Psychological Barriers to Behavior Change

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SUMMARY

Adopting a healthy lifestyle often requires changing patterns of behavior. This article describes three categories of psychological barriers to behavior change: those that prevent the admission of a problem, those that interfere with initial attempts to change behavior, and those that make long-term change difficult. Strategies are identified that family physicians can use to overcome the barriers.

RÉSUMÉ

L'adoption d'un mode de vie sain nécessite souvent une modification de son comportement. Cet article décrit trois catégories de barrières psychosociales empêchant ce changement de comportement: celles qui poussent à nier l'existence d'un problème, celles qui contrecarrent les tentatives initiales visant à modifier le comportement et celles qui, à long terme, rendent le changement difficile. L'article identifie certaines stratégies utiles au médecin de famille désireux de surmonter ces barrières.

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MANY PEOPLE ENGAGE IN BEhaviors, such as smoking, excessive drinking, and eating high-fat foods, that can harm their health. Also, many people fail to take beneficial action, such as exercising, performing self-examinations, and wearing seat belts. Indeed, by commission or omission, most of us fall short of lifestyles that would maximize our well-being. The pervasiveness of unhealthy behaviors in our society increases both the frequency and severity of many health problems.

Unhealthy lifestyles pose a substantial challenge to family practitioners, who daily see the ill effects of their patients' habits. As the members of the medical system with whom the public has the most contact, family physicians can potentially exert enormous influence. Yet many practitioners doubt their ability to change their patients' habits in such domains as smoking and diet.[1]

To help people alter their lifestyles successfully, health professionals must be able to identify psychological barriers that inhibit desired behavior change. This paper will describe some barriers and identify specific strategies for overcoming them.

Table 1 presents an overview of my analysis of psychological barriers to behavior change. Inhibitory factors can operate at three stages of behavior change: the admission of a problem, the initial attempts to change one's behavior, and the successful long-term behavior change. I am not the first to distinguish between different stages of behavior change. For example, in the domain of addictive behaviors (eg, smoking), theorists have proposed models of change that include up to five stages.[2] Three common stages in these models are deciding to change, initial change, and maintaining change.[3,4] My framework obviously parallels these models, although my first stage emphasizes the recognition of a problem, which can precede the decision to change.

Table 2 presents a summary of the strategies that can be used to overcome the barriers listed in *Table 1*.

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Admission of the problem

At least four conceptually distinct (though not necessarily unrelated) factors can keep people from perceiving or admitting that their actions put them at risk for health problems: trivialization or denial, perceived invulnerability, faulty conceptualizations, and debilitating emotions.

Trivialization or denial. Theorists in preventive health have assumed that people will be motivated to change unhealthy behaviors when they perceive that the problem threatening them is potentially serious.[5,6] Thus, for example, it has been assumed that women will be increasingly

Table 1. **PSYCHOLOGICAL BARRIERS TO BEHAVIOR CHANGE**

BARRIERS TO ADMISSION OF PROBLEM	BARRIERS TO INITIAL ATTEMPTS TO CHANGE	BARRIERS TO LONG-TERM CHANGE
Denial or trivialization	Lack of knowledge	Cognitive and motivational drift
Perceived invulnerability	Low self-efficacy	Lack of perceived improvement
Faulty conceptualizations	Dysfunctional attitudes	Lack of social support
Debilitating emotions		Lapses

likely to perform breast self-examinations to the extent that they regard breast cancer as a severe health problem.

Surprisingly, research has not always supported this assumption. In a review of the relevant literature, Janz and Becker[7] found that only half of the published studies obtained significant correlations between perceived severity and preventive behaviors (or stated intentions). Some of these failures could have reflected a lack of variation in perceived severity, because certain diseases (eg, AIDS, cancer) are recognized as serious by everyone. But people sometimes deny that such factors as overexposure to the sun, failure to wear seat belts, and high-fat diets pose serious threats to their health. Family practitioners can fulfill an important function by educating patients about actual levels of risk.

People can also trivialize health risks not by denying that a problem is serious if it occurs, but by deciding that their absolute risk for the problem is so small that behavior change is unwarranted. Jeffery[8] has distinguished between two perspectives on health behaviors: one that concentrates on the individual and one that concentrates on the population as a whole. From a population perspective, very small individual risks can add up to very large consequences. For example, the absolute probability of a heavily smoking 35-year-old man's developing lung cancer within 10 years is 0.3%, and the probability of the same man's developing heart disease within 10 years is 0.9%.[9] Translating these figures into population statistics is sobering: of a group of one million heavily smoking 35-year-old men, nearly 10 000 will die within 10 years from their smoking habit.

Unfortunately, individuals base their behavioral decisions on their personal levels of risk, and any particular heavily smoking 35-year-old man has approximately a 99% chance of surviving the 10-year period even if he continues smoking. Given that 10 or 15 years seems to be about the longest time frame that most individuals can contemplate,[10] it is not surprising that people frequently opt to maintain pleasurable but potentially unhealthy behaviors, even when they perceive their risks accurately. (Of course, people do not always perceive their risks accurately. The next section will discuss the tendency to optimism.)

What can family physicians do to counter this "individual risk" perspective? First, awareness of their patients' perspectives can help to make the sometimes frustrating behaviors of patients more understandable. But there are also some things that physicians can do to alter their patients' perspectives. For one thing, physicians can make risks more salient to their patients by describing – with similarities noted where appropriate – people who failed to beat the odds. Anecdotal descriptions of personal experiences have been shown to have much more effect than abstract population information.[11,12]

A second approach is suggested by research on the "framing" of risks. Extrapolating from theories on decision making under risk,[13] several researchers have found that the way risks are presented to patients and physicians affects their willingness to engage in corrective or preventive actions. For example, people asked to imagine that they have a terminal illness with a limited life expectancy, and physicians asked what

they would recommend to such patients, are both more likely to say that they would choose or recommend surgical treatment when probabilities are presented in terms of the patient's chances of surviving surgery rather than his or her chances of dying during surgery (even though the two probabilities represent the same reality, eg, a 90% chance of survival or a 10% chance of dying).[14,15] Conversely, patients' willingness to undergo diagnostic procedures like amniocentesis and to perform behaviors like breast self-examination is greater when messages are framed negatively – presenting the probability of an abnormal rather than a normal fetus or the dangers of not performing rather than the benefits of performing self-examinations.[14,16]

The common principle underlying these findings is that the framing of options affects perceptions of whether the decision involves possible gains or losses. In the surgery case, individuals must decide whether to undergo a life-threatening procedure that has curative potential; choosing surgery seems more attractive when surgical outcomes are framed positively. In the diagnostic cases, individuals must decide whether to undergo procedures that can identify abnormalities; the procedures seem more warranted when stated probabilities emphasize the likelihood of abnormality.

What implications do these studies on the framing of risks have for family physicians? First, if physicians want to avoid the effects of framing, they should describe options both positively and negatively. For example, even though it may seem redundant, the probabilities of both a normal and an abnormal fetus should be stated to patients who are considering amniocentesis. (Of course, decisions regarding amniocentesis are complicated by the associated risk of miscarriage; thus, the probabilities of miscarriage and no miscarriage should also be stated.) On the other hand, physicians sometimes feel strongly that a particular decision is desirable, such as to perform breast self-examinations. In these cases, it seems warranted to frame the options in a manner that maximizes the chances of behavior change. For preventive health behaviors, this would mean emphasizing the risks of not performing the behavior.

Perceived invulnerability. If individuals do not feel personally susceptible to a health problem, then they are unlikely to change their behaviors to reduce their risk.[5-7] Unfortunately, people are unrealistically optimistic about their chances of avoiding various problems. For example, Weinstein[17] surveyed a random, community-wide sample in New Jersey. He found a pervasive tendency toward unrealistic optimism about susceptibility to health problems. When asked to estimate their own risk compared to their peers, respondents rated themselves as significantly less likely than average to experience 25 of 32 health hazards, including drug and alcohol problems, lung and skin cancer, gallstones, pneumonia, tooth decay, ulcers, influenza, and diabetes.

Weinstein also assessed various objective risk factors, such as family histories, smoking status, and diet. Although respondents took into account some risk factors when rating their own susceptibility to health problems, there were many examples of poor recognition of actual risks. For instance, there was no relation between smoking status and perceived risk of stroke, between exercise or dietary cholesterol and perceived susceptibility to heart disease, between tooth flossing and perceived vulnerability to gum disease, or between seat belt use and perceived risk of injury in an automobile accident.

Why do people see themselves as less vulnerable to health problems than their peers? Obviously, it is disturbing or threatening to think that we might develop a serious health problem. Thus, to the extent that a problem has not yet appeared, we are motivated to conclude that it is unlikely to occur in the future.[17] Similarly, people are quick to recognize factors that decrease their own risks, but fail to appreciate that such factors could be common in others (and, therefore, do not afford them unique protection).

People are less likely or less willing to recognize factors that increase, rather than decrease, their risks.[18] For example, in one study, people who had a sibling with colorectal cancer were informed by mail of their relatively greater risk for this type of cancer; yet, in a subsequent interview, they did not rate themselves as more susceptible

Table 2. **STRATEGIES FOR OVERCOMING PSYCHOLOGICAL BARRIERS**

BARRIERS TO ADMISSION OF PROBLEM	BARRIERS TO INITIAL ATTEMPTS TO CHANGE	BARRIERS TO LONG-TERM CHANGE
Educate patients about their susceptibility to health problem	Provide basic information and skills relevant to new behavior	Schedule follow-up visits to maintain motivation
Describe personal experience with patients who developed problem	Elicit and address patients' concerns about self-efficacy	Use rewards: set specific goals and apply meaningful rewards
Frame risks optimally: state negative effects of not performing healthy behavior	Articulate specific benefits that patients will gain by adopting new behavior	Provide realistic expectations about improvement
Have patients imagine they have developed problem	Elicit and address competing attitudes that interfere with new behavior	Identify improvements that can occur quickly
Educate patients about early signs of problem		Encourage self-monitoring of progress
Elicit and address faulty conceptualizations of problem		Involve patients' families in behavior change
Correct fear-arousing misperceptions of disease		Have patients imagine long term adherence to new behavior
Convince patients that their actions can effectively reduce threat		Induce adaptive explanations for possible lapses

to colorectal cancer than did people in a control group.[19]

An optimistic outlook probably helps people cope with difficulties and disappointments. Indeed, Taylor and Brown[20] have argued that several illusions, including optimism and an overly positive self-image, promote well-being by motivating people to persevere in the face of obstacles. There is even evidence that people who are optimistic by temperament are less likely to experience certain illnesses and show better recovery from coronary bypass surgery.[21] Thus, an optimistic approach is, in many respects, healthy.

Too much optimism, however, can inhibit preventive health behaviors. For example, Burger and Burns[22] found that a sense of personal invulnerability was associated with failure to take precautions against pregnancy and sexually transmitted diseases. Baumeister[23] has argued that there is an "optimal margin of illusion": seeing things as slightly better than they are allows perceivers to reap the benefits of optimism while avoiding the dangers of acting on highly unrealistic assumptions.

Thus, the challenge for the family practitioner is to motivate protective actions without unduly undermining patients' optimism. One strategy is the same educational one mentioned previously: direct, no-nonsense talk about patients' susceptibilities to problems for which they are at heightened risk (due to age, family history, or habits). Describing personal experiences with people who developed such problems can also be effective.

A third strategy for overcoming perceived invulnerability can be derived from studies on "mental simulation." Several researchers have shown that imagining an event increases the subjective likelihood of that event's occurring in the future.[24,25] For example, Gregory and colleagues[26] asked subjects to read and imagine a scenario depicting their involvement in an automobile accident. Compared with controls, subjects who imagined the scenario said that they were more likely to be involved in a car accident

someday. In a second study, subjects who had imagined being involved in an automobile accident expressed greater support, in an apparently unrelated telephone interview, for various traffic safety laws (eg, legislating seat belt use, lowering the speed limit).

Thus, mental simulations can make an event seem more likely or real. Extending this principle, smokers, for example, could be asked to read and project themselves into a written script in which they have developed heart disease. It is necessary that people imagine that they personally have developed the health problem rather than, for example, simply thinking about the problem.[24,25,27]

Faulty conceptualizations. Patients' conceptualizations of illness determine, in part, how they interpret physical symptoms, whether they seek medical care, and whether they comply with recommended treatments. For example, many people delay seeking medical care – sometimes fatally – because they attribute early signs and symptoms of a problem to a benign cause.[28] A cancer victim, for example, can attribute chronic fatigue to a hectic lifestyle, or an elderly patient can erroneously assume that his or her pains are untreatable consequences of aging.[29,30] These errors often reflect a lack of knowledge about early manifestations of health problems.

In addition, many people have critically flawed intuitive conceptions of illness or body functions.[31] For example, some hypertensive patients believe that they can tell when their blood pressure is elevated, based on symptoms like headaches.[32] They can thus take medication only when experiencing the symptoms and evaluate the effectiveness of the medication by its ability to get rid of the symptoms. Misconceptions of normal body functions can also induce unhealthy behaviors, as illustrated by Snow and Johnson,[33] who studied women's folk beliefs about menstruation. For example, some women view the uterus as a hollow organ that slowly fills with blood between menstrual periods, opening to allow the blood to escape during menses; they can thus assume that conception is possible only when the uterus is "open," namely immediately before, during, and immediately after menses.

How can family physicians correct their patients' faulty conceptualizations? First, they should not assume that patients know the early symptoms of health problems and should educate them about warning signals of problems for which they are at high risk. Second, physicians can elicit patients' intuitive models of illness. For example, patients can describe their understanding of health problems or express their feelings about behaviors recommended by the physician. Collaborative discussions can correct misconceptions and can allow the tailoring of recommendations to fit patients' implicit models.

Debilitating emotions. Emotions can sometimes interfere with behaviors that maintain well-being. For example, certain diseases are so threatening that patients are too frightened to undergo tests that diagnose them. In a survey of women aged 40 to 75, Schechter and colleagues[34] found that respondents associated breast cancer primarily with mastectomy and death and cited fear of discovering they might have breast cancer as a reason for not having mammograms. Jepson and Chaiken[35] measured subjects' naturally occurring levels of fear about cancer and found that highly fearful subjects processed a message about cancer checkups less effectively than did less fearful subjects.

Similarly, social psychology studies have demonstrated that highly fear-provoking messages can motivate avoidance and escape, rather than attention and interest.[36,37] Highly threatening messages are especially likely to produce maladaptive responses (such as avoidant thinking) when recipients are not reassured about how they can reduce the threat.[38,39]

Family physicians can reduce patients' debilitating fears by correcting misperceptions, such as the belief that cancer is a death sentence. Also, physicians can increase patients' perceptions of "response efficacy"[6] – their beliefs that certain behaviors (eg, self-examinations) will effectively reduce the threat. When patients understand that early detection is possible and that treatment is often successful, the problem becomes more controllable and less to be feared.

Initial attempts to change

I will discuss three factors that can inhibit

attempts to change behavior: lack of knowledge, low self-efficacy, and dysfunctional attitudes.

Lack of knowledge. The first factor is straightforward. Obviously, people cannot change their behavior if they don't know how to proceed. Whether the desired behavior is exercising, stopping smoking, reducing dietary fat, performing self-examinations, or using sunscreen, patients need specific information about how to begin, where to go for help, how long to continue, and so on.

Health professionals often underestimate both the extent of ignorance in relevant populations and its impact on behavior. For example, a primary reason for discontinuing exercise programs is injury, and a primary cause of injury is uninformed exercise (eg, poor warm-ups, overly intense workouts).[40,41]

A clear demonstration of the influence of basic information on behavior was provided by Leventhal and colleagues.[42] Incoming college students were given an information package urging them to get a tetanus inoculation. When the package also included a map of the campus showing the location of student health services, 28% of the students actually got the shots; when the package did not include a map, only 3% of the students got the shots.

The implications of these data for family physicians are clear: many patients know surprisingly little about preventive health behaviors, and it is important to provide them (or to have someone else provide them) with detailed how-to information. Breaking down complex behaviors into more manageable components can facilitate skills acquisition.[43] Examples are teaching patients how to perform breast or testicular self-examinations and referring smokers to helping organizations.

Low self-efficacy. People will not undertake preventive health behaviors unless they feel capable of performing the actions effectively – that is, unless they are high in "self-efficacy." For example, smokers must believe that they are personally capable of stopping smoking; obese people must feel personally capable of losing weight.

This principle is reflected in several models of behavior change. For example, both the health belief model[5,7] and protection motivation theory[6,44] propose that a person will act to deal with a health threat to the extent that the person sees the threat as serious, feels personally susceptible to it, believes the recommended actions to be effective in reducing the threat, and feels capable of carrying out the actions successfully. In many studies, the fourth factor, self-efficacy, has proved to be a powerful determinant of intentions and behavior. For example, two studies of breast self-examination[45,46] revealed that the single best predictor of the frequency of breast self-examinations was an index of perceived barriers to self-examination. This index primarily reflected low self-efficacy; its components were low confidence in doing self-examinations, exclusive reliance on medical personnel for breast examinations, and forgetting to do self-examinations.

Bandura[47] has proposed a comprehensive model of self-efficacy, suggesting that expectations of personal efficacy determine whether coping behavior will be initiated, how much effort will be expended in the performance of the behavior, and how long effort will be maintained in the face of difficulties. Thus, as others have also argued,[43] self-efficacy is important not only for initiating behavior change, but also for maintaining it over the long term. Bandura[47] has also identified the major sources of beliefs about self-efficacy, including performance outcomes and comments from other people.

For the family practitioner, these models and studies yield some simple guidelines. It is important to instill self-efficacy regarding recommended behaviors by providing basic knowledge and skills, backed up by verbal persuasion. Physicians should elicit their patients' concerns about self-efficacy, correct any misperceptions that emerge (eg, low-fat meals are difficult to prepare; an exercise regimen is incompatible with a busy lifestyle), and provide encouragement and advice.

Dysfunctional attitudes. Attitudes are individuals' evaluative (good-bad) judgments about identifiable aspects of the environment (eg, issues, people, behaviors).[48] The main source of attitudes toward behaviors is beliefs about the consequences of the behavior.[49]

For example, a survey of male college students showed that their attitudes toward performing testicular self-examinations were predictable from their beliefs about the outcomes of such behavior (whether self-examinations would be uncomfortable, accurate in detecting cancer, etc).[50]

In the domain of preventive health behaviors, there are two major kinds of dysfunctional attitudes: unfavorable attitudes toward healthy behaviors and favorable attitudes toward unhealthy behaviors. It is important to distinguish between these two types, because people could choose to maintain unhealthy habits not because they dislike the healthy option but because they value unhealthy behaviors more highly. For example, people might approve of exercise but not do so because their attitudes are even *more* favorable toward behaviors incompatible with exercising (eg, watching television, drinking beer).[51,52]

What implications does this work on dysfunctional attitudes have for family physicians? First, physicians need to foster favorable attitudes toward behaviors that they want patients to adopt, such as exercising, conducting self-examinations, or stopping smoking. The most direct way to do so is via patients' beliefs about the consequences of the behavior. It is well worth the effort to spend a couple of minutes with the patient generating some *specific* benefits of adopting the recommended actions (which could be obvious to the physician, but are not necessarily obvious to the patient).

Physicians should also elicit patients' perceptions of competing attitudes that interfere with the recommended action. For example, patients being placed on a diet with restricted fat intake could be asked to identify those foods that will be most difficult to forgo. Such discussions can be very informative about possible sources of failure to comply.[31] The physician can try to persuade the patient of the hazards of the competing behaviors (eg, of eating the banned foods) and could be able to suggest alternatives or coping strategies.

Long-term change

At least four factors can pose difficulties for maintaining long-term change: cognitive and motivational "drift," lack of perceived improvement, lack of social support, and lapses.

Cognitive and motivational drift. Although individuals often undertake a change in lifestyle with considerable enthusiasm, their beliefs and feelings tend, over time, to drift back toward original levels. For example, people might feel very vulnerable to a health problem immediately after discussing it with the family physician, but their perceptions will gradually return to previous levels unless they continue to think about their susceptibility. Similarly, attitude change erodes over time unless steps are taken to maintain it.[20,48] People will thus return to their unhealthy (but familiar and often pleasurable) habits.

How can family physicians reduce cognitive and motivational drift among patients undertaking changes in lifestyle? One technique is to schedule brief follow-up visits, wherein patients report progress and problems. Of course, billing restrictions on follow-up appointments can impose practical limitations.

Reward programs provide a second strategy for increasing long-term adherence to diets, exercise regimens, etc. Meichenbaum and Turk[31] have outlined the principles of successful reward programs. For example, specific and realistic goals must be set ("reduce smoking by one cigarette every 2 days," as opposed to "do your best"). Also, rewards must be meaningful to the participants (thus, their preferences should be solicited). An excellent example comes from a study by Grady and colleagues.[53] Women were trained in breast self-examination and randomly assigned to external reward, self-reward, or no reward groups. Subjects in the external reward group received a lottery ticket each time they returned a breast self-examination record; those in the self-reward group were instructed to reward themselves in preselected ways after self-examinations (common self-rewards were "make a special purchase" and "eat a favorite food").

The external reward group had higher return rates of self-examination records than did the other two groups (73% versus 51%). Within the self-reward group, only half of the participants reported actually rewarding themselves; those who did so returned their records at a rate similar to that of the external reward group. Thus, self-reward seemed effective *if* subjects actually implemented the planned system.

Extrinsic rewards do have drawbacks. Because rewards are controlling, patients can attribute their adherence to the rewards rather than to voluntary adoption of the lifestyle and might not learn to enjoy the new behavior.[54] For example, under normal circumstances, exercise eventually becomes intrinsically enjoyable and self-rewarding (and, therefore, self-maintaining); however, if people exercise simply to obtain external rewards, they are less likely to develop intrinsic motivation and often stop when the rewards are withdrawn.

Reward programs, therefore, seem warranted only for people undertaking a major change in lifestyle that is unlikely to become self-reinforcing for a long time, or for those who have tried before and failed or who don't think they can adhere to the recommended regimen. An example of a behavior that often warrants a reward system is smoking cessation. Because of the complexity of reward programs, physicians could prefer to refer patients to professional organizations that use rewards.

Lack of perceived improvement. People often discontinue exercise, diet, or drug regimens because they do not perceive improvement.[31] Not surprisingly, people lose enthusiasm for activities that bring no apparent benefit, especially if they require effort (eg, exercise, dieting) or are seen as potentially harmful (eg, prescribed drugs). For example, one study found that people were more likely to continue to attend fitness clubs regularly if they noticed physical improvements.[55]

Family practitioners can reduce patient disappointment by encouraging realistic expectations about improvement and by informing patients of changes that can occur relatively quickly. For example, flexibility improves soon after the initiation of an exercise program, whereas changes like weight loss take much longer to occur. Finally, physicians can encourage patients to monitor their own progress (eg, recording the frequency and duration of exercise), which will make minor improvements more salient.

Lack of social support. A supportive social environment is often a crucial predictor of long-term success in changing behavior.[31,41,55] Theorists now distinguish different types of social support, such as emotional, informational, and tangible, hypothesizing that each kind is important in certain circumstances.[56,57] The underlying principle, however, is straightforward: understanding and support from patients' families make changes more likely to be maintained over the long term.

The implications for family physicians are also straightforward: patients' social environments must be considered. Family appointments can be warranted, either to teach relevant skills (eg, how to reduce fat in cooking) or to involve families directly in the new lifestyle (eg, by joining the exercise program).[58] A recent meta-analysis of weight-loss programs, for example, found that programs that formally involved partners in treatment ("couples programs") were particularly effective.[59]

Lapses. When long-term change is attempted, behavioral lapses – slips or mistakes in which the old habits emerge again[60] – are common. For example, people attempting to stop smoking can lapse by smoking one or more cigarettes in a particular setting. Obviously, lapses increase the probability that old habits will be fully resumed – that relapse will occur; thus, physicians should do what they can to minimize lapses.

Follow-up appointments and self-monitoring both help reduce inadvertent lapses. In general, anything that increases behavioral planning, especially methods of dealing with obstacles and temptations, helps patients avoid lapses. Mental simulation can be particularly helpful. Imagining being in a situation and coping with its demands can improve actual coping skills. A meta-analysis of studies on mental practice concluded that mental rehearsal significantly improves performance of motor skills.[61]

In a more relevant context, Sherman and Anderson[27] asked patients who were beginning a four-session course of psychotherapy to imagine and explain why they would complete the therapy; clients who did so were more likely to complete the program than were those who did not. Recall that mental simulation increases the subjective likelihood of the imagined event; thus, the

technique could have worked either because it increased patients' expectations of completing therapy or because it stimulated thoughts and plans about how to adhere.

Asking patients to imagine adhering to a healthy lifestyle will increase the likelihood of successful behavior change. Patients might be asked particularly to think about encountering and overcoming possible obstacles to long-term change (eg, resisting the desire to smoke in a tempting situation); such thoughts should stimulate planning, increase expectations of success, and improve actual coping skills.

Although lapses are undesirable, they do not inevitably produce full-blown relapse. Marlatt and Gordon[4] proposed that individuals' cognitive and affective reactions to lapses will influence whether relapse ensues. In particular, relapse is more likely when individuals explain their lapse in terms of internal, stable, global, and uncontrollable causes (eg, lack of willpower) rather than external, unstable, specific, and controllable causes (eg, unusual situational pressures). The former kinds of explanations are assumed to produce reactions, such as self-blame and guilt, that make it hard to recover from slips. Recent research has supported this model.[62]

Physicians should, therefore, warn patients about the possibility of lapses and try to induce adaptive explanations in the event that lapses do occur. For example, hypothetical high-risk settings can be described, and patients can explain why they might lapse. Discussion can then focus on how the hypothetical lapse would reflect controllable factors, such as failure to use effective coping responses.

Practical limits to proposed strategies

Many of the strategies outlined in *Table 2* require time-consuming patient assessment, education, and instruction. Given the heavy demands of family practice today, these ideals can be unrealistic standards for routine care. Indeed, surveys of family practitioners indicate that lack of physician time constitutes a major barrier to proper risk assessment, counseling, and follow up.[1]

Clearly, practical considerations force family physicians to make choices about when or how to implement strategies to reduce psychological barriers to behavior change. For example, certain problems can be deemed sufficiently threatening or widespread to warrant routine assessment and counseling in one's practice. For other problems, counseling can be limited to those patients who are judged at high risk. One useful resource for these kinds of decisions is the Health Maintenance Guide from the College of Family Physicians of Canada, which distinguishes between discretionary and nondiscretionary components of periodic health examinations.

Thus, the usefulness of my analysis for a particular practice will depend on the physician's own attitudes and priorities. If and when behavior change is deemed necessary for a patient, the factors outlined and the strategies suggested could prove helpful. ■

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References

1. Mann KV, Putnam RW. Barriers to prevention: physician perceptions of ideal versus actual practices in reducing cardiovascular risk. *Can Fam Physician* 1990;36:665-70.
2. Prochaska JO, DiClemente CC. Stages and processes of self-change of smoking: toward an integrative model of change. *J Consult Clin Psychol* 1983;51:390-5.
3. Rosen TJ, Shipley RH. A stage analysis of self-initiated smoking reductions. *Addict Behav* 1983;8:263-72.
4. Marlatt GA, Gordon JR, editors. *Relapse prevention: maintenance strategies in addictive behavior change.* New York, NY: Guilford, 1985.
5. Rosenstock IM. The health belief model and preventive health behavior. *Health Educ Monogr* 1974;2:354-86.
6. Rogers RW. A protection motivation theory of fear appeals and attitude change. *J Psychol* 1975;91:93-114.
7. Janz NK, Becker MH. The health belief model: a decade later. *Health Educ Q* 1984;11:1-47.
8. Jeffery RW. Risk behaviors and health: contrasting individual and population perspectives. *Am Psychol* 1989;44:1194-202.
9. Mattson ME, Pollack ES, Cullen JW. What are the odds that smoking will kill you? *Am J Public Health* 1987;77:425-31.

10. Bonieki G. What are the limits to man's time and space perspectives? Toward a definition of a realistic planning horizon. *Technol Forecasting Soc Change* 1980;17:161-75.

11. Ginosar Z, Trope Y. The effects of base rates and individuating information on judgments about another person. *J Exp Soc Psychol* 1980;16:228-42.

12. Nisbett RE, Ross L. *Human inference: strategies and shortcomings of social judgment.* Englewood Cliffs, NJ: Prentice-Hall, 1980.

13. Kahneman D, Tversky A. Prospect theory: an analysis of decision under risk. *Econometrica* 1979;49:263-91.

14. Marteau TM. Framing of information: its influence upon decisions of doctors and patients. *Br J Soc Psychol* 1989;28:89-94.

15. McNeil BJ, Pauker SG, Sox HC, Tversky A. On the elicitation of preferences for alternative therapies. *N Engl J Med* 1982;306:1259-62.

16. Meyerowitz BE, Chaiken S. The effect of message framing on breast self-examination attitudes, intentions, and behavior. *J Pers Soc Psychol* 1987;52:500-10.

17. Weinstein ND. Unrealistic optimism about susceptibility to health problems: conclusions from a community-wide sample. *J Behav Med* 1987;10:481-500.

18. Weinstein ND. Reducing unrealistic optimism about illness susceptibility. *Health Psychol* 1983;2:11-20.

19. Blalock SJ, DeVellis BM, Afifi RA, Sandler RS. Risk perceptions and participation in colorectal cancer screening. *Health Psychol* 1990;9:792-806.

20. Taylor SE, Brown JD. Illusion and well-being: a social psychological perspective on mental health. *Psychol Bull* 1988;103:193-210.

21. Scheier MF, Carver CS. Dispositional optimism and physical well-being: the influence of generalized outcome expectancies on health. *J Pers* 1987;55:169-210.

22. Burger JM, Burns L. The illusion of unique invulnerability and the use of effective contraception. *Pers Soc Psychol Bull* 1988;14:264-70.

23. Baumeister RF. The optimal margin of illusion. *J Soc Clin Psychol* 1989;8:176-89.

24. Anderson CA. Imagination and expectation: the effect of imagining behavioral scripts on personal intentions. *J Pers Soc Psychol* 1983;45:293-305.

25. Taylor SE, Schneider SK. Coping and the simulation of events. *Soc Cognit* 1989;7:174-94.

26. Gregory LW, Burroughs JW, Ainslie FM. Self-relevant scenarios as an indirect means of attitude change. *Pers Soc Psychol Bull* 1985;11:435-44.

27. Sherman RT, Anderson CA. Decreasing premature termination from psychotherapy. *J Soc Clin Psychol* 1987;5:298-312.

28. Jones RA. Expectations and delay in seeking medical care. *J Soc Issues* 1990;46(2):81-95.

29. Cacioppo JT, Andersen BL, Turnquist DC, Petty RE. Psychophysiological comparison processes: interpreting cancer symptoms. In: Andersen BL, editor. *Women with cancer: psychological perspectives.* New York, NY: Springer-Verlag, 1986:141-71.

30. Prohaska TR, Keller ML, Leventhal EA, Leventhal H. Impact of symptoms and aging attribution on emotions and coping. *Health Psychol* 1987;6:495-514.

31. Meichenbaum D, Turk DC. *Facilitating treatment adherence: a practitioner's guidebook.* New York, NY: Plenum Press, 1987.

32. Meyer D, Leventhal H, Gutmann M. Common-sense models of illness: the example of hypertension. *Health Psychol* 1985;4:115-35.

33. Snow LF, Johnson SM. Modern day menstrual folklore. *JAMA* 1977;237:2736-9.

34. Schechter C, Vanchieri CF, Crofton C. Evaluating women's attitudes and perceptions in developing mammography promotion messages. *Public Health Rep* 1990;105:253-7.

35. Jepson C, Chaiken S. Chronic issue-specific fear inhibits systematic processing of persuasive communications. *J Soc Behav Pers* 1990;5:61-84.

36. Leventhal H. Findings and theory in the study of fear communications. In: Berkowitz L, editor. *Advances in experimental social psychology.* Vol 5. New York, NY: Academic Press, 1970:119-86.

37. McGuire WJ. Attitudes and attitude change. In: Lindzey G, Aronson E, editors. *Handbook of social psychology.* 3rd ed, vol 2. New York, NY: Random House, 1985:233-346.

38. Self CA, Rogers RW. Coping with threats to health: effects of persuasive appeals on depressed, normal, and antisocial personalities. *J Behav Med* 1990;13:343-57.

39. Lazarus RS, Folkman S. Emotions: a cognitive-phenomenological analysis. In: Plutchik R, Kellerman H, editors. *Theories of emotion.* New York, NY: Academic Press, 1984:189-218.

40. Massie JF, Shephard RJ. Physiological and psychological effects of training: a comparison of individual and gymnasium programs, with a characterization of the exercise "drop-out." *Med Sci Sports* 1971;3:110-7.

41. Olson JM, Zanna MP. Understanding and promoting exercise: a social psychological perspective. *Can J Public Health* 1987;78:S1-S7.

42. Leventhal H, Singer R, Jones S. The effects of fear and specificity of recommendation upon attitudes and behavior. *J Pers Soc Psychol* 1965;2:20-9.

43. Strecher VJ, DeVellis BM, Becker MH, Rosenstock IM. The role of self-efficacy in achieving health behavior change. *Health Educ Q* 1986;13:73-91.

44. Maddux JE, Rogers RW. Protection motivation and self-efficacy: a revised theory of fear appeals and attitude change. *J Exp Soc Psychol* 1983;19:469-79.

45. Shepperd SL, Solomon LJ, Atkins E, Foster RS Jr, Frankowski B. Determinants of breast self-examination among women of lower income and lower education. *J Behav Med* 1990;13:359-71.

46. Strauss LM, Solomon LJ, Costanza MC, Worden JK, Foster RS. Breast self-examination practices and attitudes of women with and without a history of breast cancer. *J Behav Med* 1987;10:337-50.
47. Bandura A. Self-efficacy: toward a unifying theory of behavioral change. *Psychol Rev* 1977;84:191-215.
48. Olson JM, Zanna MP. Attitudes and beliefs. In: Baron RM, Graziano WG, editors. *Social psychology.* Fort Worth, Tex: Holt, Rinehart, Winston, 1991:192-225.
49. Fishbein M, Ajzen I. *Beliefs, attitudes, intention, and behavior: an introduction to theory and research.* Reading, Mass: Addison-Wesley, 1975.
50. Brubaker RG, Wickersham D. Encouraging the practice of testicular self-examination: a field application of the theory of reasoned action. *Health Psychol* 1990;9:154-63.
51. Fishbein M. Social psychological analysis of smoking behavior. In: Eiser JR, editor. *Social psychology and behavioral medicine.* London: Wiley, 1982:179-97.
52. Eiser JR, Gentle P. Health behavior as goal-directed action. *J Behav Med* 1988;11:523-35.
53. Grady KE, Goodenow C, Borkin JR. The effect of reward on compliance with breast self-examination. *J Behav Med* 1988;11:43-57.
54. Lepper MR, Greene D, editors. *The hidden costs of reward: new perspectives on the psychology of human motivation.* Hillsdale, NJ: Erlbaum, 1978.
55. Olson JM, Zanna MP. *Predicting adherence to a program of physical exercise: an empirical study.* Toronto, Ont: Ontario Ministry of Tourism and Recreation, 1982.
56. Cohen S. Psychosocial models of the role of social support in the etiology of physical disease. *Health Psychol* 1988;7:269-97.
57. Taylor SE. Health psychology: the science and the field. *Am Psychol* 1990;45:40-50.
58. Norman R. Health behavior: the implications of research. *Health Promotion* 1986;25(1-2):2-5,9.
59. Black DR, Gleser LJ, Kooyers KJ. A meta-analytic evaluation of couples weight-loss programs. *Health Psychol* 1990;9:330-47.
60. Brownell KD, Marlatt GA, Lichtenstein E, Wilson GT. Understanding and preventing relapse. *Am Psychol* 1986;41:765-82.
61. Feltz DL, Landers DM. The effects of mental practice on motor skill learning and performance: a meta-analysis. *J Sport Psychol* 1983;5:25-57.
62. Curry S, Marlatt GA, Gordon JR. Abstinence violation effect: validation of an attributional construct with smoking cessation. *J Consult Clin Psychol* 1987;55:145-9.