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STRATEGIES FOR BEHAVIOR CHANGE IN PATIENTS WITH HEART FAILURE

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Appropriate management of chronic heart failure and its signs and symptoms requires a considerable amount of participation by patients. Behavioral changes that prevent or minimize signs and symptoms and disease progression are just as important as the medications prescribed to treat the heart failure. The most difficult lifestyle changes include smoking cessation, weight loss, and restriction of dietary sodium. The Transtheoretical Model is a framework for assessing and addressing the concept of readiness for behavior change, which occurs in a 6-step process. The model consists of 3 dimensions: the stages of change, the processes of change on which interventions are based, and the action criteria for actual behavior. The stages of change are discussed, and interventions are presented to assist patients with heart failure in progressing through those stages toward maintenance of changed lifestyle behaviors. Methods for measuring the level of readiness for change of patients with heart failure are also presented, because correct staging is required before appropriate interventions matched to a patient's stage can be delivered. (American Journal of Critical Care. 2004;13:305-313)

Chronic heart failure is a significant health problem in the United States; 5 million patients are affected, and 550 000 new cases are diagnosed each year.¹ Appropriate management of the disease and its signs and symptoms requires a considerable amount of participation by patients. Unfortunately, heart failure remains a terminal illness in which patients' conditions decline progressively. Medications for treating heart failure such as angiotensin-converting enzyme inhibitors and β -blockers have improved the mortality and morbidity statistics for the disease in recent years. Although important, medications for heart failure constitute only half of the treatment program. Behavioral changes that prevent or minimize the signs and symptoms and progression of the disease are just as important as the medications that are prescribed.

Nurses spend considerable time educating and counseling patients with heart failure so that the patients have the knowledge and tools to prevent signs and symptoms and manage the disease. Although this

education typically addresses the lifestyle changes necessary to control signs and symptoms and to improve outcomes, failure of patients with decompensated heart failure to adhere to recommendations remains a frequent reason for hospital readmission.²⁻⁵ Despite interventions, many patients may not be ready to learn how to manage the illness, and consequently they do not make the necessary changes in health behaviors.

The behavioral changes recommended for patients with heart failure are numerous (Table 1). Simply making one of these lifestyle changes is difficult, but healthcare providers expect patients with heart failure to value the treatment of the disease enough to make permanent changes. Usually, patients receive 1 or 2 teaching sessions in which they learn of these changes, and then they are expected to incorporate all of these changes into their behavior patterns from that day forward. However, as any healthcare provider will attest, this sequence of events is not what usually happens.

The most difficult lifestyle changes include smoking cessation, weight loss, and restriction of dietary sodium. Additionally, financial constraints may make it difficult for some patients to fill prescriptions regularly, preventing the patients from receiving the full

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Table 1 Lifestyle changes recommended for patients with heart failure

Reduce sodium in diet, ranging from 2000 to 4000 mg/d
Restrict fluid intake (<2 L [<64 fl oz] daily)
Get regular aerobic exercise
Allow for periods of rest during the day between activities
Monitor weight daily
Quit smoking
Lose weight if appropriate
Eliminate alcohol and cigarettes
Reduce fat and cholesterol in diet if coronary disease is present
Report signs and symptoms of weight gain or worsening heart failure immediately

benefit of pharmacological therapy. Determining if a patient is compliant regarding smoking cessation and weight loss is relatively easy; however, conclusively determining whether a patient has eaten high-sodium foods or has taken his or her medications appropriately is almost impossible. Smoking cessation and weight loss are not only measurable but also relatively “black or white.” A person either smokes or does not smoke, and a person is either overweight or within normal weight parameters. The intake of sodium in the diet is not so clear. Sodium intake is a continuum; a person can consume as much or as little sodium as possible, ranging from zero sodium intake to enormous sodium intake of thousands of milligrams per day. Comprehending this concept and understanding how to remain at the low end of the sodium intake continuum is often difficult for patients initially.

Implementing behavioral change in patients with heart failure is a challenging task. Traditional strategies such as educational classes, videos, and written instructions present the information to all patients in the same manner regardless of each patient’s readiness to make lifestyle changes. Some patients are more prepared than others to hear the information and make the necessary changes. For that reason, evaluating models that individualize the instructional program for lifestyle changes is important.

The Transtheoretical Model of Behavior Change

In the early 1980s, James O. Prochaska and his associates first proposed the Transtheoretical Model (TTM) as a framework for assessing and addressing the concept of readiness for changes in behavior.⁶⁻⁸ This framework has been the basis of their research for more than 2 decades. On the basis of data from studies of persons who did not change high-risk health behaviors, Prochaska and Velicer⁸ proposed a general rule of thumb: 40% of persons with at-risk behaviors

are in a stage of change marked by resistance and denial and have no intention of changing the behavior. Another 40% have thought about changing some time in the next 6 months, and only 20% are actually preparing to make serious change. Clearly, action-oriented interventions, such as education programs that stress strategies for behavior change, do not match the needs of at-risk persons who do not believe change is needed.

The TTM is based on a set of critical assumptions about the nature of behavior and the interventions that can best facilitate change, including the following:

- No single theory can account for all the complexities of behavior change.
- Behavior change is a process that unfolds over time and occurs in stages.
- Without planned interventions, populations with high-risk behavior remain stuck in early stages marked by no movement toward change.
- Specific processes and principles of change should be applied at specific stages.
- Chronic behavioral patterns are under some combination of biological and social influence and self-control.

Interventions designed within the TTM are targeted to enhance self-control.⁸ The TTM has been applied to a broad range of behaviors and a wide variety of populations, but it has been used to assess behavior change in patients with heart failure in only a single study.⁹

The TTM consists of 3 dimensions:

1. the various stages of change, which is the central organizing construct and temporal variable of the model,
2. the processes of change on which interventions are based, and
3. the action criteria for actual behavior (the dependent dimension or outcome).

Decisional balance (pros and cons of changing) and self-efficacy (situation-specific confidence that change can be maintained without relapse) and temptation vary in predictable ways throughout the stages of change. The TTM emerged from an analysis of the leading theories of psychotherapy and behavior change (thus the name Transtheoretical Model), and many components of this model were adapted from such theories as Freudian, Skinnerian, and Rogerian traditions.⁸

The Stages of Change

In the TTM, behavior change is viewed as a 6-stage process that may progress in a linear fashion but most often progresses in a spiral pattern that includes relapse to prior stages, recycling through the stages, and learning from mistakes before changed behavior becomes stable. The stages of change within the TTM are as follows:

1. Precontemplation: The person is perhaps unaware or underaware that a problem exists and has no inten-

Table 2 Definitions of the processes of change^{8,12,13}

Process	Explanation
Experiential	
Consciousness raising	Increased awareness of causes, consequences, and cures for a problem; increasing information about self and the unhealthy behavior
Dramatic relief	Experiencing and releasing feelings about the possible consequences of the behavior; using feelings to help motivate change
Self-reevaluation	Cognitive and affective assessments of one's self-image with and without the behavior in order to change how one thinks about oneself in relation to the behavior
Environmental reevaluation	Cognitive and affective assessments of how the presence or absence of the behavior affects one's social environment; becoming aware that one can serve as a positive or negative role model to others
Social liberation	Recognizing changes in the environment or social changes that influence personal change
Behavioral	
Self-liberation	Recognizing choices related to available actions and making a commitment to change a behavior
Helping relationship	Seeking and accepting support from others in the form of caring, trust, acceptance, and openness
Reinforcement management	Applying consequences in the form of rewards to oneself for making change
Counterconditioning	Learning new and healthier alternative behaviors to substitute for the unhealthy behavior
Stimulus control	Avoiding or removing environmental cues for unhealthy behavior and adding cues for healthier alternatives

tion of taking action in the foreseeable future (usually measured as the next 6 months).

2. Contemplation: The person is aware that a problem exists in relation to a behavior, has thought about changing, and intends to change at some time in the future, usually within the next 6 months.

3. Preparation: The person has taken some preliminary steps toward change and intends to change in the immediate future (usually measured as the next 30 days).

4. Action: The person has made a specific, overt modification in lifestyle within the past 6 months.

5. Maintenance: The person has worked for more than 6 months to prevent relapse and to be less tempted and more confident that change can persist.⁷

6. Termination: The person has no temptation and 100% self-efficacy.

During the termination phase, regardless of whether they are depressed, bored, anxious, lonely, angry, or highly stressed, persons are sure they will not give in to the temptation to return to their old unhealthy habit.⁸ Snow et al¹⁰ found that only 20% of former smokers and alcoholics ever reached this stage. For the majority, termination may not be a practical reality, and a more realistic goal for dealing with most unhealthy behaviors may be a lifetime of maintenance.⁸ Termination is

not typically assessed for purposes of research or clinical applications.

These stages of change suggest that before overt action is taken to change an unhealthy behavior, persons must successfully pass through 3 stages in which they continue the behavior. During these stages, the concept of decisional balance generally has the cons of making the change outnumbering the pros. Before progressing to action, the pros and cons must cross over, and when the pros outweigh the cons, it is a sign that a person is prepared for action. In the TTM, progress from precontemplation to action is accompanied by the pros of change increasing twice as much as the cons decrease. This assertion suggests that perhaps twice as much emphasis should be placed on raising benefits of change as on reducing the costs or barriers.⁸

The Process of Change

Any activity that a person initiates to help modify thinking, feeling, or behavior is a change process. How can healthcare providers promote lifestyle changes in such a way that patients will adhere to the changes? The primary determinants of behavior and behavior change have been enumerated by Fishbein et al¹¹ as follows:

Table 3 Stages of change in which particular change processes are most useful

Precontemplation	Contemplation	Preparation	Action	Maintenance
Consciousness-raising Dramatic relief Environmental reevaluation	Self-reevaluation	Self-liberation	Counterconditioning Stimulus control Reinforcement management Helping relationships	

- **Intention:** Does the patient have a commitment to perform the behavior?

- **Environmental constraints:** What external conditions could facilitate or be a barrier to the behavior (eg, economics, insurance carrier, caregiver issues, social isolation, living with a smoker)?

- **Ability:** Does the patient have the necessary capabilities to make permanent change (depression, elderly, frail, homebound)?

- **Anticipated outcome:** Do the pros for performing the behavior outweigh the cons? Does the patient feel bad enough to want to change?

- **Norms:** What are the social pressures to perform the behaviors (eg, repeated hospitalizations, impact on the family)?

- **Self-standards:** Is the new behavior consistent with the patient's self-image (eg, men who are forced to take on dependent roles or are no longer working)?

- **Emotion:** Does the patient have a positive reaction to performing the behavior? Is the patient emotionally invested in making the behavior change?

- **Self-efficacy:** Does the patient perceive that he or she is capable of performing the behavior?

Ten distinct processes of change (Table 2) have been identified: these are the covert and overt activities that people use to progress through the stages of change, specifically, how people change.^{12,13} The assumption of the TTM is that this common set of change processes can be applied across a broad range of behaviors, and that each process needs to be emphasized at different stages of change.⁸ Table 3 illustrates how these processes may occur.

These processes are a guide for interventions to assist patients in progressing in readiness for behavioral change, and the processes encompass a variety of techniques and methods. The amount of progress a person makes after an intervention tends to be a function of the stage of change before treatment.⁶ Consequently, it is important to measure a patient's stage of readiness

to change before implementing appropriate stage-based interventions for lifestyle changes. Prochaska et al⁶ found that persons who were in the preparation and action stages were more successful in making permanent change than were persons in the precontemplation or contemplation stage. If a patient progresses through just a single stage in the first month of treatment, his or her chances of taking action double during the initial 6 months of the program.⁶

The processes of change result in modifications of behavior and support the transition from stage to stage. These processes can be divided into 5 experiential processes that are internally focused on emotions, values, and cognitions and 5 behavioral processes that are focused on behavioral changes. Experiential processes include consciousness-raising, dramatic relief, environmental reevaluation, social liberation, and self-reevaluation. Behavioral processes include counterconditioning, helping relationships, reinforcement management, stimulus control, and self-liberation. These processes are primarily used in the action and maintenance stages and are defined in Table 2.

Measurement: Determining a Patient's Stage of Change

Correct staging is required before appropriate interventions matched to a patient's stage can be delivered. Reed et al¹⁴ suggest that a good staging algorithm should include a clear definition of the behavior to be changed and a 5-choice response format that includes the operational definitions of each of the stages. For example, they recommend that the definition of exercise include the frequency, duration, and intensity of exercise, taking into account the capabilities of the population of patients. Definitions and a consistent response format to determine stage of change for each of the behaviors that may require change in patients with heart failure are suggested in Table 4.

Clinicians should be aware that a patient's perception of his or her stage of readiness may not always match the patient's actual behavior. One of the most difficult and arguably the most important behaviors requiring change in many patients with heart failure is the reduction of sodium in the diet. Povey et al¹⁵ suggest some fundamental problems with using the TTM for dietary behaviors. They note that generally a discrepancy exists between objective assessment of diet and self-rated, subjective dietary intake. Further, for more general, widely interpreted dietary behaviors such as "eating healthy," patients are less likely to perceive accurately whether they are actively engaging in the behavior than they are for more specific behaviors such as eating 5 fruits and vegetables a day. This discrepancy may result in a mismatch between perceived and actual diet and thus lead to overrepresentation of patients in the action and maintenance stages. Low-sodium diets can be widely interpreted by patients. In a sample of patients with heart failure, Sneed and Paul⁹ noted a discrepancy between objective assessment of sodium intake and self-rated assessment of consistently avoiding salty foods.

These findings suggest that use of the TTM to stage patients with heart failure in relation to adherence to low-sodium diets may be a problem, and determining actual intake of salty foods may be necessary to stage patients accurately. Actual intake can be determined in several ways: 24-hour dietary recall, assessment of a food diary recorded for up to a week before a clinic visit, or use of a food checklist that patients could fill out while in the waiting room. To create such a list, consult a nutrition book to find the highest sodium foods typically eaten by that group of patients and ask patients to respond yes or no to whether they have eaten any of the foods on the list in the last 24 hours. If they report themselves to be in the action or maintenance stages and have eaten high-sodium foods in the past 24 hours, they should be restaged according to their actual behavior into the preparation, contemplation, or even the precontemplation stage (if they appear to be unaware of their risky behavior). It may be better to view patients who eat high-sodium foods or add salt to their food but see themselves in the maintenance stage as a separate group and design interventions for them accordingly.¹⁵

Actual behavior may have to be assessed for other behaviors as well. For example, actual exercise behavior may have to be assessed by using such things as an activity log or journal, a pedometer, or a list of examples of common behaviors that exceed the action criterion and behaviors that do not. Keep in mind, however, that these, as well as all self-reported measures of behavior, are subject to social desirability bias.

Table 4 Questions about stage of change and response options

Questions with definitions

Do you exercise 3 times a week for at least 20 minutes each time?

Exercise includes brisk walking, riding a stationary bicycle, swimming, or other exercise of similar intensity advised for you. Activities that are primarily sedentary, such as bowling or playing golf with a cart, would not be considered exercise.

Do you drink 2 L (2 qt) or less of fluid a day (water, sodas, coffee, tea, juice)?

Have you eliminated high-sodium (salty) foods from your diet?

High-sodium foods include canned vegetables; processed foods such as deli meat, prepared gravy and sauces, frozen dinners; "fast food" (such as pizza, fried chicken, burgers, french fries), and snacks (such as potato chips, corn chips, salted nuts). Foods also become high in sodium when salt is added to them during cooking or at the table.

If applicable:

Have you quit smoking cigarettes (or other tobacco products)?

Have you quit drinking alcohol (beer, wine, liquor)?

Have you been trying to lose weight by dieting (eating fewer foods, smaller portions, or less fattening foods)?

Response options¹⁴

Maintenance:	Yes, I have been for more than 6 months.
Action:	Yes, I have been for less than 6 months.
Preparation:	No, but I am planning to start in the next 30 days.
Contemplation:	No, but I am planning to start in the next 6 months.
Precontemplation:	No, and I don't plan to start in the next 6 months.

All patients may not need to lose weight, and this need can be determined by calculating the body mass index of each patient and then staging those patients who have an index greater than 25. Efforts at trying to lose weight can be accomplished by exercise, dieting, or both. Because exercise is important for patients with heart failure, independent of their need to lose weight, staging can be determined by evaluating dietary interventions. If patients report that they are in the action or the maintenance stage, yet show no downward trend in their weight or body mass index, there may be a mismatch between reported effort and actual

Table 5 Educational plan based on level of readiness to change**LEVEL: Precontemplation** – *Having no intention of changing behaviors related to heart failure in the next 6 months*

Process of change	Activity
Consciousness-raising	
Encourage patients to increase their level of awareness, seek new information, and gain understanding and feedback	Have educational pamphlets readily available for patients to pick up and read Give a list of Internet sites with information on heart failure Encourage questions Invite patients to attend a heart failure support group Have patients describe heart failure in their own words Share information from investigational studies of heart failure, especially findings about quality of life
Dramatic relief	
Ask patients to consider ways in which heart failure affects the way they feel	Have patients recall how they felt before they had heart failure versus how they are feeling now Have patients in the maintenance stage give testimonials during a group session about how lifestyle changes have improved how they feel
Environmental reevaluation	
Encourage patients to consider and assess how their heart failure affects the physical and social environment	Have family members share their thoughts about the patient's illness Have family members share experiences and emotions related to exacerbations of heart failure and hospitalizations Ask patients to describe physical and social changes in their life since their heart failure developed

LEVEL: Contemplation – *Seriously considering the need to change lifestyle behaviors, but having no plan to do so in the next month*

Process of change	Activity
Consciousness-raising	
Encourage patients to increase their level of awareness, seek new information, and gain understanding and feedback	Give patients pamphlets about heart failure to take home Provide a video about heart failure Give a list of Internet sites with information on heart failure Encourage questions Invite patients to attend a heart failure support group Have patients describe heart failure in their own words
Dramatic relief	
Ask patients to consider ways in which heart failure affects the way they feel	Have patients attend a support group with members giving testimonials about improvement in the way the members feel after making lifestyle changes Have patients express their feelings at a support group Have patients role-play situations in which they need to make choices between healthy and unhealthy lifestyle changes (eg, ordering low-sodium foods from a restaurant menu) Use psychodrama to role-play what body parts feel with heart failure (eg, what would swollen feet say if they could talk?) Have patients visualize the release of neurohormones rampant in their body if no lifestyle changes are made
Environmental reevaluation	
Encourage patients to consider and assess how heart failure affects their physical and social environment	Have patients and family members reverse role-play an episode of exacerbation of the heart failure Have patients describe changes they have made in their physical environment since their heart failure developed Discuss patients' personal cost of treating heart failure

Table 5 *continued*

<i>Self-reevaluation</i>	
Encourage patients to assess how they feel and think about themselves with respect to heart failure and the need to exercise or decrease sodium intake	Have patients describe the changes in their lives since heart failure developed (eg, activity level, hobbies, travel) Have patients fill out a questionnaire on the quality of life and review the results with them Have patients visualize what life would be like without signs and symptoms of heart failure Review patients' diet records and point out inconsistencies between values and behaviors
LEVEL: Preparation – Planning to change behaviors related to heart failure in the next month	
Process of change	Activity
<i>Self-reevaluation</i>	
Encourage patients to assess how they feel and think about themselves with respect to having signs and symptoms of heart failure	Have patients write down 2 or 3 thoughts or beliefs about their heart failure; identify any items that are incorrect or inaccurate, and review corrected information with patients Help patients plan activities for after lifestyle is changed (eg, exercise plan, dietary choices to replace sodium, use of low-sodium recipes)
<i>Self-liberation</i>	
Encourage patients to believe in their ability to change and make the choice and commitment to act on that belief	Complete a written contract between nurse and patient about new behaviors Explain importance of self-care in managing heart failure Teach patients to read "Nutrition Facts" labels Have patients speak with a patient who is in the maintenance stage about the effects of the changes on quality of life Encourage patients to purchase equipment needed for lifestyle changes (eg, comfortable walking shoes)
<i>Stimulus control</i>	
Encourage patients to identify cues to remind them to increase positive behavior	Have patients remove items from their home that are temptations and potentially harmful (eg, salt, cigarettes, alcohol, high-fat foods) Have patients purchase a low-sodium cookbook Have patients place the bathroom scale next to the commode for daily measurement of weight Have patients place their medication schedule on the refrigerator door Have patients keep 2-L bottle of water in the kitchen and pour out an equivalent amount of water whenever drinking another liquid Provide patients with 1-week pillbox Help patients develop a shopping list of healthy snacks to keep in the house
LEVEL: Action – Engaged in changing behaviors related to heart failure for less than 6 months	
Process of change	Activity
<i>Self-liberation</i>	
Encourage patients to believe in their ability to change and make the choice and commitment to act on that belief	Update the contract between the nurse and the patient Have patients record weight, blood pressure, and heart rate daily Allow patients to self-adjust amount of diuretic as needed Have patients keep a diet and activity journal
<i>Counterconditioning</i>	
Encourage patients to substitute healthier alternatives in conditions that normally elicit signs and symptoms of heart failure	Have patients identify situations that increase noncompliance and suggest substitute activities Review information on low-sodium diet; share low-sodium recipes; give a list of low-sodium cookbooks Develop an exercise plan with patients or have patients join cardiac rehabilitation or fitness center Help patients identify low-fat and low-cholesterol foods; share heart healthy recipes; give a list of low-fat cookbooks

Table 5 continued

<i>Stimulus control</i>	
Encourage patients to identify cues to remind them to increase positive behavior	<p>Have patients remove items from their home that are temptations and potentially harmful (eg, salt, cigarettes, alcohol, high-fat foods)</p> <p>Have patients purchase a low-sodium cookbook</p> <p>Have patients place the bathroom scale next to the commode for daily measurement of weight</p> <p>Have patients place their medication schedule on the refrigerator door</p> <p>Have patients keep 2-L bottle of water in the kitchen and pour out an equivalent amount of water whenever drinking another liquid</p> <p>Encourage patients to avoid entering restaurants that serve high-sodium food (eg, McDonald's, Taco Bell, any Chinese restaurant)</p> <p>Have patients post their daily exercise plan on the refrigerator</p>
<i>Reinforcement management</i>	
Encourage patients to acknowledge and reward positive behavior changes	<p>Help patients identify specific rewards such as a new dress after losing 4.5 kg (10 lb) or a nice dinner out after 2 weeks of carefully following a low-sodium diet</p> <p>Encourage patients to take a vacation out of town</p>
<i>Helping relationships</i>	
Encourage patients to use support system of family, friends, and clinic healthcare providers	<p>Help patients identify at least 1 person who is committed to helping them change and get support from that person</p> <p>Get patients involved in a support group</p> <p>Encourage patients to join Weight Watchers, cardiac rehabilitation, and so forth</p>
LEVEL: Maintenance – <i>Actively engaged in changing behaviors related to heart failure for past 6 months</i>	
Process of change	Activity
<i>Counterconditioning</i>	
Encourage patients to substitute healthier alternatives in conditions that normally elicit signs and symptoms of heart failure	<p>Have patients identify situations that increase noncompliance and suggest substitute activities</p> <p>Share low-sodium recipes with patients; give patients a list of low-sodium cookbooks</p> <p>Develop an exercise plan with patients or have them join a cardiac rehabilitation or fitness center</p> <p>Share heart healthy recipes with patients; give patients a list of low-fat cookbooks</p>
<i>Stimulus control</i>	
Encourage patients to identify cues to remind them to increase positive behavior	<p>Have patients remove items from their homes that are temptations and potentially harmful (eg, salt, cigarettes, alcohol, high-fat foods)</p> <p>Have patients purchase a low-sodium cookbook</p> <p>Have patients place the bathroom scale next to the commode for daily measurement of weight</p> <p>Have patients place their medication schedule on the refrigerator door</p> <p>Identify foods to order that are within the patients' dietary guidelines when they eat out at restaurants</p> <p>Have patients repeat quality-of-life questionnaire and compare responses with previous results</p>
<i>Reinforcement management</i>	
Encourage patients to acknowledge and reward positive behavior changes	<p>Help patients identify specific rewards, such as a new dress after losing 4.5 kg (10 lb) or a nice dinner out after 2 weeks of carefully following a low-sodium diet</p> <p>Encourage patients to take a vacation out of town</p>

Table 5 continued

Helping relationships	
Encourage patients to use support system of family, friends, and clinic healthcare providers	<p>Help patients identify at least 1 person who is committed to helping them change and get support from that person</p> <p>Get patients involved in heart failure support group</p> <p>Ask patients to speak with other patients with heart failure who are at lower levels of readiness to change</p> <p>Get patients involved in local American Heart Association activities</p>

behavior. As with sodium, use of 24-hour dietary recall, 3-day food diaries, or food checklists may help determine the problem. Portion size, as well as content of the diet, should be assessed.

Application of the TTM to Patients With Heart Failure

As the understanding of the pathology of heart failure increases, it has become clear that excessive sodium intake is harmful. The effectiveness of medications such as diuretics and neurohormonal blocking agents is reduced if sodium intake is high; hence the importance of changing dietary patterns to include a low-sodium diet. Furthermore, exercise, weight loss, and smoking cessation are beneficial in patients with heart failure. Yet how do we help patients incorporate the changes in their lives that will significantly affect signs and symptoms and, indeed, the disease state?

It is not realistic to expect patients to make changes that they are not prepared to make. A patient's stage of readiness for change must be measured before a change program is implemented. Once the patient's stage of readiness has been determined, appropriate strategies for applying the processes of change may be instituted. Table 5 presents a plan that offers specific activities for each of the processes of change to assist patients in moving through the stages of readiness for change.

Conclusion

Chronic heart failure remains a significant health problem in the United States. Traditional methods of promoting behavioral lifestyle changes have been only marginally successful, as numerous studies on patients' noncompliance have revealed. The application of the TTM to patients with heart failure offers an opportunity to improve patients' compliance by individualizing the change process to meet the needs of each patient. Doing

so, however, requires validation by research trials involving patients with heart failure before the model can be applied in clinical practice. With the appropriate activities to meet the patient's stage of readiness for change, healthcare providers may facilitate a patient's movement along the continuum of change to alter lifestyle behaviors that can affect the disease.

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