000-0002-2960-2772>

Kristie M. Harris  <https://orcid.org/0000-0003-3378-7017>

Carlos Mena-Hurtado  <https://orcid.org/0000-0002-4954-5672>

Rajita Sinha  <https://orcid.org/0000-0003-3012-4349>

Daniel L. Jacoby  <https://orcid.org/0000-0002-9182-275X>

Kim G. Smolderen  <https://orcid.org/0000-0001-6104-6254>

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Correspondence concerning this article should be addressed to Kim G. Smolderen, Department of Internal Medicine Yale School of Medicine, 789 Howard Avenue, Dana Building, Floor 3, New Haven, CT 06511, United States. Email: kim.smolderen@yale.edu

Cardiovascular disease (CVD) remains the most common chronic condition of our time and the leading cause of disability, morbidity, and mortality in the United States (Virani et al., 2021), affecting over 1 in 3 Americans (Centers for Disease Control and Prevention, 2019). CVD presents with multidimensional risk profiles and etiological mechanisms that affect a wide range of functioning and outcomes (Martínez-García et al., 2018; McClellan et al., 2020). The health care utilization and financial impact of CVD are staggering, with annual health care costs and lost productivity amounting to \$363.4 billion and rising (Virani et al., 2021).

While novel drug therapies and technological advances have significantly improved CVD outcomes over time (Mancini & Colombo, 2015; Masson et al., 2009; Price, 2019), addressing behavioral and psychosocial factors are also pillars of CVD risk management (Dornelas, 2012; Dornelas & Sears, 2018). Investments in CVD care, however, have been disproportionately allocated to targeting biological factors and using highly technological approaches versus investing in evidence-based prevention and management programs that address behavioral and psychosocial contributors to CVD (Davidson et al., 2018). Studies like INTERHEART show that factors such as stress, physical inactivity, diet, and smoking explain up to 90% of the risk for coronary heart disease (Yusuf et al., 2004). Other behavioral factors—pain, excessive alcohol use, and insomnia—also increase CVD risk and progression (Gæde et al., 2003; Gobeil et al., 2021). Furthermore, concomitant mental health conditions, including depression and anxiety, are highly predictive of CVD incidence, outcomes, and costs (Pedersen & Andersen, 2018; Roest et al., 2010; Stenman et al., 2016).

Recognition of the role of psychosocial and behavioral factors in CVD first gained prominence in the context of care for patients with coronary artery disease (CAD), particularly for the postacute coronary syndrome clinical pathway (ACS). Pivotal trials conducted in the late 1990s, the Enhancing Recovery in Coronary Heart Disease (ENRICHD) and Sertraline Antidepressant Heart Attack (SADHART) trials, were supported by the National Heart, Lung, and Blood Institute and Pfizer, respectively (Glassman et al., 2002; Writing Committee for the ENRICHD Investigators, 2003). These trials taught us key insights on how to design future collaborative behavioral health trials in the cardiovascular specialty setting—for instance, feasibility, focusing on persistent rather than reactive depression, powering to detect clinical events, and the use of selective serotonin reuptake inhibitors in cardiac patients (Sheps et al., 2003). Unfortunately, there have been limited subsequent trials of comparable size and translation of the evidence to clinical practice leading to widespread integration of behavioral health in CVD care. Therefore, a fresh impetus is needed to reinvigorate the field through rigorous behavioral trial design integrating prior insights of the older work, investment in implementing evidence-based post-ACS care pathways, and training practitioners in evidence-based integrated behavioral care paradigms in the larger practice of cardiovascular medicine.

We find ourselves at the beginning of an era of highly data-driven and value-based care models, in which the health system is increasingly integrating variables like social determinants of health and patient-centered metrics, to define evidence-based, cost-effective, equitable, and holistic care (Joynt Maddox et al., 2020; NEJM Catalyst, 2018; Reidhead & Kuhn, 2016; Ski et al., 2014). As previously noted (Allan & Fisher, 2012; Burg, 2018; Davidson

et al., 2018), offering more patient-centered, high-value care requires holistic, integrated CVD care paradigms that target behavioral and psychosocial factors in a multispecialty team setting. With training as scientist-practitioners, and expertise in behavioral intervention development, testing, and service delivery, health psychologists are ideally equipped to design, implement, and evaluate these novel care paradigms.

Aligned with these integrated paradigms, population health approaches are increasingly designed to target subpopulations of risk (Evans & Bufka, 2020). Health psychologists delivering care to CVD populations also find themselves along the population health spectrum: They can operate as specialists delivering indicated care or direct preventive risk mitigation to cardiovascular populations by setting up scalable interventions or quality improvement programs. CVDs are areas of priority for population health programs and offer a target for quality care metrics like those designed by the Centers for Medicare and Medicaid Services (CMS; 2021b) and National Quality Forum (2021). Health psychologists need to be equipped and supported to lead the design of patient-centered, high-quality integrated care in the context of population health approaches (Evans & Bufka, 2020), ensuring that behavioral health care is fully integrated into CVD care delivery that is driven by scientific inquiry and newer capabilities of modern data and implementation science (Palacios et al., 2018; Shaw et al., 2018).

In this article, we make the case for why health psychologists are uniquely poised to lead the application of integrated care models to transform the delivery of cardiovascular medicine, while also promoting a renewed interest in the scientist-practitioner model that is enriched by innovations in data and implementation sciences (Baker & Benjamin, 2000). Our roadmap provides a vision and strategic planning framework that can be used to enable health psychology in CVD medicine to grow as a subspecialty and to build a tradition of cotreating patients with CVD alongside cardiovascular and other behavioral medicine specialties. While prior work documented relationships among behavior, mental health, and CVD and testing models for intervention, the next phase is to build leadership capacity and scalability and develop quality standards. Yale was at the forefront of establishing the vision for an integrated model of behavioral medicine (Schwartz & Weiss, 1978), and we are now pushing to extend this model into populations with CVD to incorporate behavioral health care in the delivery of CVD medicine and highlight the specific role of the health psychologist in realizing this goal.

We first review the current challenges faced by the field of health psychology. Next, this work extends prior writings on the role of health psychology in cardiovascular medicine (Allan & Fisher, 2012; Burg, 2018; Davidson et al., 2018; Rozanski, 2014) by introducing a roadmap for health psychology and integrated CVD care that is informed by the Wagner chronic care model (Wagner et al., 2001, 1996) and providing exemplars to illustrate how health psychologists can contribute to integrated cardiovascular care in peripheral artery disease (PAD) and heart failure (HF) pathways. Third, to realize the integration of health psychology as a cotreating specialty within the cardiovascular care team, we outline business case considerations. We conclude with seven priority action areas to facilitate further maturation and improvement of quality standards for the field of health psychology in integrated cardiovascular care and to build future centers of excellence in behavioral medicine for CVD (Elrod & Fortenberry, 2017).

Integrating Health Psychology in CVD Specialty Care: Challenges and Opportunities

In the following section, we discuss poignant challenges faced by the field of health psychology in leading the integration of behavioral health into cardiovascular specialty care and present opportunities that are levers for change. Importantly, while highlighting the perspective of health psychology, we recognize and promote the collaboration between a wide spectrum of disciplines, including psychology, psychiatry, nursing, social work, sociology, anthropology, epidemiology, education, biostatistics, and other contributors to the interdisciplinary field of behavioral medicine (Schwartz & Weiss, 1978).

Making the Case for the Distinctive Role of Health Psychology in CVD Management

Health psychology first emerged in direct response to a post-World War II trend where medicine shifted from a focus on infectious disease toward managing the rise of chronic diseases and, along with it, increased health care spending (Matarazzo, 1980). Health psychology is a recognized specialty in psychology that focuses on the role of behavioral and psychosocial factors in chronic illness, adaptive processes in response to disease, and how to modify behaviors to promote health (Matarazzo, 1980). However, we have failed to remain at the forefront of recent developments that call for an increased adoption of integrated patient-centered frameworks to measure performance and quality of care and guide chronic disease management.

The American Psychological Association (APA) recognized that psychology, a field with the longest history and largest scientific knowledge base focused on the study of human behavior, could play a unique role in improving health service delivery while lowering the accelerating cost of health care. In 1976, the APA assembled a Task Force on Health Research that led to the establishment of Division 38 (Health Psychology). Shortly thereafter, the foundational Yale Conference on Behavioral Medicine was held (Schwartz & Weiss, 1978) under the premise that behavioral health and biomedical scientists should solve problems of health and illness in an interdisciplinary way. In 1983, the Arden House Conference was convened to reach a consensus on the scope of professional responsibilities and training of health psychologists (Miller, 1983). Together, these multidisciplinary professionals promoted the importance of behavioral health, spurring investment in related research and education (Matarazzo, 1980, 1983).

Among the fields that are represented within behavioral medicine, health psychology distinguished itself from more applied domains by adopting a scientist-practitioner approach to training and practice (Baker & Benjamin, 2000), a model that promotes the highest standards of scientific discovery for the design, implementation, and evaluation of data-driven behavioral health care. Doctoral-level health psychologists are trained to understand biomedical and psychosocial mechanisms of action, causal pathways, and mediating and moderating psychosocial, physiological, and environmental factors (e.g., social determinants of health) that predict disease, and the impact and experience of illness, and to implement health behavior change in humans in a highly replicable and predictable way, with some models explaining almost 80% of the variance

(Beck et al., 2018; Davy et al., 2015; Tsai et al., 2005). With extensive training in evidence-based behavioral interventions, health psychologists are uniquely positioned to adapt, test, and implement new behavioral interventions for patient symptoms, such as stress, anxiety, sleep, pain, and substance use to the CVD context. They are trained as highly specialized methodologists and psychometricians, mastering advanced statistical analytical skills for quantitative and qualitative analyses, questionnaire and clinical interview development and validation, and program evaluation (Figure 1; Ogden, 2012). Additionally, health psychologists are skilled in bridging patient, caregiver, and provider communication. Such a breadth of expertise makes the health psychology specialty content area critical in the CVD setting. With this orientation and training, health psychologists have further translated models of behavioral health into reliable methods for assessing and intervening on behavioral and psychological factors. A current challenge, however, is that interest for the scientist-practitioner model and an appreciation for the expertise of the health psychologist have diminished with calls for more applied and midlevel practitioners who could deliver behavioral health care (Baker & Benjamin, 2000).

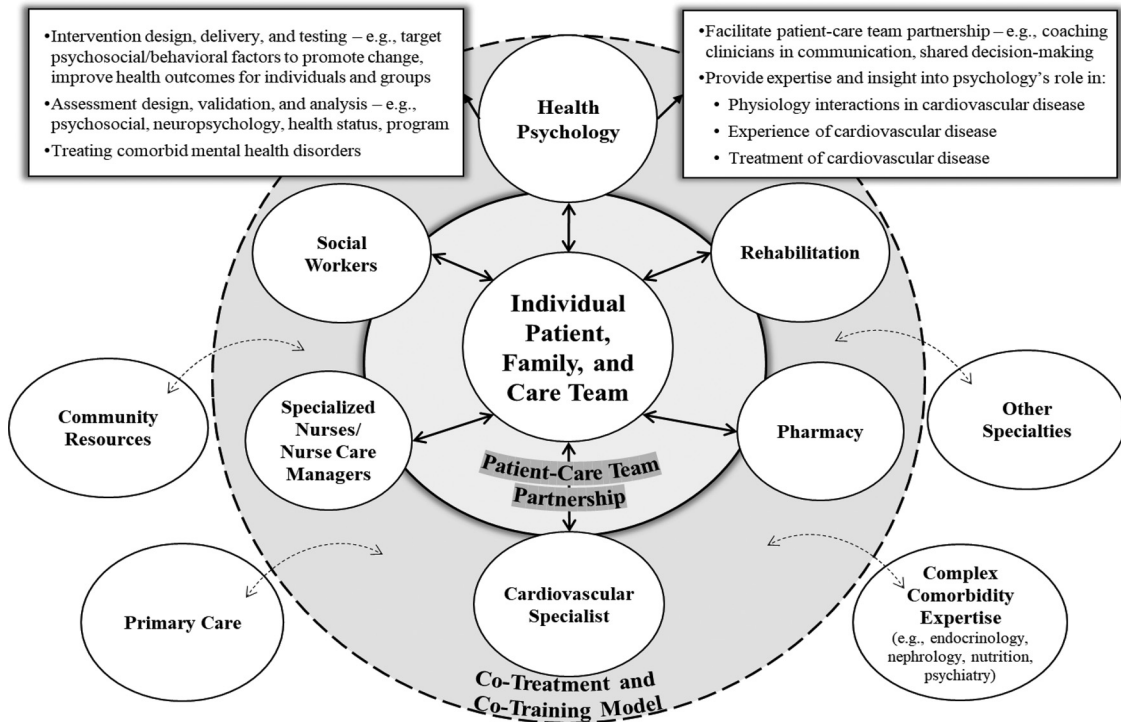
While we promote a collaborative approach to behavioral medicine and the delivery of behavioral health care, we argue that health psychologists, both in the United States and internationally (Plass et al., 2018), are uniquely positioned to help lead and implement the innovation that is needed to integrate behavioral health into CVD health care. However, we need to address current gaps in organized platforms of advocacy and thought leadership, advanced training opportunities, and marketing and academic networks to articulate the unique skillset and value of the profession for multidisciplinary cardiovascular specialty care (Davidson et al., 2018; Rozanski, 2014). The proposed Yale Roadmap for Health Psychology and Integrated Cardiovascular Care responds to these challenges, calls for a renewed interest in the scientist-practitioner model, and highlights the key role that health psychologists can play in the design and delivery of integrated cardiovascular care.

Fee-for-Service Versus Value-Based Care Model

A second challenge to integrating health psychology into cardiovascular care is that the U.S. health care system is currently designed as a fee-for-service model (McClellan et al., 2020). In this environment, health systems need to be financially viable to survive, and highly technological CVD diagnostics and procedures are reimbursed at a higher cost than low-tech behavioral health care that is delivered by health psychologists (Schroeder et al., 2013). Also, while some care pathways have penalties (e.g., 30-day readmissions for HF), for the most part, fee-for-service remains a large driver of the economic viability of U.S. health care systems. Unfortunately, the economic reality of the current system is that services that are reimbursed at a lower rate are not prioritized to the same extent as higher reimbursed services, despite evidence of their value and potential to engender better outcomes over time.

Increasingly, reimbursement models and performance metrics prioritize information that is derived from patient-centric assessments. Relatedly, screening efforts for mental health disorders and cognitive dysfunction are being organized for various somatic populations, and there is greater use of shared decision approaches

Figure 1
Cotreatment and Cross-Training Model of Integrated Cardiovascular Disease Management



for medical populations, such as those undergoing knee or hip arthroplasty, patients with rheumatoid arthritis or lung cancer, and more recently, patients with HF (CMS, 2021b). Given these developments, health psychologists must be prepared to explain, study, and quantify the value of integrated behavioral health care models and aid in characterizing quality for these patient-centric metrics within the CVD realm.

Adding a health psychologist who delivers behavioral assessment and intervention services and therapeutic intervention—in a 1:1, group, or telehealth setting—to a cardiovascular specialty service can generate immediate value and revenue. Licensed psychologists can bill for a range of services to optimize CVD self-management and improve patient quality of life and outcomes. Examples include mental health and behavioral assessments and treatments, behavior change interventions, and neuropsychological evaluations. By building pathways to treat behavioral risk and mental health disorders that frequently co-occur with CVD, health systems may also reduce costs through fewer appointment “no-shows.” Among patients with HF specifically, novel readmission reduction programs addressing psychosocial functioning should be designed and tested (Freedland et al., 2016) and may reduce costs via fewer Medicare-imposed penalties. Moreover, health care systems that value holistic, patient-centered care and employ health psychologists as a cotreating specialty along with the cardiovascular care offered may be more appealing to patients compared to systems with more siloed specialty care (Luxford et al., 2011). Thus, highlighting this integrated approach has the potential to generate new business, better satisfaction scores, higher health system rankings, and so forth.

Health psychology currently faces a difficult landscape of fee-for-service, but interest is rapidly growing in new value-based payment structures that provide bundled payments for cardiovascular conditions and emphasize the patient trajectory over widge-tized and more arbitrary quality care indicators (McClellan et al., 2020). With their scientific expertise, health psychologists are poised to assume leading roles in the design and testing of new value-based care models to prevent unnecessary care episodes and target patient self-management, treatment adherence, health behaviors, and mental health needs to improve outcomes. A challenge is that most of the newer value-based models integrating behavioral health expertise have been studied in the primary care setting or other somatic populations (Woltmann et al., 2012). Thus, there is an increased need to systematically test and quantify integrated care models for CVD in the specialty care setting.

Health Psychologists and Cardiovascular Specialists: Unknown Partners

Unfortunately, few cardiovascular specialty providers are familiar with the expertise or services offered by health psychologists (Ogden, 2012). Additionally, while improving, there continues to be mental-health-related stigma in health care (Knaak et al., 2017) and a hesitancy among some providers to broach this topic with patients, even when providers themselves may be suffering from mental health issues or burnout due to the ever-taxing requirements of the current health care system (Mihailescu & Neiterman, 2019). Yet providers in the cardiovascular specialty setting are increasingly aware of the importance of mental health and behavioral factors in their patient populations (Levine et al., 2021).

While providers may be receptive to integrating a health psychologist in their practice, they may also be unsure which services are in the domain of psychology versus other allied health services and how to do so given a lack of cotraining and cotreatment experience.

To model integrated care, increase providers' familiarity and experience with such care, and reduce potential stigma, enhanced and shared training opportunities are needed across the spectrum of health psychology, cardiovascular specialties, and behavioral medicine at large. Health psychologists have been instrumental in training providers who are involved in delivering CVD care, but the integration of behavioral health in didactic training models for medicine is far from universal (Davidson et al., 2018). Continuing education, training, and coaching opportunities (e.g., departmental in-service trainings, grand rounds, webinars) on the current state-of-the-science regarding the intersection of mental health, behavioral factors, and cardiovascular health are needed to increase familiarity with each other's fields and recognize the gestalt of joined forces. Anticipating a gradual shift to more value-based care, practical cotraining opportunities are needed where cardiovascular care providers and health psychologists can observe, virtually or in person, successful models of integrated care and apply learned principles in hands-on, collaborative activities. Clinical training components could include comprehensive patient assessment, facilitating shared decision-making approaches, collaborative case review in multidisciplinary patient conferences, codelivery of medical and psychological interventions, and advice about pragmatic tasks like scheduling and billing.

Health psychologists will also need continuous training and increased familiarity with CVD care advances and complex presentations to better understand the risks, benefits, and trade-offs that are associated with various management approaches. They can benefit from cross-training with cardiovascular trainees, didactics about new insights into CVD pathophysiology and therapeutic advances, and participating in rotations in the cardiovascular specialty setting as a learning laboratory. Finally, integrating behavioral health care into CVD care will require partnerships between professional organizations that represent psychology, behavioral medicine, and cardiovascular medicine to define standards of care collectively for these novel care models.

The Yale Roadmap for Health Psychology and Integrated Cardiovascular Care: Applying the Wagner Chronic Care Model

Using Wagner's chronic care model (CCM; Wagner et al., 2001, 1996), we provide a roadmap for health psychology as a cotreating specialty in modern integrated cardiovascular care (Ogden, 2012). The CCM was developed to manage the growing burden of chronic disease and embraces a proactive health care approach that focuses on well-being, patient self-management, and engagement (Wagner et al., 2001, 1996) through six areas: context of the health care system, delivery system design, clinical information systems, decision support, self-management support, and community resources and policies.

Implementing CCM components is associated with improved quality of care and patient outcomes, including in CVD populations (Davy et al., 2015; Strickland et al., 2010; Tsai et al., 2005; Woltmann et al., 2012). The American College of Cardiology and

American Heart Association offered guidelines to improve patient-centered and team-based care including via enhanced patient-clinician communication, assessment of patient-centered outcomes and perspectives, shared decision-making, collaborative care planning, and goal setting (Krumholz et al., 2006; Levine et al., 2021; Walsh et al., 2012). As many newer, value-based models integrating behavioral health expertise have only been studied in the primary care setting or in other somatic populations (Bridges et al., 2015; Jacobsen et al., 2019; Woltmann et al., 2012), there is a need to systematically test and quantify integrated care models for CVD in the specialty care setting, where CVD populations, especially the sickest, are primarily managed. Behavioral interventions for cardiovascular specialty populations are cost-effective in randomized controlled trials (Davidson et al., 2013, 2010; Huffman et al., 2014; Kronish et al., 2012; Rollman et al., 2009; Writing Committee for the ENRICH Investigators, 2003), but we lack systematic, real-world evidence about how programs perform and improve outcomes at practice or health system levels in a cardiovascular specialty service line.

One area, however, where we do have data about the effectiveness of integrated models of CVD care is in the setting of cardiac rehabilitation. Specifically, incorporating a behavioral health component (i.e., stress management training) into standard cardiac rehabilitation led to an almost 50% reduction in adverse clinical events over the subsequent 5 years (Blumenthal et al., 2016). Despite the promise of this finding, there has still been limited uptake of integrated models of CVD care for patients with CAD/post-ACS, including in cardiac rehabilitation. As coronary heart disease mortality has decreased over the last decade (Virani et al., 2021), there are an increasing number of patients that survive an ACS event and thus could derive benefit from an integrated care approach. Given that referral rates to cardiac rehabilitation remain suboptimal, with less than one third of eligible patients referred and even fewer attending (Ades et al., 2017), models of integrated behavioral care where health psychologists are part of the disease management team may seem more appealing for integrating these insights into overall CAD disease management. Expansion of integrated behavioral care to other increasingly prevalent chronic CVD conditions, including PAD and HF, warrants similar efforts as was done to develop behavioral care paradigms for CAD and ACS. To demonstrate what these lesser-known care pathways may look like, we present exemplars of patient cases in these two conditions to show how, ideally, integrating health psychologists into a multidisciplinary team can enhance the delivery of care. While we focus on PAD and HF specifically, the approaches described are designed to serve as models for how this integration can be achieved across the variety of CVD presentations and specialty care settings.

Integration of the Health Psychologist on the Multispecialty Vascular Team

Lower-extremity PAD is one of the most prevalent and burdensome vascular chronic diseases globally (Virani et al., 2021). Patients with PAD present with unique multimorbidity risk (atherosclerotic) profiles, health behaviors (e.g., a high prevalence of smoking, ambulatory problems that prevent exercise), and mental health profiles that differ from coronary artery disease (Golomb et al., 2006; Saxon et al., 2020; Thomas et al., 2020) so that tailored applications of integrated care models need to be designed, adapted, and tested for PAD, a role that health psychologists are

equipped to fulfill. Programs could include assessment and treatment for behavioral risk factors (e.g., nicotine use, alcohol intake, exercise, diet, sleep, pain) and common co-occurring mental (depression, anxiety, and posttraumatic stress disorder) and substance use disorders and address adherence concerns.

Mr. Wilson is a 52-year-old male patient with history of smoking, poorly controlled Type-II diabetes, and chronic kidney disease who presents with critical limb ischemia and is followed in the multidisciplinary vascular medicine program at a large academic health system. He presented in the emergency department with severe sepsis and then received a below-knee amputation. He suffers from nonhealing wounds in the other leg and may soon face another amputation. He is trying to understand these significant events for his professional and personal life. He is struggling to get his Medicaid application filed and is worried about his family's financial future. He presents with clinically relevant depressive symptoms and has expressed that life as he currently experiences it feels incredibly hard to bear. He is not motivated to quit smoking or change his diet as the cascade of events has given him a feeling of loss of control. He is worried about his loss of independence, his ability to fulfill his role as a father to his high-school-aged daughter, and as a husband as his wife has become his primary caregiver.

Context of the Health Care System

Mr. Wilson is offered case management services within the vascular medicine program to address his chronic care needs, screen for depression and health behaviors, and provide needed treatment. The hospital leadership prioritizes the provision of patient-centered, holistic care with a specific immediate goal to increase depression detection and treatment rates among vascular patients. The health psychologist supports the nurse case manager by overseeing the depression screening, treatment, and monitoring efforts.

Delivery System Design

The health system hired a clinical health psychologist to work with the multidisciplinary vascular team to cotreat patients with chronic vascular diseases. Mr. Wilson receives treatment for his depression and assistance with his chronic care needs; the advanced care practitioner follows up on medications and care linkage needs and works with the psychologist to arrange screening and depression treatment within the vascular specialty setting and with a psychiatrist to receive depression medication. Mr. Wilson has the option to join a group-based chronic care management and behavioral therapy program that is specifically designed for amputation survivors.

Clinical Information Systems

To ensure that patients and providers have access to and continuous monitoring of behavioral health information, a data collection system is in place to regularly assess depression, anxiety, and stress levels and quality of life when Mr. Wilson interacts with the vascular medicine team. Synchronous tracking within the electronic health record (EHR) and patient portal ensure that this information is available for the care team and patient in real time to support Mr. Wilson's treatment. From this registry data, feedback and benchmark reports about depression screening and guideline-directed treatments can be generated for the practice and for the

health system to inform quality improvement efforts. The health psychologist has designed the patient-centered assessments with the interdisciplinary vascular and informatics team and oversees analytics and reporting related to these data monitoring efforts.

Decision Support Systems

The psychologist and case manager attend biweekly multidisciplinary patient conferences and limb salvage team meetings with other members of the vascular team to review the management of Mr. Wilson and other patients with complex vascular disease. When patients face a limb-endangering situation, the psychologist is available to facilitate patient-provider interactions using shared decision-making frameworks.

Self-Management Support

After Mr. Wilson's crisis, the issue of self-management is an important area of focus to avoid future escalations of care. He and his family require support to monitor his nutritional health, medication regimen, wound care status, mood, and pain. As he participates in the amputation support program, Mr. Wilson has access to patient-friendly tracking applications to promote self-management and the exchange of information with the care team. The health psychologist leads the design of an interdisciplinary amputation support program and the process and outcome measures to evaluate the program's effectiveness.

Community Resources and Policies

Mr. Wilson requires immediate mental health evaluation and support, rehabilitation for his postamputation status, a prosthesis, home care, transportation support, and assistance with filing Medicaid paperwork, while continuing to address the other chronic care needs related to his comorbidities. Given his extensive needs, case management offered within the health system is a priority, as is linkage to care resources in the community. The health psychologist on the team can evaluate and treat depression within the vascular medicine program, and has also developed a support program following amputation, in which different specialties, including social work, and rehabilitation medicine specialists participate and provide information and links to resources.

Integration of the Health Psychologist on the Multidisciplinary Heart Failure Team

HF affects 6.2 million Americans, is associated with high rates of mortality and hospitalizations, and costs the U.S. health care system over \$30 billion annually (Virani et al., 2021). Health care expenditures and poor outcomes in HF are multifaceted problems due, in part, to suboptimal patient self-management, which is driven by complicated, often changing treatment regimens, the need for lifestyle adjustments, progressively worsening functional status, and high rates of concomitant cognitive impairment and mood, anxiety, and sleep disorders (Greene et al., 2021; Maddox et al., 2021; Ruppert et al., 2016). Recent consensus statements include psychological assessment, treatment, and monitoring as essential skills for an HF team (Greene et al., 2021; Maddox et al., 2021), with psychologists as key team members. Meta-analytic findings show that a collaborative care approach in HF is

associated with improved patient quality of life and functional status and reduced anxiety symptoms (Cui et al., 2019).

Ms. Adams is a 61-year-old female patient with a history of obesity and poorly controlled hypertension who developed HF with reduced ejection fraction secondary to an acute myocardial infarction 6 months ago. Her last hospitalization was 3 weeks ago after being treated for fluid overload, and she now has been readmitted due to a reemergence of symptoms. Upon discharge, she was referred to the health system's HF disease management program for close follow-up and to cardiac rehabilitation but was a no-show to each appointment. During an evaluation with the inpatient HF team, Ms. Adams reports frustration with her symptoms, places blame on her providers for not "fixing" her during the last hospitalization, and acknowledges feeling hopeless and overwhelmed by managing HF. She further reports difficulty sleeping since her last discharge, often staying awake for hours to worry about her disease and how she will manage it along with her other responsibilities. As a result, she has started falling asleep while at work. She is fearful that she will soon be fired because of this behavior and the "sick time" she has accrued, so she began saving her money and only purchased the least expensive of the three medications she was prescribed after her last hospitalization.

Context of the Health Care System

Behavioral health services are a key component of the HF care offered. Marketing materials discuss the challenges of HF management and common co-occurrence with mental illness, and psychologists are described as key members of the care team. Health psychologists are colocated within the HF outpatient setting, round with the inpatient HF consult teams, participate in collaborative treatment planning, and routinely assess and treat patient mental and behavioral health concerns.

Delivery System Design

The health care system hired a health psychologist who negotiated servicing both the inpatient and outpatient HF services. The health psychologist has designed a battery of validated patient-centered assessments to screen patients for mental health concerns (e.g., depression, anxiety, poor sleep) and self-care behaviors during inpatient and outpatient HF encounters using a tablet device with EHR integration. Upon inpatient screening, Ms. Adams' scores exceed preset cutoffs, triggering an EHR consult to the psychologist who then meets with Ms. Adams to further foster her relationship with the care team, validate her concerns and provide targeted support, and discuss the importance of follow-up. At discharge, Ms. Adams feels more capable of managing her HF and subsequently attends her HF disease management appointment. There, she is assigned a nurse case manager to follow her prospectively and serve as a single point of access and information. The psychologist coordinates with the case manager to ensure that their follow-up visits coincide with Ms. Adams's other visits to minimize burden associated with travel or missing time from work.

Clinical Information Systems

The health psychologist met with health system leadership to advocate for regular assessment of the full range of factors—biological, psychological, social, and behavioral—relevant to HF self-management and outcomes. As a result, the health system

now mandates that this assessment is completed at least once annually for all HF patients and that both patients and providers receive reminders via the EHR. The health psychologist has added language in the EHR to help providers discuss mental health concerns with their patients and outline referral pathways. The health psychologist also designed a system-wide registry to track the initiative and measure associations with outcomes and health care costs.

Decision Support Systems

Health psychologists participate in weekly multidisciplinary HF case conferences and keep the care team informed of the latest evidence-based science concerning psychosocial and behavioral factors in HF. They are colocated in the HF clinic and available for curbside consultation with case managers and the medical team and to provide immediate patient evaluation and facilitate shared decision-making with patients and providers.

Self-Management Support

To engage in effective self-management, patients must understand the importance of their treatment regimen and recommended lifestyle modifications and feel capable of engaging in these behaviors. The health psychologist can use evidence-based approaches to address causal mechanisms inhibiting behavior change, including low motivation and self-efficacy, and practical barriers. Emerging technology platforms can also be used to deliver additional patient education and reminders and track adherence. For Ms. Adams, her cardiologist recommends diet and activity modification and improved medication adherence, and the health psychologist works with her to facilitate these changes with mobile health technology.

Community Resources and Policies

The health psychologist regularly presents to case managers, social workers, and primary care physicians within their health care system and in the larger community to inform them about the role of psychosocial and behavioral factors in HF self-management and preventing readmissions and to share evidence-based strategies for assessing patient needs. For Ms. Adams, social workers in the multidisciplinary HF team helped her apply for disability, while pharmacy enrolled her in a prescription assistance program.

Health Psychology Integration in CVD Specialty Care: Making the Business Case

Integrating health psychology as a specialty to cotreat cardiovascular patients requires developing and testing care pathways for different clinical scenarios. Next, we reflect on organizing and engaging different stakeholder groups and planning considerations to make a business case for integrating health psychology into the cardiovascular specialty setting.

Stakeholders to Involve

It is important to recognize the different providers and services with a stake in the delivery of cardiovascular care within an organization. There can be many individual primary providers of CVD

care in large health care systems, and thus health psychologists should identify specific clinical champions who will serve as partners in the pursuit of integrating health psychology services. Ideally, these champions should hold leadership roles within the various service lines in which one wishes to integrate (e.g., vascular medicine, HF) and will be involved in program building. Another stakeholder group is hospital administrators who oversee the cardiovascular and behavioral health service lines across a health system and who are responsible for their operations planning and fiscal management. Next, leadership of the cardiovascular specialty, and any existing psychology or behavioral service lines and their respective leadership or other allied health constellations, are key players to involve as new program planning requires their buy-in.

Ideally, leading conversations across these stakeholders would be a responsibility that is shared by clinical champions from the cardiovascular specialty and health psychologists with expertise in understanding and delivering behavioral health services for cardiovascular populations. It is also important to involve patient leaders, care management experts, and community liaisons who can speak to the issues of priority and provide key input on the design of the proposed program and implementation process. As health psychologists have specific training and skills in building interprofessional collaborations for care delivery, they offer a unique role in joining multidisciplinary team members for care coordination and management.

Building the Business Case

To make a compelling business case to integrate health psychology expertise into the multidisciplinary cardiovascular care team, projected case volumes must first be determined. The volume of patients with CVD who are seen in the health care system and estimates of the prevalence of mental health disorders and behavioral risk factors in target populations (Kaplan et al., 2019; Rutledge et al., 2009; Shields et al., 2018) must be documented. This information can be extrapolated from contemporary literature and supplemented with health system data. As one gathers these data, it is important to identify current deficiencies in behavioral health care delivery. For example, illustrating that very few CVD patients have been screened for depression in the year preceding or following key episodes of care for their coronary or vascular problem helps to substantiate the case that these data represent lost opportunities to improve patient care and outcomes via billable services.

Next, to estimate potential revenue to be generated, an inventory of billable services that may apply to the target patient population should be generated for the integrated health psychology service—for example, current procedural terminology codes for health behavior assessment and intervention, depression screening, neuropsychological evaluation for patients with suspected cognitive impairment, and individual, family, and group psychotherapy codes. Applying the estimates of CVD and behavioral and mental health risk analyses to the focal cardiovascular populations allows for calculating behavioral health billable services that may be realized annually. These calculations should factor in costs for operating such services (e.g., personnel, logistics). How billing for behavioral health services occurs, combined with the CVD specialty, via the psychology specialty, or as a subspecialty of psychiatry, are important questions to consider. Additional considerations include if and how much effort

is warranted for consulting psychiatry services or a psychiatrist on staff, where the psychologist would be hired (by the CVD service line or by the behavioral medicine specialty), and the type of business agreement between the CVD and psychology and/or behavioral medicine discipline to be negotiated.

Planning discussions need to involve key leadership stakeholders and an investment from the health system to frontload or backstop the costs as revenue streams and scaling take time to develop. The health psychologist can help to design data collection and program evaluation protocols to test the assumptions that are used for the business model and measure benefit (e.g., rates of adherence, patient engagement and satisfaction, health behaviors, mental health, quality of life, CVD outcomes, new business for the health care system) and use the data to continually refine the model for integrating health psychology into the cardiovascular specialty care.

Importantly, business case plans for incorporating health psychology into integrated cardiovascular care teams should focus on short-term gains and must also consider models for value-based care. Evidence-based projections and realized savings based on clinical trial evidence and cost models, and patient volumes drawn to the cardiovascular specialty because of the integrated services that are being delivered, can be used to present a larger vision of potential value and to negotiate for larger programmatic investments with health system leadership.

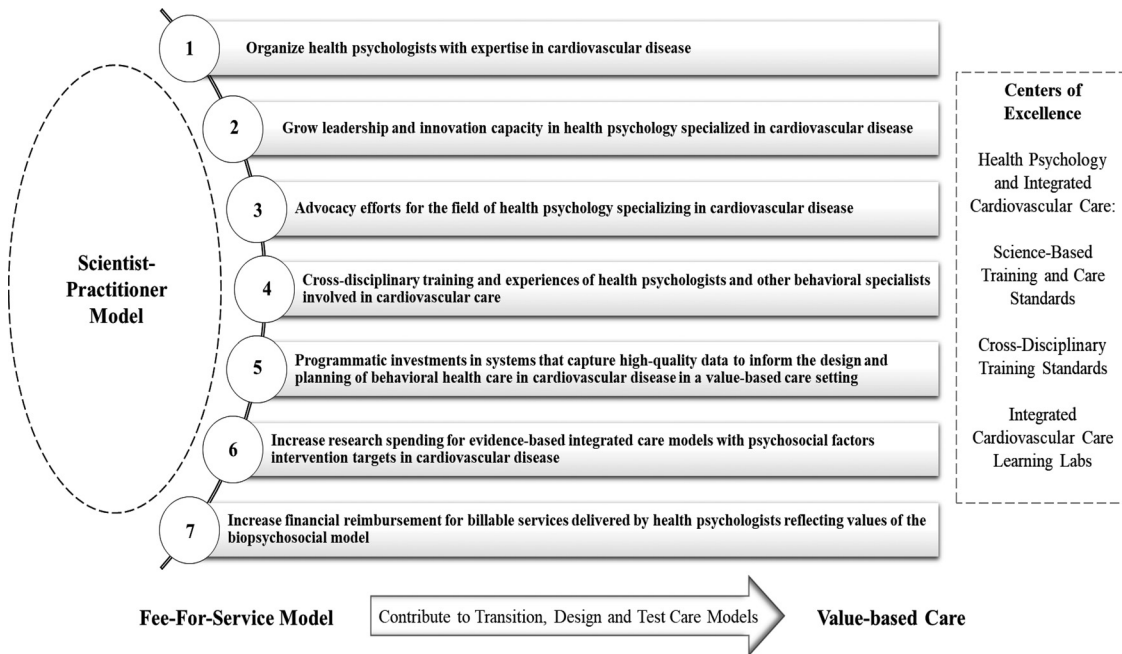
An Agenda of Priority Areas for Health Psychology and Integrated Cardiovascular Care

To collectively realize the Yale Roadmap for Health Psychology and Integrated Cardiovascular Care, we next highlight seven priority areas of planning (see Figure 2). These areas pertain to the organization of health psychologists who have an expertise in cardiovascular disease, the ability to grow leadership and innovation capacity within the health psychology community specializing in CVD, increasing advocacy efforts, and cross-specialty training opportunities, as well as structural programmatic investments, and investments in research and expansion of billable services for health psychology services in cardiovascular populations.

Organize Health Psychologists With Expertise in CVD

Grouping resources and expertise among health psychologists with specialization in CVD is needed. This would allow for articulating training needs and standards, making an inventory of existing expertise, finding a scientific community for advocacy, sharing resources, and further professional development, efforts needed to mature the subspecialty both nationally and internationally (Plass et al., 2018). Such activities would also facilitate the recognition of health psychology in cardiovascular populations as its own subspecialty of health psychology (APA, 2021), forming a subspecialty within other cardiovascular professional organizations, as well as recognition by The Joint Commission. Care standards should be defined for high-quality integrated cardiovascular care including health psychologists. Such standards would encompass training, evidence generation, volume, expertise, and outcomes criteria to formulate blueprints for future centers of excellence (Elrod & Fortenberry, 2017; The Joint Commission, 2021).

Figure 2
The Yale Roadmap for Health Psychology and Integrated Cardiovascular Care



Grow Leadership and Innovation Capacity in Health Psychology Specialized in CVD

To further mature the health psychology subspecialty in CVD, organizing and centralizing expertise will not be sufficient. Health psychologists must also build leadership capacity and develop business and entrepreneurial skills. This enterprise will allow for balanced partnerships within industry, health systems, and academia and ensure that health psychologists can effectively negotiate with key players to articulate the value of their subspecialty and receive the business and data support needed to implement evidence-based innovations in care.

Advocacy Efforts for the Field of Health Psychology Specializing in CVD

As health psychologists with expertise in CVD organize and build leadership capacity, advocacy efforts should be launched to gain representation in cardiovascular professional organizations to further articulate the value of this subspecialty in CVD management across disciplines and to the wider community. This mission can be accomplished by becoming more active across professional organizations that are invested in integrated cardiovascular care by networking, submitting to annual meetings, and contributing to educational materials, guidelines, and position statements.

Cross-Disciplinary Training and Experiences of Health Psychologists and Other Behavioral Medicine Specialists Involved in Cardiovascular Care

More advanced postdoctoral training programs are needed to train health psychologists specializing in CVD to develop,

implement, and test novel treatment programs, methods, and care innovations in real-world CVD clinical settings (“the CVD clinic as a learning lab”). Competencies must be defined and used to develop high-quality training standards and an accreditation process. Training areas include models of psychological intervention relevant to managing CVD, advanced data science and analytics, implementation science, and practical cross-treatment experiences. Opportunities also exist to integrate more behavioral health and psychology didactics earlier in medical and cardiovascular specialty programs and to improve familiarity with the biopsychosocial model. To support this cross-disciplinary experience, appointments for specialists and faculty leading these training, research, and clinical programs should reflect the nature of their involvement (i.e., joint behavioral health and cardiovascular specialty appointments).

Programmatic Investments in Systems That Capture High-Quality Data to Inform the Design and Planning of Behavioral Health Care in CVD in a Value-Based Care Setting

Current EHR systems do not routinely accommodate richer documentation of patient-reported measures (e.g., health status, quality of medical decision-making) or elaborate behavioral health risk assessments (e.g., depressive and anxiety symptom monitoring). Pilots are underway to collect this data within EHR or via parallel systems, but efforts remain early and fragmented. Health psychologists can apply their expertise in assessment, psychometrics, and measurement-based care models to develop and test these methods and concurrently use this data to design integrated behavioral care and evaluate the cost-effectiveness of improving patient care.

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Increase Research Spending for Evidence-Based Integrated Care Models With Psychosocial Factors as Intervention Targets in CVD

The National Heart, Lung, and Blood Institute, the APA, and policy makers can help to promote a funding agenda and mechanisms to support studies that design and test models of care targeting psychosocial factors as approaches to improve adherence, self-management, and outcomes in CVD. A focus on developing and testing models of care that includes scientist-practitioners who are experts in the study of human behavior and health as part of the larger multidisciplinary CVD care team could be of high value in garnering support for implementing integrated behavioral health care teams.

Increase Financial Reimbursement for Billable Services Delivered by Health Psychologists Reflecting Values of the Biopsychosocial Model

To reflect a better balance in valuing the contribution of psychosocial factors to the etiology and progression of chronic illness, reimbursement strategies need to be updated to provide a consistent message that psychosocial and biological factors are equally valued in chronic disease management. National legislative action is needed to improve the CMS reimbursement policy and better incentivize mental and behavioral health services. In 2015, CMS began reimbursing care programs that follow specific services and structural guidelines from the CCM (Del Valle & McDonnell, 2018; Centers for Medicare and Medicaid Services, 2021a), but those policies only apply to primary care. We require dedicated reimbursement strategies for treating complex CVD at levels that reflect the expertise and training of health psychologists in the specialty setting. Lobbying is needed to prioritize integrated behavioral health care across health systems—from hospital to community settings—to address complex care needs in prevalent, taxing chronic diseases such as CVD.

Conclusions

Collectively, this article provides a landscape of the existing gaps for the subspecialty of health psychology while mutually emphasizing the immense opportunities to extend existing holistic, integrated approaches into cardiovascular care. Benefiting from an increasing interest in value-based care and patient-centered care delivery models, and advances in implementation and data sciences, health psychology should be at the forefront of these developments to facilitate the delivery of behavioral health in mainstream cardiovascular specialty care. In the tradition of the chronic care model, which has already facilitated behavioral health care integration in primary care, the Yale Roadmap for Health Psychology and Integrated Cardiovascular Care offers an agenda of priority areas to similarly integrate health psychology as a subspecialty into the delivery of specialty CVD care. Health psychologists must start leading discussions with health care systems; developing and testing integrated, financially viable models of care; and encouraging programmatic implementation and scalability. This vision and strategic planning roadmap are ambitious, but opportunities have never been timelier as society reflects upon how to reprioritize health care spending and care for the whole person.

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