

Modeling Behavior Change for Better Health



Changing Behaviors: The Highest Health Hurdle

There is one fact about our current health crises with which all investigators agree: the state of our health and the rate of our health care spending are both directly related — for better or worse — to our behavior. Any effort to increase wellness, manage risks, reduce costs or improve condition management inevitably turns to a change in some aspect of lifestyle or behavior, and the need for population-scale change is inarguably urgent. Consider just a few data points:

- According to the Centers for Disease Control and Prevention, more than one-third of U.S. adults (35.7 percent) are obese.¹
- Between 1999–2000 and 2009–2010, the percentage of adults aged 45–64 and 65 and over with two or more chronic conditions (hypertension, heart disease, diabetes, cancer, stroke, chronic bronchitis, emphysema, current asthma and kidney disease) increased for both men and women, all racial and ethnic groups examined, and most income groups.²

Yet all of us know, often to our chagrin, that an entrenched behavior can be remarkably resistant to change. In some sense, each is a successful adaptation that delivers something of value within the uniquely personal context of an individual's knowledge, beliefs, attitudes, values, cultural norms and social environment. Because motivation arises within these very specific conditions, lasting change can only be achieved through informed interventions that modify the behavioral context to elicit different motivations and reward different decisions. This, in turn, requires a subtle understanding of how behavior develops and why it occasionally changes.

The Science of Behavior and Change

Fortunately, the study of behavior is common to modern psychology, social science, economics and education. There is a great deal of settled knowledge about how behaviors arise and under what circumstances they change. The modern world looks and works as it does in large part because marketers have learned to use this knowledge so profitably, and there is no reason why health and wellness practitioners shouldn't be equally proficient.

The modern study of behavior took flight with (and then, in many cases, from) Freud's work on the psychopathology of neuroses and hysterical disorders. The first empirical investigation to yield a useful change methodology was Pavlov's work on the conditioning of reflexive behaviors (classical conditioning) at the turn of the twentieth century. This was followed in mid-century by the development of operant conditioning, which emerged from the work of B.F. Skinner and dealt with the modification of voluntary behaviors through their environmental consequences.

One of the most influential applications of behavioral science to health-related behaviors occurred in the 1970s with the development of the stages of change model, also known as the transtheoretical model. The originators, Prochaska and DiClemente, were searching for a more effective smoking cessation methodology. Several ideas from the stages model — that change is a sequential and often iterative process that unfolds over time, in which barriers must be identified and overcome, and in which no stage can be successfully negotiated until the individual is fully prepared — have become embedded in many subsequent efforts to systematize our understanding of behavior and health.

CMS economists predict that average annual spending on health care in the United States will outpace the growth of the GDP by 1.1 percent and reach \$4.6 trillion by 2020, nearly 20 percent of the nation's expected economic output.

Source: <http://content.healthaffairs.org/content/early/2011/07/27/hlthaff.2011.0662.full>

The ASM Model

At Optum™, our approach to shaping health behavior to drive engagement in health improvement programs is structured around a three-stage model that draws on the leading theories of behavior change and applies their insights to operational practice. Like the transtheoretical model, our approach views behavior change as a process continuum and accepts the idea that to be successful, programmatic interventions must address the specific needs and opportunities of an individual subject at his or her current state of progress. It also acknowledges the broader context — social, cultural and environmental — within which behaviors arise and change. Our model takes its name — ASM — from the three stages it describes: awareness, skill building, and maintenance.

Figure 1. The ASM behavior change model



Stage One: Awareness and Motivation

No one undertakes the discomfort and sustained effort that are necessary to change an established behavior without powerful motivation, and an essential precursor to motivation is the awareness of a serious health risk. The first phase of the ASM model describes the specific characteristics of risk awareness that must be achieved, and the role of program communications in creating awareness and driving the transition to motivation. The model posits three aspects of awareness that must be satisfied in order to create a strong and persistent determination:

- The individual must be made aware that an existing behavior is directly responsible for a significant health risk.
- The present risk must be perceived as sufficiently immediate and severe that the benefits of immediate action outweigh whatever value is associated with the existing behaviors and justify the investment of energy required to surmount the inevitable barriers.
- Our communications must specifically address any individual attitudes or cultural beliefs that support existing behaviors and mediate against change. They must include specific cues to take action, and must be regularly repeated.

In its description of the awareness stage of behavior change and the specific requirements of program communications intended to create and build motivation, the ASM model incorporates essential insights from several established behavioral theories. In particular, we draw on:

- **Health belief theory**, a model of health service utilization developed by Irwin Rosenstock and colleagues beginning with research they conducted for the U.S. Public Health Service on why some people — and not others — sought out clinical assessment for tuberculosis. This model holds that the likelihood of an individual taking action to change a health behavior is a function of his or her perceived susceptibility to a specific health risk, the perceived severity of that risk, and the perceived benefit of change relative to the barriers and costs. It notes the subjective nature of perception and the impact of various mediating factors (personal attitudes, cultural values).³
- **Balance Theory** is a model developed by Fritz Heider in the 1940s that describes the role of social influences in an individual's adoption and modification of personal attitudes and motives. It proposes an interplay between two psychological needs: (1) to maintain cognitive consistency over time, and (2) to balance personal attitudes with those held by important social contacts. It even offers a notational system for determining the least costly — and most likely — adaptation.⁴
- **Reasoned Action Theory**, developed by Martin Fishbein and Isek Ajzen in the 1970s and '80s, describes behavior as the outcome of an interaction between personal attitudes and the attitudes of an individual's social network, called subjective norms by the authors. The model allows for individual weighting of attitude and social norms in every instance, and predicts the importance of directly addressing social context to achieve a desired behavioral outcome.⁵
- **Goal Setting Theory** as developed by Edwin Locke and Gary Latham, who made separate studies of the relationship between goal formation, motivation and workplace performance before joining forces to publish "A Theory of Goal Setting & Task Performance." They describe five attributes of well-set goals that correlate with high levels of motivation and achievement: clarity, challenge, commitment, feedback and task complexity. In addition, they note the importance of avoiding conflict between individual goals, and of setting attainable short-term goals to enhance motivation.⁶

Stage Two: Skill Building

With the necessary risk awareness and motivation in place to initiate and sustain action, the second stage of the ASM model focuses on the necessary skills to achieve success, and on the unique process by which each individual develops those skills. Replacing an ingrained behavior is a learning process that requires the development of new critical disciplines, and of a personal methodology for incrementally exchanging high-risk behaviors for healthy ones. Any educational intervention to support this learning must reflect an accurate understanding of the skills that enable behavior change, the process through which these skills are acquired, and the wide range of personal and social factors that can facilitate or inhibit learning. Critical factors for successfully supporting skill development include:

- An understanding that self-confidence is essential, and that both confidence and motivation are acquired through incremental successes and eroded by failure
- A program design tailored to the problem-focused learning style that is typical of adults
- Communication messaging that is carefully designed to elicit the most efficient responses

- A goal-setting strategy that divides large tasks into smaller, more easily accomplished components
- Specific goals that are clear, measurable and consistent

In its description of the skill-building stage of behavior change and the specific requirements of program communications intended to support and expedite the learning process, the ASM model incorporates essential insights from several established behavioral theories, including:

- **Self-efficacy theory** is a core component of the larger social cognitive theory developed by psychologist Albert Bandura. Its central concept is the idea that an individual's belief in his or her ability to succeed in an undertaking determines behavior and outcomes. Thus the use of fear arousal messages in program communications must be carefully calibrated.
- **Adult learning theory** originates in the work of Malcolm Knowles, who introduced the term andragogy to distinguish the practice of instructional design for adults from pedagogy, the practice of instructing children. According to Knowles, there are several characteristics that typify and distinguish adult learning. Adults are most interested in learning things that will be of immediate value in their professional roles or personal pursuits. They assess new information in the context of their own personal life experiences, and their learning style is problem-centered, not subject-oriented.⁷
- **Goal-setting theory**, particularly the ideas that goals with measurable achievement metrics promote the development of self-efficacy, and that there should be a transition from shorter-term to longer-term goals as an individual progresses through the skill-building process.

Stage Three: Long-term Maintenance

If initiating a positive change in health behavior is hard — and it is — then preserving that change until it becomes ingrained is harder by far. But if beneficial changes don't persist, then the organization's investment in initiating those changes and its long-term goals for better health and lower costs are both at risk. Thus the third stage of the ASM model describes the mechanisms by which new behaviors become fixed, and the requirements of program interventions that seek to reinforce healthy change and preventing relapse. Several factors are critical, including:

- Regular program communications that continuously reinforce an individual's awareness of the health benefits of his or her new behaviors, and the risks of returning to old habits
- Regular reinforcement from the individual's social network, including testimonials and personal examples by peers and leadership figures
- A transition in program reinforcements from extrinsic incentives to internal rewards, supported by program messaging that links healthy change to self-identity
- Consistent support in the workplace culture and physical environment

A message that stimulates and motivates one individual with a high level of self-efficacy could easily inhibit another with less self-confidence.

Source: Albert Bandura, Self-efficacy: Toward a Unifying Theory of Behavioral Change, *Psychological Review*, Vol. 84, No. 2, 191-215, 1977

In describing the maintenance stage of behavior change and the specific requirements of program communications intended to sustain healthy change over the long term, the ASM model incorporates key insights from several established behavioral theories, including:

- **Reinforcement theory** is a component of behavior modification theory with roots in Skinner's operant conditioning. It describes the function of external reinforcements in increasing the frequency of desired behaviors, the effects of positive and negative reinforcement, and the differing impacts of various delivery schedules. Reinforcement theory provides a foundation for developing incentive strategies that effectively combine specific incentive types, values and behavioral targets. It also affirms the importance of other factors in supporting engagement and motivation, including social and cultural support, consistent communication, and a relevant mix of programs. And finally, reinforcement theory tells us that for behavior change to become permanent there must be a transition from external incentives to internal motivation based on an experiential appreciation of the new behavior's intrinsic value.⁸
- **Relevance** is a conceptual component of human information processing theory which holds that individuals are more likely to remain engaged with a behavior change program over time, and to succeed in maintaining a health-related behavior change, when program communications are regularly repeated and personally relevant.
- **Social learning theory**, which tells us that confirmation and encouragement from an individual's social network can be as important as external incentives in reinforcing and preserving beneficial behavior change.⁹

Turning Behavioral Science into Best Practice Programs

The ASM model provides the structural framework for Optum health improvement programs that seek to improve a population's health by changing its members' high-risk behaviors and supporting existing healthy lifestyles. Whatever the health issue or behavioral target, our goal is that all interventions follow the same conceptual sequence.

First, build awareness of a specific health issue. Clearly establish its severity, its roots in existing behaviors, and the benefits of a specific change. Second, focus the resulting motivation on building self-efficacy through incremental mastery of specific skills and successful replacement of poor habits with healthier behaviors. Finally, strengthen and sustain the new norms through ongoing communication, consistent social and environmental support, and a phased transition from external to intrinsic reinforcement. Consider these three examples.

ASM in Action: Making Physical Exercise a Daily Habit

In applying the ASM model to any behavior change exercise, we begin with the insight that every individual behavior is shaped and sustained by a combination of personal, social and environmental influences. To create lasting change at the personal level, we must also change the external influences by creating both a culture of health in the organization and a physical environment that accommodates and encourages the changes we seek.

Studies by Victor Strecher and others confirm that longitudinal engagement and behavioral outcomes are significantly enhanced when communications are personalized to directly address a user's age, gender, ethnicity, attitudes and other personal attributes.

Source: <http://www.jmir.org/2008/5/e36/>

Figure 2: A comprehensive framework for behavior change programming

	Individual	Organizational	Environmental
Motivation and Awareness	Assessments Tailored messaging	Policies Leadership visibility	Posters Floor stickers
Skill Building	Coaching classes	Flexible work time	Onsite fitness equipment Walking paths Conducive stairs
Maintenance/ Reinforcement	Support groups Reminder messages Rewards	Incentives Organizational recognition/rewards	Access to equipment Structural design facilitates activity

In the physical exercise example shown in figure 2, the individual activities planned for each stage in the ASM change process are supported by developments in the organizational culture and physical environment that are designed to encourage and sustain the target behaviors. The model provides a comprehensive framework for identifying and accomplishing all changes in the social context and physical environment that are necessary to initiate, inform and maintain individual behavior change at population scale.

ASM in Action: Synchronizing Educational Content Delivery

The Optum health and wellness website team curates educational content on a wide range of health topics and online programs for delivery through the LEARN section of our employer portal. The team maps all of its selected content to the ASM model’s behavior change phases so that every user can find relevant and engaging information for their own stage of their own health journey. Figure 3 shows an example of diabetes management information mapped to the sequential phases of awareness, skill building and maintenance. The team also uses the ASM model in gap analyses to ensure that appropriate content is available to support the entire behavior change process, and is working to apply the model to content evaluation for its online program learning modules.

Figure 3: ASM stage sequencing for online diabetes educational content

	Awareness	Skill Building	Maintenance
Overview + Prediabetes	Should you be tested for diabetes?	30 ways to trim 100 calories	Mediterranean Diet may help prevent diabetes
Diabetes Type 1	Just diagnosed? Manage Type 1 diabetes	Your teen and Type 1 diabetes	Preventing complications from Type 1 diabetes
Diabetes Type 2	Questions to ask your doctor about Type 2 diabetes	The best exercise plan for Type 2 diabetes	The link between sleep and Type 2 diabetes
Gestational Diabetes	What is gestational diabetes?	Oral glucose tolerance test	Gestational diabetes: What happens after my baby is born?
Living with Diabetes	“You can’t eat sugar” and other diabetes myths	Recipe substitutions for healthier meals	Diabetes and foot care

ASM in Action: Wellness Consulting and Strategic Planning

The Optum wellness consulting team has embedded the ASM model in its assessment processes and the strategic plans it develops for its customers. The team has created a standard set of behavior change solutions for each of the most common population health risks it encounters in its employer consulting engagements. The deliverables for each risk solution include a multi-year package of recommended programs, services, resources, incentives and environmental adaptations that are based on an ASM approach to the required behavior change. Each solution is modified to reflect the specific population characteristics, and becomes part of a 3–5 year strategic plan to reduce health risks and costs for that customer.

Changing Behaviors, Saving Lives

Changing health-related behaviors is unquestionably hard, but it can be done successfully, consistently, cost-effectively and at population scale. The key to success is an actionable model of behavior change that fully reflects the complex relationships between individual, attitude, culture, society and the physical world. Only when an intervention program targets the critical individual, organizational and environmental factors that reward and sustain high-risk behaviors can an effort to replace it succeed and more desirable behaviors take permanent root. The ASM model provides Optum wellness programs with exactly this type of insight, and gives them an unprecedented capacity to empower individuals and improve lives.

Sources:

¹ <http://www.cdc.gov/nchs/data/databriefs/db82.pdf>

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⁸ Serxner S. (2013). A different approach to population health and behavior change: Moving from incentives to a motivation-based approach. *American Journal of Health Promotion/The Art of Health Promotion* March/April: 4-7

⁹ Bandura A. Self-efficacy: Toward a Unifying Theory of Behavioral Change, *Psychological Review*, Vol. 84, No. 2, 191-215, 1977

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Seth Serxner brings the breadth of his experience in academia, industry and consulting to his role as senior vice president of population health for Optum. His versatile skill set ensures processes and outcomes that improve health for clients in all markets. Seth's deep knowledge of behavior change, population health and measurement allow him to visualize and deliver on program innovation. He has more than 25 years of experience in health and productivity management and has published more than 30 articles.

Seth came to Optum from Mercer's Total Health Management specialty, where he served as partner and senior consultant for nine years. During his tenure there he established himself as a national expert on behavior change, program design and measurement. He spent a decade each in academia and private industry before becoming a consultant. He is a board member, executive committee member and vice president of the C. Everett Koop Health Project. He also sits on the editorial review board of the *American Journal of Health Promotion* and edits and is a reviewer for peer review journals such as the *Journal of Occupational and Environmental Medicine* and *Health Affairs*.

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