

Principles of Changing Health Behavior

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Successful implementation of clinical preventive care programs is a shared responsibility of patients and health care professionals. The physician often laments patient failure to follow directions while the same patient complains that instructions were never given. Health care professionals should strive to "practice as they preach." They need to assure that their patients have clearly understood the recommendations and that patient concerns are assessed and addressed. Similarly, patients need to participate more actively in their own health care and to assume greater initiative in getting their questions answered and their concerns addressed. To increase the likelihood of these actions and their intended health behavior changes, a set of principles derived from theory and research can be followed. These principles represent a way to understand and influence the health behavior of physicians and patients. The principles are interactive and complementary and are based on the elements that appear to be associated with successful educational programs. Consideration of these principles in the conduct of educational diagnoses, interventions, and health education programs increases the incidence and durability of behavior change.

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THE RENAISSANCE of physician interest in what makes patients behave as they do calls for turning the looking glass inward and asking first what makes physicians behave as they do. By addressing both questions within the context of preventive and health promotion practices, we hope to arrive at some principles of behavior change that will be useful to both physicians and patients. The principles will help physicians in adjusting their own behavior to become more effective in counseling their patients and to help patients in becoming more successful in changing life-styles and adopting positive health practices.

How Do Physicians Behave With Respect to Prevention?

It was once assumed that physicians routinely carried out preventive medicine and patient counseling procedures as part of their practice. Indeed, this was probably so until specialization and technology, together with new economic circumstances, began to crowd these elements out of medical care. Today, even primary care physicians have difficulty devoting much time, attention or effort to the education of their patients about behavioral risk factors and ways to modify those risk factors.^{1,2}

The reasons lie partly in attitudes. Physicians often doubt the importance of some of the behavioral risk factors for chronic disease. In a survey of primary care physicians, Wechsler and colleagues¹ found that less than 50% agreed that moderating or eliminating alcohol use, decreasing sodium consumption, avoiding saturated fats, engaging in regular exercise, avoiding cholesterol, or minimizing sugar intake were very important for health promotion. Other studies have shown physicians to doubt the effectiveness of recommended screening and prevention procedures.^{3,4} One study found a large difference between medical specialties in their rates of patient counseling;⁵ another found little difference between general and family practitioners when year of graduation from medical school is controlled.⁶ Even when prevention activities are recom-

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mended, often they are not done consistently and vary from suggested standards. Recent studies have noted distinct inconsistencies among physician recommendations, patient desires, published guidelines, and actual practice.^{4,7-9}

Although some still claim that physicians continue to lag behind in their involvement in health promotion,¹⁰ recent surveys indicate growing interest among physicians in the health behavior of their patients. McAlister *et al.*² in a statewide survey of primary care physicians in Texas, found that most of these physicians considered health promotion a challenging and enjoyable part of their practice. They considered smoking the most important risk factor. Kottke *et al.*¹¹ reported from a national survey on nutrition counseling in private practice that physicians believe in the importance of educating their patients about their health risks, but they devote little time to it because they perceive that patients do not want or would not follow their advice.

Valente *et al.*¹² from their survey of 1040 primary care physicians, found that the majority believed that they should modify patient behavior to minimize risk factors, but only a small percentage reported being very successful in helping patients achieve behavioral change. Even when physicians feel adequately prepared to counsel patients, only 3% to 8% consider themselves to be very successful in helping their patients.¹ Similar findings of high physician interest, but low confidence in their own ability or that of their patients have been reported by others.¹³⁻¹⁵ Carter and colleagues¹⁶ conclude that a positive attitude toward prevention is essential for physicians to integrate preventive activities into their clinical practice. However, it now appears that a positive attitude is insufficient if it is not accompanied by a belief in the efficacy of doing something about it.

Attitudes, then, seem to have shifted from negative to positive about the importance of the behavioral risk factors and the importance of intervention to modify those risk factors. The attitudinal problem now appears to center on the physician's diffidence in carrying out the intervention. This, in turn, appears to relate to a lack of self-confidence in knowing how to intervene effectively, and a perception that the patients are not receptive, or willing, or able to change. In her survey of family practice physicians, Orleans and colleagues¹⁴ found attitudinal barriers to be the most often cited reason physicians do not treat life-style problems in their offices. Pessimism about their patients' ability to change was cited nearly three times as frequently as lack of insurance reimbursement as a reason for not treating behavioral risks.

To understand clearly the complexity of health behaviors and the interplay between physician and patient characteristics, it is useful to examine the behavioral

dimensions of a specific health behavior. For illustrative purposes, the following section will review the behavioral characteristics of cigarette smoking and the efforts of physicians to help their patients stop.

Example: Behavioral Aspects of Smoking Cessation

The majority of smokers are aware of the adverse health effects of smoking and 90% would like to quit if there were an easy way. Sixty percent of smokers have tried to quit, but few were successful at their first attempt. Each year one third of smokers try to stop smoking, but only 20% are successful; an annual reduction of only 6% of smokers. And even this amount is off-set by the addition of new smokers, so that the net decline in percentage of smokers in the US adult population has averaged about one percentage point per year.

Although this situation could be characterized as bleak, the potential for prevention is great. According to data from the Office on Smoking and Health, only 30% of smokers do not see a physician at least once a year and those smokers who do see a physician average 4.3 visits per year.¹⁷ Because most smokers quit for health reasons and because physician advice is highly regarded by patients, even minimal physician counseling can have a significant incremental effect. Orleans and associates¹⁴ estimated that if every physician offered structured advice and minimal self-help materials, the national quit rate might double.¹⁴

Unfortunately, many physicians do not take advantage of the opportunity to counsel their smoking patients about their habit.^{3,18} In a study of internists who report smoking cessation counseling, 8% report counseling only during the initial visit, 57% counsel for less than 2 minutes, and 36% counsel only when smoking is considered an immediate health hazard.¹⁸ This low level of counseling is particularly true for routine medical visits unrelated to a smoking-related disorder. Among internists, 82% counsel most (at least 75%) of their smoking patients with chronic obstructive lung disease. However, only 52% counsel the majority of all their patients who smoke.¹⁸ This level of physician-reported counseling is similar to that reported by patients.

In a survey conducted in Michigan, only 44% of smokers reported ever having been told by their physician to stop smoking.¹⁹ In a predominantly low-income black population attending a family medicine outpatient clinic, 41% of smoking patients reported being told by their physician to stop smoking.¹³ In this study, heavy smokers and those being treated for a smoking-related disorder were significantly more likely to be advised to stop smoking; however, only 21% of smoking women who were being given a prescription for oral contracep-

tives were advised to stop. In the Michigan study, smokers with other cardiovascular disease risk factors were no more likely to report physician cessation advice than those without those additional risks.¹⁹

Cummings and colleagues¹³ reported that physicians who were current smokers were less likely to advise their patients to stop smoking, whereas others have found little relationship between personal health practices and attitudes toward prevention.²⁰ Cummings *et al.*¹³ reported that physicians who believed that the patient either does not want to quit or was unable to do so were less likely to provide advice. Similarly, Orleans and associates¹⁴ reported that family physicians claim this pessimism about their patients' ability to change to be the greatest barrier to preventive counseling. These results are consistent with those of Wells *et al.*¹⁵ who reported the provision of smoking cessation advice to be correlated with the physician's belief in whether the patient will heed the advice. Relatedly, many patients do not perceive their physicians to be interested in the patients' efforts to quit.¹⁹

Related to the physician's belief in the ability of the patient is the physician's belief in his own ability. Although patients believe in the importance of physician advice and physician smoking interventions have been shown to be relatively effective, many physicians feel unprepared and as a result, avoid counseling entirely.^{1,15} Recent studies, however, indicate that the perceived effectiveness among recently trained family physicians may be on the increase.²¹ Nevertheless, the relatively low level of self-efficacy, coupled with the lack of reimbursement for smoking cessation services, may account for the low level of patient and physician reports.¹⁹

Factors Influencing Prevention Practices

In attempting to understand the health behavior and practices of physicians and patients, it is helpful to review the types of factors that influence health behaviors. We have identified three sets of factors—predisposing, enabling and reinforcing—which combine to influence health behavior and which can serve as a diagnostic framework for developing educational interventions.²² Predisposing factors include knowledge, attitudes, beliefs, values, and perceptions related to the motivation needed to perform a given health action. These are the factors associated with “wanting to do” a health action. Enabling factors include those skills, resources, and facilities which are necessary to perform a specific action. These are the “being able to do” factors. Finally, reinforcing factors include those variables that reward or support positive health behaviors. These are the factors where one is “rewarded for doing.”²³

The previously described attitudinal and perceptual problems can be classified as the set of predisposing factors influencing the behavior of physicians. Depending on the degree of self-confidence and the degree to which the physician perceives the patient to be willing and able to change, the physician will be more or less predisposed to take action to support the patient in making behavioral changes.

Such predisposing factors account for the motivation of the physician to take action, but even with motivation, action sometimes fails to occur because the physician lacks the skills or resources to act. Gemson and Ellinson²⁴ found in a survey of 120 randomly selected primary care physicians in New York City that 87% agreed that physicians should practice more preventive medicine, but they cited as their main obstacles to doing so their lack of time, inadequate reimbursement, and unclear recommendations. In addition to these factors, Carter *et al.*¹⁶ identified lack of the requisite staff and space and the dearth of tested educational materials as the major barriers which interfere with the delivery of preventive services. Knight *et al.*²⁵ reported that a computerized health maintenance prompting program was well accepted by physicians and was associated with improved attitudes toward health promotion activities. Similarly, McDonald *et al.*²⁶ reported a two-fold increase in preventive care among a group of physicians using computer-reminder messages. Thus, techniques that support or facilitate preventive activities, such as computerized reminders, are activities targeted at a second class of factors influencing behavior, *i.e.*, factors that enable the behavior.

Adequate reimbursement could function as either an enabling or reinforcing factor. It could serve as an enabling factor in promising the resources that would “enable” the physician to invest time and effort in patient education and preventive medicine. Reimbursement actually received would function later as a reinforcing factor that rewards the behavior and therefore increases the probability that the physician's behavior will recur at the next opportunity to practice preventive medicine.²

Other reinforcing factors that would strengthen the continuation of physician practices include the visibility of results and other feedback from colleagues and patients.^{27,28} Curative treatment yields visible, usually short-term results that are satisfying to the patient, and therefore rewarding to the physician when the patient reports back with satisfaction. Preventive medical interventions often yield no palpable results within memory of the intervention, so there is no positive feedback and reinforcement. Thus, physician reinforcement for preventive behavior becomes particularly important to the patient. Alternative means of reinforcing physician be-

havior must be found because the patient will not be providing it.

Battista and associates²⁹ studied the cancer prevention practices of primary care physicians in the province of Quebec. They found variables that could be classified as predisposing, enabling, and reinforcing as being the determinants of physician behavior, with the specific mix of factors varying as a function of the cancer site. Physician knowledge, gender, continuing education, method of reimbursement and provider-related barriers were the major predictors of prevention scores.

Thus, a mixture of predisposing, enabling and reinforcing factors combine for both the physician and patient to explain much of the discrepancy between the actual practice of cancer prevention activities and the recommended guidelines. To understand better how to influence health-related behaviors, the following section identifies eight principles of health behavior change and discusses them in relation to the actions of both physicians and patients.

Application of Principles of Health Behavior Change

One way for physicians to improve patient health behavior and to increase compliance with specific recommendations is by incorporating principles for changing health behavior into their existing practice. Based on observations of successful health education programs, we have identified the following eight principles of health behavior change: (1) diagnostic, (2) hierarchical, (3) cumulative learning, (4) participation, (5) situational specificity, (6) multiple methods, (7) individualization, and (8) feedback.

These principles are based on our observations and experience as health education practitioners and researchers. They pertain to both physicians and patients and are not mutually exclusive; rather, they are mutually supportive and complementary of one another. The incorporation of these principles into health education practice enhances the probability of lasting health behavior change.

Diagnostic Principle

The first task in changing health behavior is to recognize the causes of the behavior. We shall refer to this as the diagnostic principle of changing behavior.

Just as the physician must diagnose an illness before it can be properly treated, so too must a behavior be diagnosed before it can be properly treated. "Properly" in this context means to influence changes in behavior by means of interventions that are essentially educational and supportive rather than coercive or manipulative. By understanding the causes of the behavior, one can intervene efficiently with combinations of information,

counseling, training, resource development, and reward to influence the factors predisposing, enabling, or reinforcing behavior.

The first step in completing the diagnosis is determining whether the patient is interested in making a behavioral change. One way of assessing this is by determining the patient's salient health beliefs.³⁰ Does the patient believe he or she is personally susceptible to health problems if action is not taken? Does the patient believe that the problems are severe? Finally, does the patient believe that the action will work and that the perceived benefits of adopting the behavior are greater than the risks? Depending upon the answers to these questions, the physician can diagnose the deficiencies in motivation and assess whether education to strengthen motivation is needed, or whether the physician can bypass this time-consuming task and proceed directly to the patient's skills for making the change.²³ Similar types of questioning can help ascertain the other factors which may influence the behavior in question and assist in selecting the appropriate intervention.

Hierarchical Principle

Following the diagnostic principle, a second principle of changing behavior is the hierarchical principle. This principle would argue that there is a natural precedence in the importance of the factors influencing behavior such that the first order of business is to insure that the predisposing factors are in place (wanting to do) before intervening on the enabling factors (being able to do), and that enabling factors have been addressed before intervening on the reinforcing factors (rewarded for doing).²³ In reality, the opportunity for intervention may be fleeting, so interventions for all three factors might need to be addressed simultaneously in some circumstances. The point of the hierarchical principle is to align the interventions (education, counseling, training, resources, feedback, and rewards) so that they are expended or deployed in the most efficient and logical order. It is inefficient and sometimes ineffective to train someone in skills to enable a behavior that the trainee is not previously motivated to perform. Similarly, reinforcements will go unused if they are designed to reward behavior that has not been predisposed or enabled.

For example, there is little point in setting up a reward system for performance of sigmoidoscopy if the physicians have not been educated to understand the need for sigmoidoscopy or trained to perform the procedure.³¹ Similarly, in the survey by Orleans *et al.*,¹⁴ over 25% of physicians suggested that they needed additional training to better treat lifestyle risks. If medical school and residency training programs included opportunities to develop skills in counseling, behavior change and rein-

forcement techniques, physicians might be better prepared once in the office setting.

For patients, it is useful to categorize or triage individuals to know which educational intervention to employ.^{23,32} Physicians should ascertain whether the patient is motivated to change, able to change and rewarded for changing. Depending upon where the patient is in this hierarchy, the most appropriate intervention can be applied. When unable to determine the precise stage of the patient, it is recommended that the physician or other health worker assume that the patient is already motivated, but does not have the skills to change or initiate the health behavior. Thus, the appropriate intervention will focus on training or skills development. If the patient appears unmotivated in developing the skills, educational efforts should be directed at influencing health beliefs and increasing motivation. If the patient is both motivated and skilled, efforts should be directed at reinforcing and maintaining the behavior.³²

Principle of Cumulative Learning

Related to the hierarchy principle is the principle of cumulative learning. To effect the behavior of physicians or patients, a series of learning experiences must be planned in a sequence that takes into account the prior learning experiences and concurrent incidental experiences to which the learners will be exposed. Learning does not occur in a vacuum. Behavior responds to the cumulative learning experiences of the individual, including those that preceded and those that were incidental to the planned educational or behavioral change program. Thus, an effective health education program requires a planned sequence of activities tailored as closely as possible to the prior circumstances and experiences associated with the target behavior.³³

Orleans and colleagues¹⁴ found that family practice physicians were most likely to discuss a problem or provide counseling than to refer to a more intensive behavioral program in the community. Of course, this is appropriate if the patient has not had prior counseling. In many instances, however, a patient may be already motivated to change and have some information which might be incorrect or insufficient. Incorrect understanding could set up unrealistic expectations in the patient, leaving the patient unprepared for difficulties, disappointments, and side effects associated with the changes ahead. In these instances, cumulative learning should be taken into consideration and, patients should be provided with the appropriate intervention.

The principle of cumulative learning is illustrated by the sometimes misunderstood statistic indicating that 95% of smokers quit on their own. This statistic, although accurately reflecting the fact that most smoking

cessation occurs without the immediate aid and continuous support of formal programs, does not take into account the prior events that may have influenced quitting such as possible previous attendance at a program, or spousal quitting. Thus, although it may appear that quitting is a random and spontaneous event, more critical analysis shows that prior quit attempts are extremely predictive of eventual cessation.³⁴ Perhaps, those who are successful quitters have accumulated prior learning and experiences that provide sufficient motivation and skills to allow an otherwise marginal event (e.g., media coverage, friend quitting) to make the successful difference. The readiness to change and the possible cumulative learning effect should be assessed as part of the educational diagnosis.

Principle of Participation

The principle of participation is considered by many to be the one guiding principle in all health education programs. This principle holds that the success of health education programs is proportional to the degree of "involving people in defining their own needs, setting their own priorities, controlling their own solutions and evaluating their own progress."³⁵ The principle of participation allows packaged behavior change programs to be adapted to meet the unique circumstances of a given population.

The principle of participation holds true for both the patient and the provider.³³ Prospects for success are greatly increased when all relevant parties are involved. Participation helps to insure realistic goals, acceptable methods and program commitment. No principle of behavior change has greater generalizability than the principle of participation.³⁵

The prospects for success in any attempt to change the behavior of physicians will be enhanced if those same physicians have participated in identifying their own need for change and in selecting the learning experience that will enable them to make the change.³⁶

Likewise, patients must be encouraged to become more active partners in the learning process.³⁷ The literature is replete with references to the benefits of patient participation in health education programs.³⁵ Often, as participation increases and the patient becomes "activated," the patient is likely to demand more from the physician. The physician may be bothered initially or uncomfortable with this situation, but increased patient involvement will likely result in informed choices, increased compliance, and lasting behavior change.²³

Another way of viewing participation is as active patient involvement in the support for and reinforcement of self-change. Despite the contemporary value placed on social support, it may be that self-support is more

important in maintaining long-term behavior change.³⁸ Specifically, external reinforcement may be an effective expedient in initiating behavior change, but this does not ensure the durability of the change which can be most likely guaranteed with intrinsic reinforcement. Thus, not only is the principle of participation important in designing the intervention and assuring initial patient involvement, continuing participation (manifesting intrinsic reinforcement) is important in maintaining the desired change over time.

Principle of Situational Specificity

The principle of situational specificity holds that there is nothing inherently superior or inferior about any method of intervention to achieve behavior change. It always depends on the circumstances, the target audience, the timing, and the enthusiasm and commitment of the agent of behavior change.

New methods of education or intervention on behavior often appear in randomized trials to have an advantage over "traditional" methods, but this advantage typically wears off after the method has lost its novelty. This "novelty effect" makes some methods seem superior, but the long history of educational research is strewn with new educational technologies that prove in the long run to be no better than the predecessor technologies except in their strategic application to the right audience, at the right time, with enthusiasm and commitment. This places increased reliance on the principle of participation.³⁷ Simply put, the appropriate intervention depends upon the situation and the specific choice should be based on a thorough educational diagnosis, with an understanding of the specific advantages and disadvantages of the available interventions.

Principle of Multiple Methods

The principle of multiple methods also follows from the diagnostic principle, insofar as multiple causes invariably will be found for any given behavior. For each of the multiple predisposing, enabling, and reinforcing factors identified, a different method or component of a comprehensive program will enhance the success of behavior change.

In studying primary care physicians, Orleans and colleagues¹⁴ observed that when physicians provide health promotion or disease prevention services, they often rely on methods which are by themselves ineffective to change behavior or alter habits. Of those who provide advice, only one fourth regularly offer a systematic behavioral treatment in their practice. Orleans and colleagues¹⁴ concluded that primary care physicians would benefit from guidelines for counseling and referral in addition to their existing methods. Weinberger and col-

leagues³⁹ suggest that physicians use the same multiplicity of techniques as they use to obtain information to make therapeutic decisions to make prevention decisions.

In attempting to change the health behavior of patients, it must be remembered that human behavior is complex and that no single intervention can be expected to have lasting impact. Thus, a variety of techniques should be employed. Each activity should be complementary and directed at the factors which influence health behavior. The use of multiple methods not only helps to assure a variety of alternative opportunities for learning, but a variety of methods tends to bolster retention and promote reinforcement.⁴⁰ The reinforcements should be balanced between external and intrinsic sources to assure both initial and lasting behavioral change.³⁸

Principle of Individualization

The principle of tailoring or individualization is essentially another way of emphasizing and coordinating the principles of cumulative learning, participation, and situational specificity. Tailoring refers to the adaptation of learning experiences to each individual.

In physician education, the principle of individualization must take into account that "reading" continues to be rated by physicians as a preferred information source for preventive medicine decisions.³⁹ By using written materials, the physician can control the selection, pace, repetition, skipping pattern, and other aspects of the learning experience better than with learning methods that control the rate of presentation, such as lectures, films, video or audio tapes. Where reading fails is in not providing the practice and feedback on progress and mistakes required for successful behavior change. Both knowledge and practice are necessary to successfully apply interventions.

Physician tailoring of preventive counseling based on the characteristics of the patient is perhaps the most important of the principles. Physicians should use the same diagnostic and prescriptive care in treating the patient educationally as they take in treating the patient medically. Just as the medical treatment is based on the medical diagnosis, so should the educational treatment be based on the educational diagnosis. The same educational techniques should not be applied to all patients any more than the same drug is used on every patient. Physicians should draw upon the other principles outlined here to better understand factors that contribute to behavior and ascertain what intervention will work best with which patient.

With regard to cancer prevention, numerous studies have been conducted in the effort to explain health be-

haviors. Many of the studies have identified demographic, familial, and psychological factors which influence health behaviors and which can be used to tailor effective educational interventions. In the area of compliance with colon cancer screening recommendations, Halper and colleagues⁴¹ reported that past medical practices, perceptions of the severity of cancer and barriers, particularly following instructions and dietary requirements, influenced compliance. Farrands and associates⁴² found compliers with occult blood test recommendations had positive attitudes towards other medical practices and were well informed about serious illness. Design of physician counseling to establish or reinforce these patient belief and attitudes is likely to increase patient compliance.

In tailoring interventions, accepted theories of health behavior should be considered. Although human behavior is complex and it is unlikely that a single theory will fully explain health behaviors, a variety of theories and models have been developed and tested. Mullen and associates⁴³ compared the ability of current health behavior models to account for variances in three types of changes in lifestyle. This analysis found that a combination of predisposing, enabling and reinforcing factors²² predicted lifestyle behaviors more accurately than the other models tested.

Not only should educational interventions be tailored to include sound educational theory based on the characteristics of the patient, they should also be developed so as to allow for individualized learning. Learning is an individual process that occurs at different rates and through various experiences; thus, it is important to have personal questions answered and instruction paced to suit individual progress.^{37,40}

Principle of Feedback

The principle of feedback assures that the individual whose behavior is expected to change obtains direct and immediate feedback on the degree of progress and specific effects of his or her behavior. This assures that the learner is able to adapt both the learning process and the behavioral responses within his or her own situation and pace.

As with the other principles, the importance of feedback applies equally to physician and patient. Part of the reason physicians rely on reading for their primary source of information on prevention is because of the lack of feedback provided by preventive programs.³⁹ Feedback mechanisms for primary prevention should be established so that information is learned for prevention in the same way it is learned for therapeutic decisions. Winickoff and colleagues²⁸ tested the effect of

peer comparison feedback on physician performance in colorectal cancer screening. They found peer feedback improved compliance with recommended standards of care and played an important role in quality assurance.

The goal of feedback should be to make progress visible and to transfer responsibility back to the patient. Feedback is closely linked with participation and has the potential of leading to lasting behavior change by providing a powerful source of intrinsic reinforcement.²³ Another benefit of feedback is that it can be applied by all members of the health care team as the patient progresses through therapy.³⁷

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