Teaching, learning, doing: best practices in education

George L Blackburn

ABSTRACT
As many as 90 million Americans lack basic skills needed to access, understand, and use health information and services to make healthy dietary choices. Effective teaching by physicians can bridge the learning gap and arrest the epidemic of obesity. The Academy at Harvard Medical School is developing best practices in teaching that will equip future doctors to reduce health illiteracy and promote positive changes in thinking and behavior in their patients. Models of how people learn can help physicians select tasks, questions, and prompts that advance teaching and learning. To keep and use new information, adults need to integrate new ideas into existing frameworks of understanding and participate in the learning process by linking new information to what is already known. By teaching patients how to read a single food label, starting with calories, physicians can set the stage for future learning. The process of change is challenging, particularly in adults. Best practices in teaching and learning can help physicians be more effective agents of change. Am J Clin Nutr 2005;82(suppl):218S–21S.

KEY WORDS
Health literacy, agents of change, patient teaching, obesity

INTRODUCTION
The science of nutrition that underlies public health policy on the prevention and treatment of obesity has been consistently communicated to the public by those in academia, government, and industry. However, for the most part, it has failed to promote healthy eating among the public. The 74% increase in the prevalence of obesity between 1991 and 2001 could be considered a trend that reflects a breakdown in effective teaching and learning. Improvements in education are needed to close the gap between knowledge and action in the prevention and treatment of obesity.

Much of that gap can be attributed to health illiteracy, a problem almost as widespread as obesity itself. In the United States today, as many as 90 million (1) Americans lack basic skills needed to access, understand, and use health information and services to make healthy dietary choices. In recent testimony before a Senate subcommittee on the growing epidemic of childhood obesity (2), US Surgeon General Richard H. Carmona noted that many people, even educated Americans, do not know what a calorie is or how to burn it.

The data echo his claim. An estimated 129.6 million American adults, or 64%, are overweight or obese (3). Fifteen percent of children aged 6–9 y are considered overweight or obese (4). With >9 million children at increased risk of weight-related chronic diseases (5, 6), the need to translate nutrition knowledge into medical practice and personal behavior has become a necessity. Many government agencies and other organizations have responded to the crisis by urging medical schools to make communication skills a routine part of student training (1). They have also issued a call to action for US physicians to improve the way they communicate with patients.

Physicians can reduce obesity-related mortality by closing the gap between what they know and what parents and children understand about physical activity and healthy eating (7). To make healthy food choices, adults and children need easy-to-use information that fits into their busy lifestyles. By applying best practices in teaching and learning, clinicians can improve health literacy and give patients the information they need.

BEST PRACTICES IN MEDICAL EDUCATION
The Academy at Harvard Medical School (8) was recently established to advance the training of medical students by supporting the school’s most innovative and effective educators. Its focus on educational research and faculty development will give it the capacity to develop best practices in teaching, to set a standard that will help future doctors increase health literacy in their patients, and to communicate with them more effectively.

Research shows that small changes in behavior reap major dividends in personal health. Data also indicate that patients usually seek out and respect advice from their primary care physicians and that such advice can motivate them to change unhealthy behaviors (9–12). By incorporating best practices in teaching into medical school curricula, continuing medical education programs, and public health initiatives, physicians should be better able to help patients incorporate healthy changes in eating and activity levels into their daily lives.

TEACHING AND LEARNING
Models of how people learn can help physicians select tasks, questions, and other prompts that advance the teaching process.

1 From the Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA.
3 Supported by the S. Daniel Abraham Chair in Nutrition Medicine at Harvard Medical School and the Harvard Center for Healthy Living.
4 Address reprint requests and correspondence to GL Blackburn, Beth Israel Deaconess Medical Center, Feldberg 880, East Campus, 330 Brookline Avenue, Boston, MA 02215. E-mail: gblackbu@bidmc.harvard.edu.

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TABLE 1

Major principles of the developmental perspective of learning

<table>
<thead>
<tr>
<th>Principle</th>
<th>Description</th>
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<tbody>
<tr>
<td>Principle 1</td>
<td>Prior knowledge is the foundation on which future knowledge is built.</td>
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<td>Principle 2</td>
<td>Prior knowledge must be activated for learning to take place, for students to understand and personally connect with a new concept.</td>
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<td>Principle 3</td>
<td>Learners must be actively involved, linking new information to what they already know.</td>
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<td>Principle 4</td>
<td>The links themselves are more important than the new information; the more links, and the stronger they are, the easier it becomes to apply new knowledge across a broad range of situations and choices.</td>
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<tr>
<td>Principle 5</td>
<td>Learning cannot be context free; knowledge, and its organization into an individual’s personal construct system, is highly dependent on the context in which it was learned.</td>
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<td>Principle 6</td>
<td>Intrinsic motivation is associated with deep approaches to learning (eg, study required for case analysis vs multiple choice questions); it is preferable to surface approaches to learning (eg, externally motivated, rote memorization), which are associated with anxiety.</td>
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<tr>
<td>Principle 7</td>
<td>Teaching should be geared toward making the teacher increasingly unnecessary, toward the development of the learner’s autonomy as well as intellect.</td>
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Responses to such cues can clarify the ideas, values, and preferences that patients bring to an office visit. In general, the more a clinician knows about a patient’s thoughts, feelings, and opinions, the more fully he or she can engage cognitive and emotional defenses and successfully bring about desired change, or at least hold open the possibility of such change.

Many schools of thought have been proposed to explain the learning process. One such example, the developmental perspective (13), defines the process as one in which an individual, faced with a need to broaden an understanding or guide future action, uses a previous interpretation of what an experience means to him or her to construct a new or revised interpretation of meaning. The developmental perspective addresses two key factors: 1) how people come to understand something, and 2) the relationship between teaching and learning. The approach, which is based on seven principles (Table 1), considers previous knowledge the most important determinant of learning. To keep, and use, new information, adults need to integrate new ideas into existing frameworks of understanding. They also need to actively participate in the learning process by linking new information to what is already known.

The links themselves are more important than the new information. The more links, and the stronger they are, the easier it becomes to apply new knowledge across a broad range of situations and problems. Integration of new information is a gradual process. The learning curve starts low and progresses upward, building on previous knowledge to extend understanding. The ability to link ideas within and between subjects and contexts, as well as between theory and practice, requires time and reflection; both are considered essential for making knowledge more accessible, transferable, and usable.

CHANGING MINDS

Strategic thinking, patience, and resourcefulness are essential for success as an agent of change. In small group or one-on-one settings, multiple factors influence a physician’s skill at changing minds. A variety of approaches (Table 2) can be used to correct misperceptions that prevent patients from realizing their personal health goals. Delivering a message many times in many different ways is one of the most powerful weapons in the armamentarium. Saying something once is not enough to prompt change, likewise with repeating one directive over and over again. It takes multiple intelligences, symbol systems, and embodiments to get an idea to “click.” Some patients, for example, will respond to cartoons and videos, some to stories and photographs, others to journal articles, government reports, and pertinent URLs.

Other ways to move patients toward healthy eating include interpersonal sensitivity, patient-important (14) encounters, confronting resistances, participating in give-and-take, and fostering bonds by engaging individuals or group members in a common enterprise. The clinician’s task is to figure out which of these, alone or in combination, is most likely to be effective in the long run for a particular individual. In general, the more a physician knows about a patient’s thoughts, feelings, and opinions, the more fully he or she can engage cognitive and emotional defenses and successfully bring about desired change.

TABLE 2

The seven levers of change

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<th>Description</th>
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<tr>
<td>1. Reason</td>
<td>The rational approach uses facts, logic, and rhetoric to convince or persuade.</td>
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<td>2. Research</td>
<td>Uses recent journal articles, government reports, and pertinent websites to appeal to the intellect.</td>
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<td>3. Resonance</td>
<td>Restates patients’ goals and reframes the message so that it “feels right.”</td>
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<td>4. Representational redescriptions</td>
<td>Repeats a point of view in many different forms (eg, linguistic, numerical, graphic) to reinforce the message.</td>
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<td>5. Resources and rewards</td>
<td>Provides recognition or items of value (eg, donations to charities, money, tickets to events) for accomplishing objectives.</td>
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<td>6. Real-world events</td>
<td>Leverages emotional responses to major news events to promote shifts in perspective.</td>
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<td>7. Resistances</td>
<td>Identifies and defuses barriers to change, that is, resistances stemming from age, emotion, or public stance.</td>
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Source: Reference 18.
the more difficult it is to reverse. By identifying and defusing resistances, physicians can create opportunities for change.

According to the transtheoretical or stages of change model, the process is a series of steps (Table 3), each with certain tasks and characteristics. These have been successfully incorporated into smoking cessation programs and are now being used to help people lose weight (19) and increase physical activity (20). The stages include precontemplation, contemplation, preparation, action, maintenance, and relapse/recycling. Physicians can help patients move from one level to the next by providing stage-appropriate information, support, or tools.

NO FIXED RULES

Although there are no formulas for changing minds or behaviors, certain similarities apply to most individuals. Data indicate that people learn and change through successive approximation (21), and that they need to hear a particular message several times, and in a variety of ways, before it can become an impetus to action. Physicians can begin delivering effective messages by teaching patients how to read a single food label (Figure 1), starting with calories. It takes little time or effort to explain what a calorie is and how it affects body weight.

That basic lesson, which can establish the previous knowledge that makes future learning possible, will be reinforced by the Food and Drug Administration’s recently launched Calories Count campaign (http://www.fda.gov/oc/initiatives/obesity) (22). The simple message that “calories in must equal calories out” is the foundation for a national education effort to encourage Americans to take small steps to fight obesity (http://www.smallstep.gov/). As part of that initiative, the Food and Drug Administration will also evaluate how the Nutrition Facts panel on food labels can be revised to highlight the critical role calories play in consumers’ diets (Figure 2).

THE CHALLENGES OF CHANGE

The job of promoting change is rarely a matter of straightforward persuasion; more likely, it is an ongoing effort to create conditions for change and keep hope alive (23). Studies show that the process of change is gradual, particularly in adults. Success requires years of learning (18). Most people are unable to convert new behavior into habitual practice without guided application over a significant length of time. It takes an estimated 10 y to become an expert in any given discipline. In the Look AHEAD (Action For Health in Diabetes) trial, for example, obese patients are randomly assigned to Lifestyle or Diabetes Support and Education interventions for 4 y, with 7.5 y of follow-up (24). Similarly, the Women’s Intervention Nutrition Study protocol includes randomization to intensive dietary intervention with long-term counseling, followed by monthly group sessions (25).

Challenges associated with modifying patients’ behavior are enormous and extend far beyond persuading them to take their pills (26). Best practices in teaching should help physicians meet these challenges with new skills that enable them to improve communication and be more effective agents of change. Public health campaigns to increase health literacy are also expected to help by empowering people to use nutrition aids and information [eg, the Dietary Guidelines (27), the Food Guide Pyramid (28), and the Healthy Eating Index (29)] to make healthy food choices.

To date, these approaches lack scientific evidence to support their use. Randomized trials are needed to find out whether medical students who learn communication skills do a better job at increasing health literacy than those who do not. The same holds true with learning theory and the psychology of change; data have yet to establish whether exposure to such material will make clinicians more effective agents of change. Similarly, prospective trials are needed to measure the effectiveness of public health campaigns to improve the food choices and weight maintenance in American adults and children.

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**TABLE 3**
The stages of change model

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
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<tbody>
<tr>
<td>Precontemplation</td>
<td>Not ready for change.</td>
</tr>
<tr>
<td>Contemplation</td>
<td>Thinking about change.</td>
</tr>
<tr>
<td>Preparation</td>
<td>Getting ready to make a change, planning, and commitment.</td>
</tr>
<tr>
<td>Action</td>
<td>Making the change, implementing the plan, taking the action.</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Sustaining and integrating behavior change.</td>
</tr>
<tr>
<td>Relapse/recycling</td>
<td>Slipping back to previous behavior and reentering the cycle of change.</td>
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Source: Reference 9.

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**FIGURE 1.** Emphasizing calories (22). Calories Count is the key message in the Food and Drug Administration’s campaign to fight obesity in America.

**FIGURE 2.** Labeling calories: the entire container (22). Counting calories is critical for people who are trying to achieve and maintain a healthy weight.
REFERENCES


