

Integrating Psychologic Approaches Into the Behavioral Management of Cardiac Patients

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Despite increasing evidence that depression and other psychologic risk factors promote atherosclerosis and adverse cardiac events, practice guidelines for integrating psychologic considerations into the management of cardiac patients are currently lacking. This review explores how application of psychologic principles may help physicians to implement three basic approaches for improving the behavioral management of cardiac patients. The first is the identification and reduction of barriers to following behavioral recommendations, including the presence of negative mood states and other psychologic factors. Patients often self-manage negative moods through unhealthy behaviors such as smoking or eating. However, replacement of these behaviors with more health-promoting behaviors such as exercise and stress management techniques is often difficult and may require active assistance. Second, physicians should help provide patients with external support systems such as referral to support groups or telephone follow ups, when necessary. Such external supports, however, often require other approaches for long-term maintenance of new health behaviors. Third, a motivational literature suggests that physicians can promote patient self-management by formulating health goals in a manner that satisfies "basic psychologic needs" such as the needs for autonomy and competency. Satisfaction of these needs increases "vitality" (a positive state of energy and enthusiasm). Motivation can also be enhanced by creating an emotional attachment to health goals. A case example is provided to illustrate the application of these concepts in clinical practice, and future directions are discussed, including a potential healthcare model that could make the behavioral management of patients more feasible in cardiac practice. **Key words:** psychologic stress, coronary risk factors, nonadherence, motivation, stress management, cardiovascular disease.

CAD = coronary artery disease.

INTRODUCTION

John S. is a 53-year-old man who is referred to a cardiologist because of a mild abnormality on resting electrocardiography and multiple coronary risk factors, including a family history of coronary artery disease and borderline blood pressure elevation. John is substantially overweight and quite sedentary. John's referring family physician has previously recommended that he lose weight and start exercising, but John has not yet complied. A stress test reveals no current evidence of ischemia, but his cardiologist wants to help John better manage his coronary risk factors. What can John's cardiologist do to assist him?

As summarized in this supplement, depression is a significant coronary artery disease (CAD) risk factor (1) that promotes atherosclerosis and adverse cardiac events by both behavioral effects (2) and the induction of many pathophysiological effects, including chronic inflammation (3), endothelial dysfunction (4), platelet abnormalities (5), and other consequences that result from chronic stimulation of the sympathetic nervous system (6) and the hypothalamic-pituitary-adrenocortical axis (7). In addition, a variety of other psychosocial factors such as poor social support and various forms of chronic stress also contribute to the progression of CAD (8).

How should cardiologists respond to this information? Cardiologists are not unfamiliar with guiding patients regarding

certain aspects of health behavior, including smoking habits, poor diets, and physical inactivity. However, although psychologic risk factors are both pathogenic factors and ubiquitous in cardiac practice (9), recommended practice guidelines for the integration of psychologic considerations into cardiac practice are currently lacking. Accordingly, this brief review will explore several basic ways in which cardiologists can integrate psychologic approaches into their management of cardiac patients. The approaches will be illustrated by a case example. This discussion will incorporate various principles that can be derived from overlapping literature concerning patient adherence and the promotion of motivation. However, a rigorous summary of this growing literature is beyond the purview of this review.

ACKNOWLEDGING THE DIFFICULTY OF MAINTAINING NEW HEALTH BEHAVIORS

Effective behavioral management begins with the understanding that initiating behavioral change is frequently difficult. In part, this is because new behaviors are vulnerable to easy cessation and must be performed consciously and repeatedly before they become truly established as new lifestyle practices. The more difficult the behavior, the more vulnerable the practice. Among behaviors that may be requested of patients, those that constitute new practices without the need to break old habits are relatively easier to initiate and maintain. Changing habits are more difficult, because they are more ingrained and automatic (and thus, appropriately referred to as "second nature"). Among habits, those which are used to reduce fatigue, tension, or a negative mood may be particularly difficult to break, because the immediacy of their effects and any resultant positive mood strongly reinforce these habits. When patients then seek to break such mood-regulating habits, they may now experience repetitive "moments of challenge" as they try to do without their usual means for reducing tension or elevating moods. The most difficult behaviors to break are those that feed physiological addictions such as

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smoking. Like other mood-regulating behaviors, smoking may be induced by negative moods (10,11). However, when the smoker tries to stop smoking, the smoker may also experience physiological withdrawal symptoms and a strong physiological craving, which heighten the “moments of challenge” that occur as smokers attempt to deny themselves their customary cigarette in the face of negative moods and tension.

Based on this reasoning, there should be a hierarchy of challenge relative to successful patient adherence to behavioral recommendations, as illustrated in Figure 1. The literature is supportive of this view. For instance, although adherence to medications is a common and difficult problem in medicine (12), the adherence rate to other lifestyle suggestions such as recommendations to stop smoking or lose weight is substantially lower (13). Given this perspective, the widest potential array of behavioral management tools and motivational techniques should be considered when attempting to help cardiac patients change health behaviors or modify interrelated psychological risk factors for CAD. Various actions have been proposed in this regard by an expert panel on compliance (14), but basically three categories of assistance have been developed for promoting patient adherence to health habit change: removing barriers to health habit change, providing external assistance, and motivating patients to initiate their own self-management of behavior. Although a comprehensive analysis of these potentially complementary approaches is beyond the context of this review, the use of each approach is briefly highlighted.

OVERCOMING BARRIERS TO MAINTAINING NEW HEALTH BEHAVIORS

A wide variety of factors may help promote poor patient adherence to recommended lifestyle changes. These include

psychologic factors (e.g., depression, chronic stress), biologic factors (e.g., medical illness, fatigue states, cognitive impairment, poor sleep), poor social support, low socioeconomic status, lack of physician follow up, poor communication between patient and health providers, functional medical illiteracy, and false health beliefs (e.g., denial of the importance of CAD risk factors). Each of these factors may require its own specific solution, but given the focus of our supplement, only the barrier posed by psychologic factors is reviewed.

Many psychologic factors can affect behavior (8), but the influence of depression may be particularly strong. For instance, a metaanalysis has revealed that depression is associated with a threefold increase in nonadherence to medical recommendations (15). The effect of depression on patient adherence to physician recommendations has been documented within various cardiac populations (16–19), but examination of this association according to levels of depressive symptoms has not been rigorously assessed. However, even low levels of depressive symptoms may be important in this regard. Moreover, daily variations in moods can strongly propel or inhibit behavior (20–22).

There are a number of possible mechanisms that may account for this association. First, as mentioned previously, health-damaging behaviors such as smoking may serve as a means of self-regulating negative moods (10,11,22,23). Second, because negative moods tend to make people more self-preoccupied (24,25), these negative health behaviors may also be used by some as a form of distraction from unpleasant self-focus (26). Third, Thayer has suggested that two components of moods—energy and tension—may also serve as stimuli to behavioral action (Fig. 2) (27). Specifically, when people were asked to record their moods throughout the day according to levels of perceived levels of energy and tension,

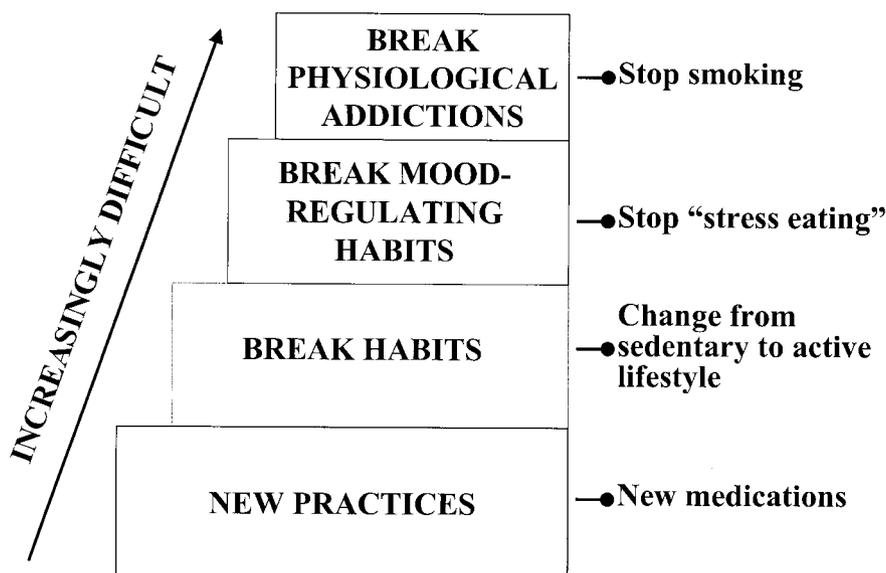


Figure 1. Behavioral change can be considered according to a hierarchy of behavioral challenge, ranging from those that are least difficult (i.e., the initiation of new practices in which there is no preexisting habit that needs to be broken) to the most difficult (i.e., breaking addictive habits which satisfy physiological drives). Cardiologists' common involvement in the management of behaviors that are the most difficult for patients to maintain helps explain why nonadherence to behavioral intervention is so commonly experienced in cardiac practice.

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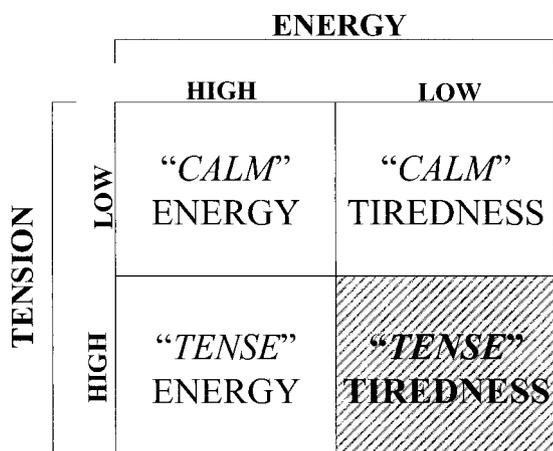


Figure 2. Thayer's proposed biopsychologic model for evaluating moods based on self-reported measurements of energy and tension levels (27). Research indicates that whereas states of "calm energy," "calm tiredness," and even "tense energy" are all associated with a predominance of positive moods, periods of "tense-tiredness" are relatively unpleasant and associated with a relatively higher frequency of pessimism and other negative cognitions.

those periods associated with the combination of high tension but low energy (i.e., "tense-tiredness") were also associated with greater feelings of unpleasantness. Importantly, experimental study indicates that individuals generally use similar behaviors to self-manage feelings of fatigue, tension, or low moods (22). This suggests that in addition to negative moods, per se, feelings of high tension or low energy may also serve as stimuli to the use of negative health habits such as stress-related eating or smoking. Of note, negative cognitive predispositions that may increase the risk for CAD such as pessimism (28) appear to be accentuated by the presence of tense-tiredness (22).

These observations regarding moods, tension, fatigue, and behavior may also help explain how chronic stress, another psychological risk factor for CAD (9), may adversely influence the behavior of patients. As illustrated in Figure 3, one would expect chronic stress to be associated with both increased tension and decreased energy. The result should be a greater frequency and magnitude of tense-tiredness, negative moods, and pessimistic perspectives among chronically stressed individuals. This, in turn, should lead to a higher frequency of overt depression, adverse behaviors (to diminish tense-tiredness), and decreased adherence to healthy behavioral suggestions. Evidence for such effects can be extrapolated from the stress literature. For example, "job strain" (i.e., high job demand with little job latitude) (29) is associated with a substantial increase in complaints of fatigue and burnout (30), increased frequency of slow psychological or physiological "unwinding" after work (31-34), and a marked increase in the incidence of depression and related distress (35-38). There have, however, been few specific studies regarding the effect of job stress on patient adherence.

How might physicians apply these observations? First, the recognition that moods, tension, and fatigue might influence patient behaviors should encourage cardiologists to incorporate a brief screening of such factors into their standard review of systems. Based on this, this review should include questions concerning: 1) negative emotions such as depression (e.g., "how has your mood been recently?"); 2) other biopsychologic factors that may affect moods such as questions concerning sleep and energy levels (e.g., "how would you describe your energy level?"); and 3) the presence of chronic stress (e.g., "what kind of pressure have you been under at work or at home?") (9). In patients in whom severe psycho-

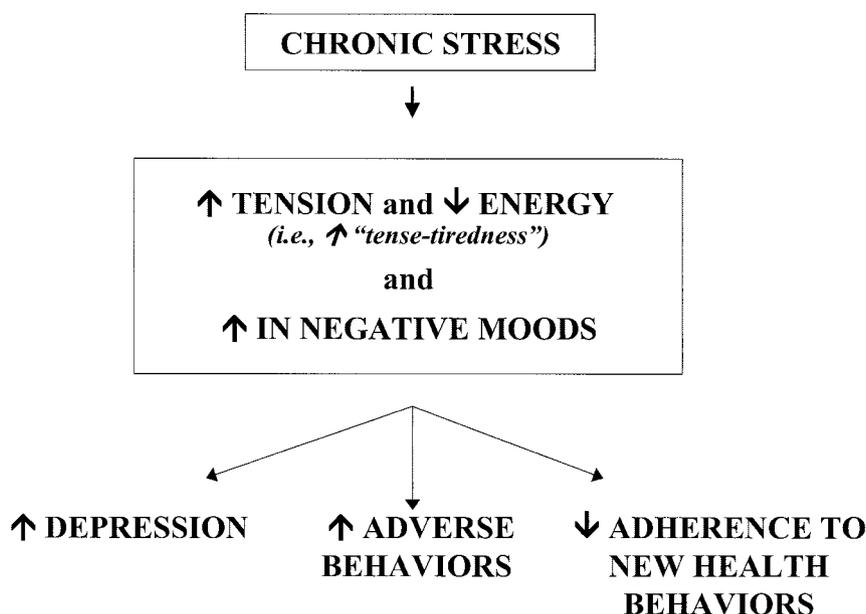


Figure 3. The potential behavioral effects of chronic stress are depicted. Chronic stress is associated with both higher tension and decrease energy, which predisposes to states of "tense-tiredness" and negative moods. As a consequence, patients with chronic stress may be more susceptible to depression, adverse behaviors that may be used to diminish tense-tiredness or negative mood states (e.g., eating or smoking), and less energy for adhering to healthy behavioral suggestions.

pathology is detected, referral to an appropriate specialist can be suggested. For the remainder, physicians and/or designated staff can help patients explore alternative approaches for dealing with sources of stress and for responding to tense-tiredness and negative moods in ways other than eating, smoking, or use of innately sedentary distractions (e.g., prolonged television watching). For instance, research indicates that even 10 minutes of rapid walking may increase energy levels and decrease tension levels for up to 2 hours afterward (39). However, special techniques may be needed for encouraging exercise among those who are not likely to be adherent to this type of recommendation, as will be illustrated in discussing the management of the case example. Physicians and/or their staffs can also recommend progressive relaxation and other forms of stress management techniques as alternative approaches to managing tense-tiredness or negative moods.

PROVIDING EXTERNAL SUPPORT FOR MAINTAINING NEW HEALTH BEHAVIORS

Because adherence to new lifestyle practices is both difficult and an inherently fragile process, providing external support for those patients who need it is desirable. Many forms of potential external support exist such as telephone follow ups, built-in follow up with designated nurse managers or other office personnel, use of behavioral contracts, participation in web-based programs, patient educational support, and the provision of various kinds of social support such as enrollment of family members or referral of patients to various types of structured or unstructured community support groups. Conversely, the lack of social support is a potent contributor to lack of adherence to new behaviors (40). Of note, the use of external supports should be individualized according to the needs and sensitivities of patients. For example, some patients will respond to authoritarian methods of support, whereas others will reject such methods.

The potential use of providing external support may be counterbalanced by the potential costliness and labor needed to maintain such support and the need for complex forms of support in some patients (12). Moreover, for many patients, even the highest levels of external support may not help them overcome their resistance to changing negative habits. For instance, despite the relatively strong structural and emotional support inherent in cardiac rehabilitation programs, patients drop out of such programs in substantial numbers (41,42). Moreover, although external supports may be very helpful in promoting adherence in the short-term, they are not as effective over the long-term compared with approaches that promote patient self-management (43). Thus, whereas the provision of external support can play an important role in the behavioral management of cardiac patients, such support usually works best when combined with other strategies that are cited in this review.

MOTIVATING PATIENTS TO INITIATE AND SUSTAIN THEIR OWN BEHAVIORAL SELF-MANAGEMENT

Various health models may be used to gain insights regarding motivational behavior (44–48), but a model that provides a strong contrast to the process of supporting behavior externally is emphasized here (48). As an introduction, motivational states have been described as those that both activate behavior and provide direction (49). With respect to factors that activate behavior, important understanding is provided from a framework that has examined psychological well-being according to the concept of “basic psychologic needs” (48). According to this concept, basic psychologic needs serve as essential “nutrients” that, when satisfied, spawn a sense of “vitality,” which, as discussed elsewhere in this supplement (50), is a positive state associated with feelings of increased energy and a sense of enthusiasm (51). Theorists differ in what they consider to constitute basic psychologic needs that may promote vitality, but examples of such basic needs, as described by “self-determination theory” (48), include the need to feel and be connected to others, the need to feel competent in the performance of one’s tasks, and the need for autonomy. The latter is the basic need to feel volition in making choices in those areas that are most personally meaningful to an individual, as opposed to making choices because of external factors or intrapsychic pressure (e.g., doing things just to please others or only because of self-esteem considerations). A growing body of data indicates that structuring health goals so that they satisfy such basic psychologic needs will result in enhanced patient adherence to health goals. For example, data indicate that those who engage in health behaviors for more autonomous reasons experience enhanced exercise and greater long-term maintenance of weight loss (52), higher rates of smoking cessation (53), and better long-term medication adherence (54).

The other component of motivation is its link to a sense of direction; people are motivated to engage and maintain activities that they “*feel*” are meaningful. By contrast, the mere cognitive wish or “wanting” to pursue a goal—without “feeling” the urge to do so—is less inherently motivational. In part, this is because intellectual understandings are often future-oriented, whereas emotional desires “live in the present.” This may help explain why providing only intellectual evidence or reasons for exercise or dieting often go relatively unheeded. The effectiveness associated with attaching to goals on an emotional basis may help explain, in part, why patients are more likely to adhere to behavioral interventions after an acute myocardial infarction or cardiac interventions (55,56). These often emotionally laden experiences can make the need to change behaviors more clear to patients, and such clarity tends to breed greater emotional attachment.

REVIEW OF THE PATIENT CASE EXAMPLE

The case of John S. is now reviewed in light of these considerations. Because this patient has revealed a history of being nonadherent to physician recommendations, three basic

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steps should be considered for improving this patient's future likelihood for adhering to recommendations concerning exercise and diet. First, attempts should be made to help John develop emotional reasons for changing his health habits. On a practical basis, this means making discussions regarding John's health behaviors as experiential as possible. This may be accomplished, in part, by trying to get John to self-identify, voice, and then reflect on potential emotional connections to his health goals (e.g., by having him identify his own personally relevant reasons for feeling more healthy, more vigorous, or living longer). The patient's physician could also be guided by principles garnered from the technique of "motivational interviewing" (57). This approach has been developed, in part, as a means for assisting patients to identify discrepancies in their behavior relative to their larger goals, as well as to explore and resolve sources of ambivalence. Motivational interviewing involves the expression of empathy, the avoidance of argumentation and confrontation, and the enhancement of patient initiative and self-confidence.

The second step involves the formulation of this patient's health goals so that they satisfy basic psychologic needs. For example, John's physician can help foster the basic need for autonomy by allowing John to take initiative for exercise and dieting in his own way, according to his own explorations and preferences. Because John may also benefit from satisfaction of the basic psychologic need for perceived competence, his physician might consider ensuring that his recommended health goals are not too difficult for John. If the goals are too difficult, frustration or anxiety may ensue or the goals will be readily abandoned. In John's case, this may involve beginning with only a single "microgoal" involving, for example, an exercise prescription of only 5 to 10 minutes per day, although this is well below thresholds known to induce aerobic benefit. By setting this patient up for "small wins," vitality may be generated, thus allowing the achievement of larger wins thereafter. Implicit in this approach is the willingness of John's physician to increase his exercise goals slowly in graded fashion. However, even this minimal goal may require external supports in some patients. Thus, the probability of John's success can be further enhanced if his physician also makes provisions to have John provided with ongoing positive feedback, because positive feedback is intrinsically motivational (58). Similarly, the likelihood of John's success may also be augmented by shaping his exercise program around the satisfaction of other basic psychologic needs such as the need for connectedness to others (e.g., by suggesting group-related exercise activities).

The third step in John's program is the development of steps to increase the manageability of John's health-related goals, because difficult, more long-term, or less concrete goals are commonly deferred for easier, more short-term, and/or more concrete goals when the manageability of stress becomes more difficult (59). Thus, John's physician should also perform a brief psychologic review of systems to identify potential psychologic barriers to John's health goals. In John's case, this review of systems indicates that John is experiencing

chronic work stress with feelings of low energy and high tension during the evening hours after work. This tense-tiredness and resultant negative moods may tend to make John more "present think"-oriented. Accordingly, to improve John's manageability, his physician may help him identify beneficial ways for dealing with his job stress and tense-tiredness. Alternatively, depending on the complexity of the issues and time required to counsel this patient, his physician may consider referring John to a member of his staff or other trained professionals for such counseling. For John, such counseling might include reviewing his reported difficulty at unwinding at night after work stress and the concept of increased nighttime vulnerability to adverse behaviors because of stress-induced tense-tiredness or bad moods. Then, examples of potential steps that may be taken to minimize these stress-related effects can be reviewed with John, including direct attempts to reduce work stress, establishing barriers to prevent work activity in the evening, selectively engaging in tension-reducing activities (e.g., progressive relaxation techniques), or developing hobbies that may help reduce tension by distracting him.

Viewed in this way, the three forms of assisting patients to adhere to behavioral recommendations—i.e., overcoming barriers, promoting external supports, and promoting patient self-management—represent a synergistic program for helping John and similar patients.

FUTURE DIRECTIONS

Are the recommendations suggested in this review practical for physicians to consider? Like patients and others, physicians are not likely to take on meaningful new practices if they are not manageable. Accordingly, prospective work is needed to define appropriate healthcare models for supporting physicians in their attempts to treat behavioral and psychologic risk factors in cardiac practice. One recent proposal has called for the study of a "stepped care" model for cardiac practice (9). For instance, the lowest step of such a model might incorporate practices that are practical for cardiologists to perform, such as integrating psychologic questions into physicians' routine review of system and counseling and/or managing patients regarding exercise, diet, and other lifestyle issues according to the principles delineated in this review. The second step might involve the referral of less-adherent patients to a designated member or team within a physician's practice or hospital network for counseling and monitoring. The third step would call for the referral of the most nonadherent patients or those with a high degree of psychologic distress, as identified by cardiologists' initial triage, to trained behavioral specialists. This type of model has recently proven successful in improving the care of some psychiatric disorders by inter-nists (60,61) while potentially even decreasing medical costs (61). However, considerable work is needed to test this type of model for cardiac practice.

Future study could also assess whether the various motivational factors that are identified in this review are also predictors of adverse outcomes in cardiac patients. For in-

stance, a strong sense of meaning and life purpose has been linked to resiliency (62–64) and been proposed as a basic need for psychological well-being (65), but as noted by Scheier and Carver (66), there is a striking lack of study to assess whether the presence or absence of meaningful purpose is also related to adverse cardiac outcomes. Similarly, “vitality” has also been linked to an increased sense of psychological well-being (51), but it too has not yet been studied relative to the development of adverse cardiac outcomes. Other work is needed to assess the clinical value of Thayer’s model of “tense–tiredness” (27).

Finally, new technologies that provide pictorial representations of atherosclerosis such as coronary artery calcium scanning may have the potential to provide moments of awareness for patients by creating greater clarity for patients as to their risk for developing future cardiac events. Because such clarity can make patients’ assessment of their own health risk more present-oriented, the pictorial presentation of coronary artery plaque or other visual representations of atherosclerosis might serve as a potential transient “window of opportunity” for initiating new behavioral interventions. Most likely, however, the success of such approaches may require that they be combined to other approaches that can spark and maintain motivation, as discussed in this review, but prospective study is also needed to assess this possibility.

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