DISEASE MANAGEMENT
Volume 9, Number 2, 2006

Disease Management Interventions II: What Else Is in the Black Box?

ARIEL LINDEN, Dr.P.H., M.S.,[1,2] SUSAN W. BUTTERWORTH, Ph.D.,[3] and NANCY ROBERTS, M.P.H.[4]

ABSTRACT

The success of any disease management (DM) program ultimately depends upon the ability and willingness of participants to change and maintain desired health behaviors. To achieve those results, DM program administrators have several issues to consider, including the type of behavioral change desired, the scope of intervention that the organization is willing and capable of implementing, and whether the appropriate support structures are available to ensure successful achievement of program goals. An understanding of these issues will assist program designers in selecting the appropriate change models. This paper serves as an extension of our prior paper in which eight core psychosocial behavioral change models were described. Here, five more recently developed theory-based approaches are introduced, providing readers with up-to-date information in this area. (Disease Management 2006;9:73–85)

INTRODUCTION

THE SUCCESS of any disease management (DM) program ultimately depends upon the ability and willingness of participants to change and maintain desired health behaviors. These behaviors typically involve lifestyle changes to reduce the risk of disease (eg, diet and exercise), adherence to therapeutic regimens (eg, medications, physical and occupational therapy), self-monitoring (eg, blood pressure, blood glucose, peak expiratory flow rate) and observance of medical instructions or recommendations. Evidence-based interventions that enhance patient motivation to initiate and maintain these behaviors should be incorporated by both disease managers and primary care providers to further tie together the DM program and provider arm of the health system.

In our previous paper,[1] readers were introduced to eight psychosocial models intended to assist DM programs in helping their participants achieve desired behavioral changes. The purpose of this paper is to provide DM program managers with more recently developed, theory-based approaches to behavioral change intended to improve patient self-management skills. As with the previous paper, models are arranged and described by levels of intervention, targeting the individual directly (Implementation Intentions Model), interpersonally

[1]Linden Consulting Group, Portland, Oregon.
[2]School of Medicine and School of Nursing, Oregon Health & Science University, Portland, Oregon.
[3]School of Nursing, Health Management Services, Oregon Health & Science University, Portland, Oregon.
[4]Providence Health System, Portland, Oregon.

(Natural Helper Model), or via a community intervention (Community Coalitions Model). In addition, a technique called motivational interviewing, which can be incorporated across all the above models, is presented. Finally, a comprehensive table is included that summarizes all of the models described in both the current and previous paper.

INDIVIDUAL LEVEL: IMPLEMENTATION INTENTIONS MODEL

Historically, theories and models such as the Health Belief Model[1–3] and Theory of Planned Behavior[4] have addressed the motivational process and goal-setting needed to make lifestyle changes. However, these models do not address how these goals are actually translated into action.[5] Practitioners and researchers alike have been puzzled as to why some people are not successful in achieving their objectives, even when they seem motivated to do so. Significant barriers in the goal pursuit or change process include failure to maintain or even initiate targeted behaviors.[6]

The concept of implementation intentions explains how a person makes successful plans to reach his or her goal, and the Implementation Intentions Model (IIM) was developed to facilitate this process.[7–11] In a meta-analysis of effects and processes of implementation intentions and goal achievement, Gollwitzer et al[6] found that detailed planning had a positive effect on attaining desired outcomes. According to Gollwitzer,[7,8] this planning is particularly effective if a person can link the intended behavior or replacement behavior to an environmental cue or normal activity, thus creating a habit or built-in reminder.

Although the model is not yet fully developed, there has been compelling research with the IIM in the attainment of health goals, an area which could have a significant impact on DM programming.[12] For example, Milne et al[13] found that among undergraduate students the addition of a volitional intervention based on IIM produced a significant increase in physical activity compared to a motivational intervention based on the information model, which did not affect subsequent exercise behavior. In another study designed for the workplace, findings showed that the formation of an implementation intention doubled the rate of attendance at health and safety training courses.[5] In a community setting, Orbell et al[14] reported that implementation intention participants were significantly more likely to perform breast self-examination than controls.

Figure 1 describes how implementation intentions can bridge the gap between patients' intentions and their target behavior. In what Gollwitzer[7] calls the deliberative/motivational phase, individuals weigh the costs and benefits of performing the behavior and decide to act. Ideally, the Implemental/Volitional Phase would come next. At this stage patients develop plans regarding how to realize the behavioral change strategies. By developing details that specify the "if-then" possibilities and identifying prompts in their routine, patients are more able to successfully overcome the common self-regulatory problems or barriers that are inherent in making lifestyle changes.[6] As a result, the plan becomes the vehicle that assists the individual in crossing that gap between intentions and their actual behaviors, ultimately leading to improved health outcomes.

For example, patients with diabetes may have received education needed to change

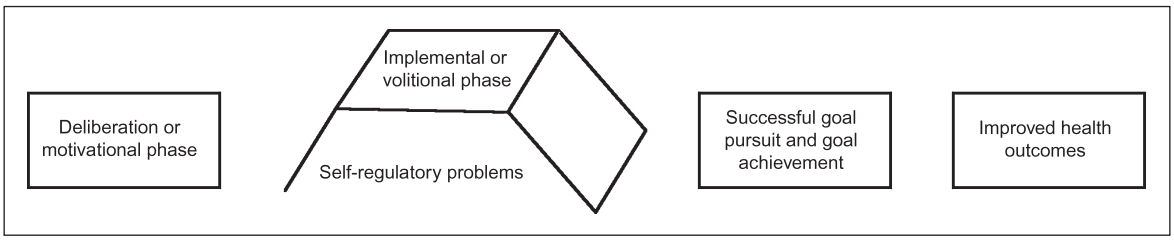

FIG. 1. Implementation Intentions Model.[6–8]

health behaviors and understand the health consequences of their disease. They may also be highly motivated to reach these goals (motivational phase), but may not have received direction or support in order to initiate the necessary changes. Therefore in the next stage (volitional phase), the disease manager and/or the primary care provider teams up with the patient to develop a detailed plan of the lifestyle management behaviors required to improve health status (eg, monitoring daily blood glucose, taking medications in a timely and consistent manner, adhering to an exercise program and diabetes-specific diet), and link these intended behaviors to environmental cues or daily activities. This collaborative effort between disease manager/primary care provider and program participant enables them to develop an effective treatment plan that overcomes the barriers to change and bridges the gap between intentions and behaviors, ultimately leading to the self-management techniques required to improve health status and yield positive health outcomes.

Since the IIM focuses on the gap between intentions and behaviors, it most benefits participants who have strong goal intentions.[11] The primary advantage of this model is that it is straightforward and can be easily implemented in existing interventions and services. Essentially, this would entail including the additional step to facilitate the "if-then" planning process and the formation of implementation intentions once a participant has been identified as being motivated to change a behavior (ie, being in the preparation or action phase in their stage of readiness to change[1,15]), and could be accomplished either through health coaching or written materials.

INTERPERSONAL LEVEL: NATURAL HELPER MODEL

The importance of social support for facilitating behavioral change has long been recognized,[16] and the Natural Helper Model (NHM) has emerged as a means of facilitating this process. Natural helpers are individuals in a community to whom others naturally turn to first for advice, emotional support and assistance.[17,18] This concept exists in neighborhoods, worksite settings, and other social groups, and has been found to be most prevalent within underserved and ethnic communities.[19]

Steuart and Kark[20] have been credited with first recognizing the value of forming collaborations between health educators and natural helpers in their work in South Africa during 1945–1959. The NHM was applied to a rural community in the United States by Eva Salber[21,22] and marked the beginning of public health interventions based on this social network approach.[17,23]

Natural helpers differ from lay health advisors, who are recruited and generally paid to deliver social support, in that they are intrinsically part of the social network they serve. They emerge as confidants and advisors based on their expertise, knowledge, motivation to help others, and their ability to inspire trust in other community members.[17] Researchers in health promotion and public health recently have focused on purposefully recruiting these natural helpers as lay health advisors and providing them with additional training in order to address health issues within the local community. For example, Tessaro et al[24] used the NHM in a worksite setting to promote women's health in multiple rural blue-collar worksites. Results indicated that natural helpers can be successfully recruited and trained to diffuse health promotion information and provide support to coworkers for healthy lifestyle changes. Study outcomes included an increase in group activities at the worksite, especially in physical activity.

Another example includes the North Carolina Breast Cancer Screening Program which also used the NHM, but implemented it in a community setting.[25] The objective was to recruit natural helpers and transform them into lay health advisors in order to positively affect African-American women's breast cancer screening practices. Again, the researchers were successful in their recruitment efforts. Evaluation efforts are still under way to determine whether or not mammography rates have increased; however, there is evidence of a variety of novel community out-

reach efforts related to breast cancer and breast cancer activities that have emerged within this rural community as a result of this intervention.

In Figure 2, Eng and Parker[17] describe the process whereby the major outcomes of the NHM are reached after natural helpers have been identified and recruited. Planners should provide the following to their new lay health advisors: (1) training to provide improved advice, assistance and referrals; (2) linkages with service providers and community leaders to discuss local health problems; and (3) support in implementing short-term and long-term self-help action in response to the health needs in the community.

These enhancements can be facilitated through existing social action arenas such as peer-to-peer social support, organization policies and practices, and community attachment (a sense of belonging) and political dynamics. It has been well-demonstrated that these social groups/constructs have a significant influence over an individual's behavior.[26]

The end result of the intervention should be the achievement of three levels of outcomes: (1) improved health outcomes through community members having knowledge of and access to options to be healthy and use of appropriate services; (2) improved coordination of agency services through agency awareness of and responsiveness to community needs; and (3) improved community competence through raised capacity to address social unity, as well as to recognize and act upon local issues.

This type of intervention has interesting applications to the DM field. For example, management at a worksite could use the NHM to help increase participation in a new benefits structure that includes a health risk appraisal, health screening, and health coaching for high-risk employees. Existing natural helpers could

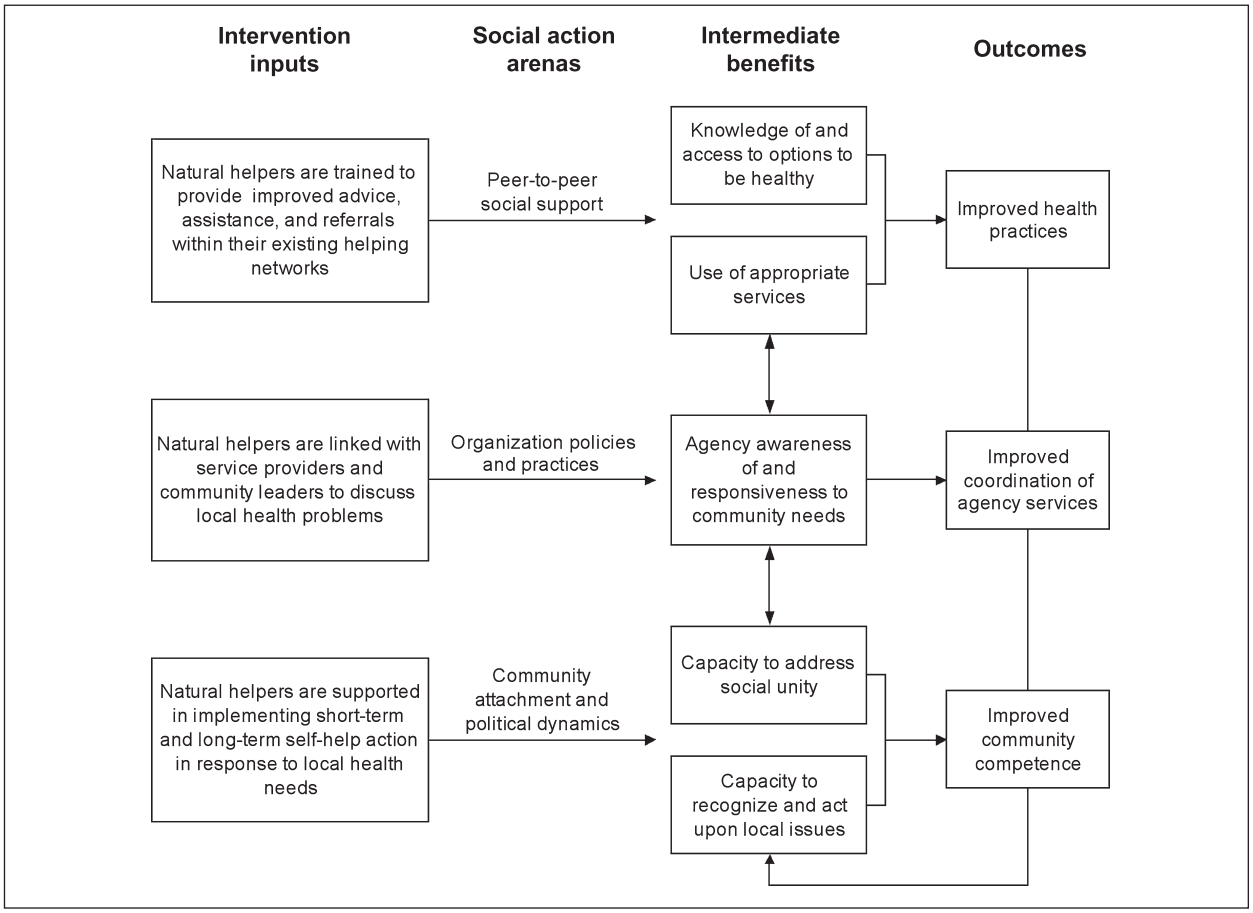

FIG. 2. Natural Helper Model.[17]

easily be identified by interviewing managers and other employees. Their recruitment could occur through an open appeal for assistance by offering an incentive program, such as bonus pay or time off, to reward participation. Next these helpers would receive training in the various aspects of the offerings and the logistics of enrolling employees in the program. They also would be introduced to program administrators and communication links would be established. In addition, they would be part of the planning and marketing activities for supplemental interventions. Outcomes would measure support for the new benefits structure, enhanced participation, effectiveness in the identification of high-risk employees, and follow-up on referrals to other related healthcare services.

The application of the NHM is limited to discrete communities or networks where the identification and recruitment of natural helpers is feasible. Another limitation of the NHM is the inability to directly measure the impact of the intervention without disturbing the natural process.[23] Although its success has been modestly demonstrated, transforming natural helpers into lay health advisors is a tremendous undertaking.[25] However, the advantage of using this model is that natural helpers already exist in the community and are amenable to collaborating with others. It is not recommended that this model stand alone as a primary DM intervention. Instead, it should be readily used to augment and enhance existing intervention models in the appropriate setting.

COMMUNITY LEVEL: COMMUNITY COALITIONS

Over the last two decades, coalition building has become a popular intervention in communities to address a wide range of public health concerns, including human immunodeficiency virus (HIV), immunizations, teen pregnancy, and tobacco control.[27] Community coalitions are structured arrangements or strategic alliances made between organizations to achieve a common goal.[28]

The Community Coalition Action Theory (CCAT) borrows from many models including community development, citizen participation, political science, interorganizational relations, and group process theory.[28] The popularity of CCAT grew in tandem with the emergence of community-wide health promotion programs. For example, the National Heart, Lung, and Blood Institutes' community demonstration project included The Stanford Three Community and Five Cities Projects, and the Minnesota and Pawtucket Heart Health Program, all of which effectively incorporated CCAT to address cardiovascular prevention strategies.[29] CCAT is based on the formation of a group derived from multiple sectors of the community, who come together to address local needs and problems.[30] The criteria for a community coalition include: the coalition generally has a lead organization and is composed of local members; it focuses mainly on local issues rather than national issues; it addresses community needs, building upon existing assets; and it helps resolve problems through collaboration.[27]

Figure 3 presents the eight basic steps that Hathaway[31] detailed for community leaders to follow in enacting CCAT. For instance, a dia-

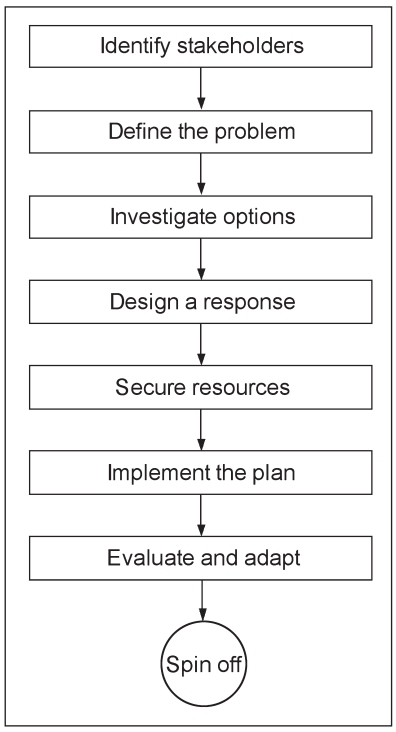

FIG. 3. Community Coalition Action Theory.[28,31]

betes DM company may see the need to foster a standard practice of care (eg, hemoglobin A1C [HbA1C] screens, annual eye, foot, and nephropathy exams) in a community and decide to take the leadership role in forming a coalition to address the issue.

Step 1 is to identify stakeholders. Kaye[32] has summarized the key reasons that people would be motivated to participate in a coalition: recognition, role, respect, reward, results, and relationships. The DM company concerned about the standards of care (SOC) for diabetes might send out invitations to health plans in the area, major employer groups, the local American Diabetes Association, and prominent practitioners in the region, to attend a meeting to discuss their intentions.

Step 2 is to define the problem. It is important to develop a vision and consensus around a common understanding of the issue, as well as to decide if further data is needed. This vision and mission must be clear to all participants and relate to the group's goals, objectives, and activities on a day-to-day basis.[33] In the example of the diabetes SOC coalition, it may be decided that a formal survey is needed to determine current prescribing practices by physicians and patient compliance. At this point, it is not unusual that external funding could be obtained. The results of the survey may indicate that physicians are not regularly testing patients for blood glucose levels, nephropathy, and glaucoma, or are not paying sufficient attention to the lifestyle management issues of their patients. In addition, results may show that a high percentage of patients are noncompliant with medication and screening recommendations, and lack self-management skills.

Step 3 is to investigate options. This step involves identifying best practices for the situation and, if needed, bringing in experts to share their expertise and experiences about what has worked well in similar circumstances. The diabetes SOC coalition may agree to share the costs of hiring a behavioral change consultant to develop interventions that improve prescription and counseling practices for diabetes patients.

Step 4 is to design a response. This step necessitates a formal evaluation of the options in order to select a plan that will meet the unique local circumstances. For example, the diabetes SOC coalition might elect to implement a lay helper's model if it has been successfully used in a previous local campaign for another lifestyle management goal. Further, they may agree to develop a subcommittee to enact the intervention. In addition, they may form a physicians' panel to develop support for best practices in diabetes management and create educational programs for successful behavior modification counseling.

Step 5 is to secure resources. This critical step involves obtaining existing internal resources among the stakeholders, as well as considering other funding sources at the private, public, local, state, or federal level. The health plans in the diabetes SOC coalition may agree to fund the project for the first year, with the understanding that several grant applications will be filed for funding subsequent years.

Step 6 is to implement the plan. Careful designation of leadership, development of timelines for implementation, and identification of finer details of the intervention are crucial at this stage. The diabetes SOC coalition might hire a project leader for the lay helper intervention to finalize their plan. They could then commence with recruitment of the lay helpers, and initiate contact with community leaders and organizations. They also may recruit a prominent physician to convene and chair the physician panel.

Step 7 is to evaluate and adapt. Process (during) and summative (post) evaluations are important to plan early and complete. Achieving concrete outcomes helps to maintain coalition membership.[33] Being prepared to adapt and change the intervention in response to midpoint outcome analysis should be expected of the project leader and coalition. The diabetes SOC coalition might discover near the end of the first program year that outcomes for patient compliance and self-management have slightly improved while provider practices have not changed. The project leader would be expected to present suggestions to strengthen this component of the program for the coalition to approve.

Step 8 is spin-off. The spin-off benefits from coalition meetings occur as people begin to know, trust, and work with one another. Con-

nections made within the coalition create opportunities for other interactions outside coalition activities that also improve the quality of community life (ie, writing grants with other agencies, increasing cross referrals, and designing joint projects).[33] For example, relationships might be formed among some of the diabetes SOC coalition members that could result in the procurement of a large grant to fund a Diabetes Management Center in the community.

There are some inherent challenges in using the CCAT. Coalitions often find it difficult to set concrete, attainable, and measurable goals and objectives. They also may become distracted by other emerging crises and side issues, or focus too narrowly on their topic.[33] Lastly, forming a coalition and planning/implementing an intervention with one can be time-consuming. On the other hand, the CCAT provides the infrastructure needed for major institutions to collaborate in enhancing one another's capacities and those of the community.[34]

TECHNIQUE TO USE ACROSS ALL MODELS: MOTIVATIONAL INTERVIEWING

In addition to the appropriate use of behavior change models to address multiple issues in DM, the identification of evidence-based techniques that are congruent with the underlying theories behind these models can greatly enhance their effects. One such technique is Motivational Interviewing (MI). This method is different from traditional health coaching approaches in that it is not based on the information model, does not use scare tactics, and is not confrontational, forceful, guilt-inducing, or authoritarian[35]; rather it is shaped by an understanding of what triggers change.[36] A recent meta-analysis found that, in a scientific setting, MI outperforms traditional advice giving in the treatment of a broad range of behavioral problems and diseases.[36]

MI originally was developed for addictions counseling in the 1980s and is described as a "directive, client-centred counselling style for eliciting behaviour change by helping clients to explore and resolve ambivalence."[35,37] It has been well researched in randomized controlled trials for use in treating addictions such as illegal drugs, smoking, and alcoholism.[38–40] As the value of lifestyle management has been more fully realized, MI has found its way into health promotion, primary care, and DM settings, and is typically employed in a health coaching application. Studies in this area have utilized the MI approach in the intervention for increasing fruit and vegetable intake,[41,42] promoting physical activity,[43–45] medication adherence,[46,47] managing hypertension and hypercholesterolemia,[48,49] and behavioral obesity treatment.[50,51] MI also has been used successfully to promote self-care for both adolescents and adults with diabetes.[52–54]

As Figure 4 illustrates, the practitioner or coach emphasizes the three underlying assumptions of MI (ie, collaboration, the evocative element, autonomy) in order to establish rapport, reduce resistance, and elicit "change talk" (ie, one's own reasons and arguments for change).[35,37] The intended outcome of these MI sessions is for patients to resolve ambivalence (a central goal), move through the stages of change,[1,15] and follow through on desirable lifestyle change, which ideally would result in improved health outcomes.

Other characteristics of this technique that make it particularly suitable for use in DM are as follows: (1) it is most effective when implemented with patients who are considered difficult (ie, reluctant to change or who are ambivalent about changing their behavior); (2) it has been found to be efficacious in small doses; (3) most healthcare professionals, including primary care providers, can be trained to be proficient in the delivery of MI-based health coaching; and (4) it has been found to be an effective pre-treatment adjunct to traditional DM programs.[55]

A quick review of the potential application of MI to the models/theories discussed in this article demonstrates the versatility of this technique to DM. In the IIM, MI-based health coaching could be used directly to help patients perform the "if-then" planning process that is essential in bridging the gap between their goals and their behaviors. In the NHM, providing training in MI for lay helpers could significantly improve their health coaching skills

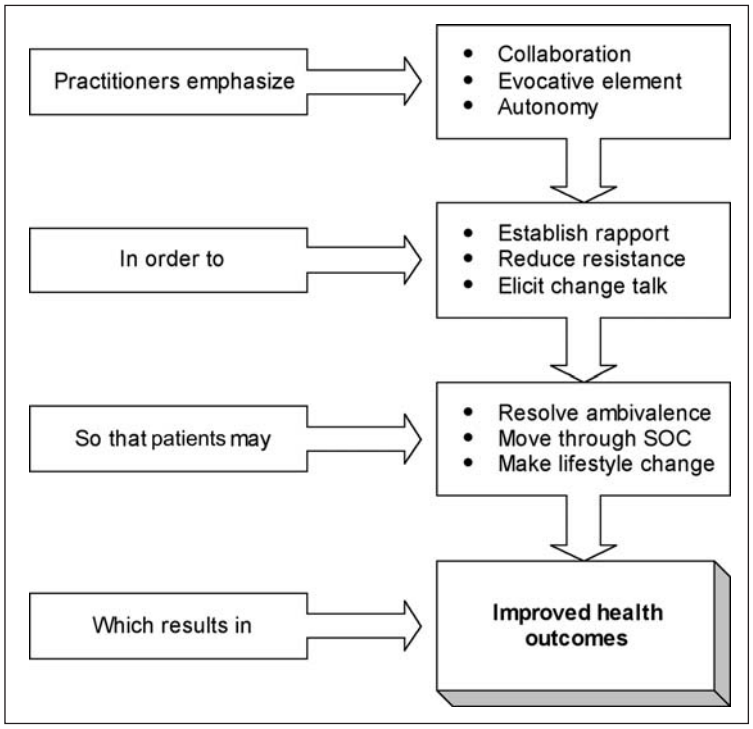

FIG. 4. Motivational interviewing technique.[35] SOC, standards of care

and outcomes. Lastly, in the CCAT, MI could be easily woven into the chosen interventions or used as an adjunct to the traditional treatment plans. The appendix provides an example of the MI technique used in combination with a popular model used in DM programs, the Transtheoretical Model.[1,15]

CONCLUSION

This paper serves as an extension of our prior paper,[1] in which eight core psychosocial behavioral change models were described. Here, five more recently developed theory-based approaches were introduced, providing readers with up-to-date information in this specialty area. Table 1 presents a summary of all models discussed in both the current and previous paper and is meant to serve as a concise reference. A brief description of the underlying theory, primary guiding principle, and targeted element of change for each approach is offered. General applications to DM are suggested along with the potential limitations facing their adoption and implementation. In conclusion, the success of any DM program ultimately depends upon the ability and willingness of participants to change and maintain desired health behaviors. DM managers should team up with primary care providers to provide interventions that facilitate these changes to ensure continuity and coordination of care. To achieve those results, DM program administrators have several issues to consider including the type of behavioral change desired, scope of intervention that the organization is willing and capable of implementing, and whether the appropriate support structures are available to ensure successful achievement of program goals. An understanding of these issues will assist program designers in selecting the appropriate change models.

Table 1. Summary of Behavioral Change Models at the Individual, Interpersonal, Community, and Comprehensive Level

Model	*Level*	*Theory*	*Main principle*	*Directly impacts*	*Application to DM*	*Limitation*
Motivational Interviewing (MI)	Individual	The exploration of ambivalence and development of one's own action plan facilitates the behavior change process.	A patient-centered evocative approach is employed to develop discrepancy, explore ambivalence, and elicit change talk.	Individual's motivation to change.	This approach can be incorporated into existing programs and interventions to enhance their effect.	The approach is counter to most provider and DM staff training.
Health Belief Model	Individual	People will take action if they believe they are susceptible to risks and that the pros outweigh the cons.	An individual's readiness to take action can be enhanced by presenting the consequences of the status quo and the benefits of change.	Individual's beliefs in the desirability of behavior change.	Interventions should be developed to help patients understand that their disease will cause harm, and that self-management will be beneficial.	One generalized educational program will not fit the specific needs of every person.
Stages of Change Model	Individual	Behavioral change is a continual process as individuals move through five different stages of readiness to change.	Interventions should be tailored to the individual's state of readiness to change in order to facilitate movement through the process.	Individual's readiness to change.	Interventions should identify the participant's stage of change and modify interventions to match.	It may be difficult to offer tailored interventions for populations who have individuals at different stages of change.
Consumer Information Processing Model	Individual	Consumer decision-making is a multistage process in which information is acquired and processed, a decision is made and acted upon, and the quality of decision is evaluated.	Complete and relevant information is provided to assist people in making appropriate choices that affect their health.	Individual's decision-making process concerning lifestyle choices.	Patients require health information that is readily obtainable, useful, comprehensive and easy to process.	Even when complete information is available, people can ignore it or rationalize the impact.
Implementation Intentions Model (IIM)	Individual	By developing details that specify the "if-then" possibilities and identifying prompts in their routine, patients are more able to successfully reach their goals.	The facilitation of detailed planning can bridge the gap between patients' intentions and their target behavior.	Individual's planning process in overcoming barriers and attaining goals.	Intervensions should include prompts for a detailed planning process to overcome barriers and reach goals.	Individuals must be motivated to make a change in order to benefit from the planning process.
Social Learning Theory	Interpersonal	Behavior is a function of an individual's subjective value of an outcome and his/her expectation that a	Desirable lifestyle choices can be enhanced by influencing environmental cues, outcome and efficacy	Individual's subjective values and expectations regarding	Intervensions should enhance interpersonal and environment support available to patients	The model is difficult to operationalize due to its complexity.

(*continued*)

Table 1. Summary of Behavioral Change Models at the Individual, Interpersonal, Community, and Comprehensive Level (*Continued*)

Model	*Level*	*Theory*	*Main principle*	*Directly impacts*	*Application to DM*	*Limitation*
		particular action will achieve that outcome.	expectations, and reinforcements.	actions and outcomes.	where lifestyle change would be helpful.	
Natural Helper Model (NHM)	Interpersonal	Respected lay people can be recruited and trained to influence others to adopt positive lifestyle habits.	Lay health advisors are recruited to provide assistance and referrals to community members to support self-help action in response to the health needs of the community.	Individual behaviors, coordination of agency services, and community competence.	Natural helpers should be identified, recruited, and trained in communities to assist with existing programs and services.	Application is limited to discrete communities or networks where the identification and recruitment of natural helpers is feasible.
Diffusion of Innovations Model	Community	Adoption of innovations will vary according to individual characteristics, and diffusion is a process that occurs over time.	Interventions that influence the rate of diffusion of an innovation are designed to address different types of adopters.	Rate of adoption of an innovation.	DM programs should consider the type of innovation being promoted and choose the most effective messenger for it.	Success of intervention is dependent upon healthcare provider support of program goals.
Theories of organizational change	Community	In order to achieve successful change of behavior in an organization, all levels of the company must be engaged in the process.	A large group intervention is designed and implemented that affects the organization on multiple layers of its social system.	Individual and large group behaviors.	DM programs should plan and implement population-based interventions that influence social norms and structures.	Existing norms, policies, and organization culture can be difficult to influence.
Community Coalition Action Theory (CCAT)	Community	A coalition provides the infrastructure needed for major institutions to collaborate in enhancing one another's capacities and those of the community.	Community leaders from multiple sectors come together to form a strategic alliance and establish programs that will address local health needs and problems.	Cultural norms and behaviors on a community level.	DM programs should consider taking the lead on forming a coalition to address conditions or diseases that they manage.	Coalition work is time-consuming and members find it difficult to set concrete, attainable and measurable goals.
Social Marketing Model	Community	Social marketing can create a demand for ideas and behaviors, similar to the marketing of commercial products.	Programs employ commercial marketing techniques in order to influence the adoption of social ideas and certain health behaviors.	Acceptance of ideas and health behaviors in target groups.	DM programs should integrate social marketing principles in their marketing strategies.	Target groups are harder to reach than in traditional commercial marketing approaches and are typically uninterested in changing behavior.
Precede-Proceed Model	Comprehensive	Behavioral change is a voluntary activity and individuals need to take an active role in their action plans.	A systematic approach is taken to the planning, delivery and evaluation of interventions that influence lifestyles and the environment.	Predisposing, reinforcing and enabling factors.	DM programs should design and implement a comprehensive and systematic approach that includes all levels.	Needs careful, long-term planning and significant investment of resources.

DM, disease management.

APPENDIX: CASE EXAMPLE OF THE APPLICATION OF MOTIVATIONAL INTERVIEWING IN DISEASE MANAGEMENT

The following is an example of how motivational interventions (MI) might be effectively applied in disease management (DM) to enroll a patient into a program or service. In addition, it demonstrates the congruency of MI with other models—in this case, the Transtheoretical (or Stages of Change) Model.

Ms. Richards has been identified as a high-risk diabetic patient as her hemoglobin A1C values have remained high. Previous DM case notes indicate that she is not checking her blood glucose levels on a regular basis and that she has not made recommended lifestyle changes. Ms. Richards is considered to be in the precontemplation stage at this time.

DM staff: Ms. Richards, my name is _____ and I am calling from DM Company to offer you an opportunity to enroll in one of our programs. May I tell you a little bit about it?

Patient: I don't have much time right now. My daughter's family is coming to visit this weekend, and I am baking for them.

DM staff: You must be excited about them coming into town. [Reflection, establishing rapport]

Patient: Yes, I am! I haven't seen them for six months.

DM staff: I don't want to interrupt your baking. Would you like me to call back? [Client-centered approach]

Patient: No, I guess I have a few minutes now. What is this all about?

DM staff: We have a new diabetes program that you qualify for. You get the opportunity to ask any questions and discuss your individual case with a health coach who specializes in diabetes management. It's all done over the telephone, and there is no charge to you.

Patient: I think I'm doing alright.

DM staff: I'm glad to hear it. Tell me what you feel is going well for you. [Rolling with resistance, open-ended question to elicit information]

Patient: Well, I'm taking that medication that my doctor gave me, and I'm not as tired as I used to be.

DM staff: It is important to take that on a regular basis. What else are you doing to manage your diabetes? [Affirmation, open-ended question to elicit more information]

Patient: Ummm . . . I'm checking my sugars.

DM staff: [Silence—used as a method to elicit more information]

Patient: Maybe not as often as I should be. But I'm checking them some. I haven't started the walking program, but I have cut back on the sweets. Of course, here I am baking this cake for my grandchildren.

DM staff: They probably expect it when they go to Grandma's. [*Reflection, validation*]

Patient: Exactly! I guess I don't have to eat much of it though.

DM staff: Ms Richards, I know you're busy. Let's see if I can summarize where you are. You are taking your medication, and you are feeling better. You have tried to cut back on sweets and are checking your sugars once in a while. You have thought about starting your walking program. Did I get it right? [Summary with important points and directing towards change]

Patient: Yes, I think that's about right. I guess I could be doing a little more. My doctor is still not happy with where my numbers are.

DM staff: I think that's something that your health coach could help you with. With your permission, I'd like to enroll you into this program and have you receive your first call. You can see how it goes from there. [Supporting autonomy]

Patient: Okay, I guess that would be alright.

DM staff: Cindy will be your health coach. When is the best time of day for her to call you? [Client-centered approach]

Patient: Probably mornings. But don't have her call until after Tuesday because my daughter is staying until then.
DM staff: Great, Ms Richards. I'll make a note for Cindy to call you Wednesday morning. Have a wonderful time with your family!
Patient: Thank you, I will! Good-bye.

As a result of the staff using MI to establish rapport, express empathy and roll with resistance, Ms. Richards has elected to enroll in the DM program and is now considered to be in the contemplation stage.

REFERENCES

1. Linden A, Roberts N. Disease management interventions: what's in the black box? Dis Manag 2004;7: 275–291.
2. Hochbaum GM. Why people seek diagnostic x-rays. Public Health Rep 1956;71:377–380.
3. Hochbaum GM. Public participation in medical screening programs: a social-psychological study (PHS publication no. 572). Washington, DC: Government Printing Office. 1958.
4. Ajzen I. The theory of planned behavior. Organiz Behav Human Decis Processes 1991;50:179–211.
5. Sheeran P, Silverman M. Evaluation of three interventions to promote workplace health and safety: evidence for the utility of implementation intentions. Soc Sci Med 2003;56:2153–2163.
6. Gollwitzer PM, Sheeran P. Implementation intentions and goal achievement: a meta-analysis of effects and processes. Unpublished manuscript, 2004. Available at: http://gsbwww.uchicago.edu/research/workshops/behavioral/Gollwitzer.pdf. Accessed July 3, 2005.
7. Gollwitzer PM, Sheeran P. Goal achievement: the role of intentions. Euro Rev Soc Psychol 1993;4:141–185.
8. Gollwitzer PM. The volitional benefits of planning. In: Gollwitzer PM, Bargh JA, eds. The psychology of action: linking cognition and motivation to behavior. New York: Guilford Press, 1996:287–312.
9. Gollwitzer PM. Implementation intentions: strong effects of simple plans. Am Psychol 1999;54:493–503.
10. Sheeran P. Intention-behavior relations: a conceptual and empirical review. Eur Rev Soc Psychol 2002;12: 1–30.
11. Sheeran P, Webb TL, Gollwitzer PM. The interplay between goal intentions and implementation intentions. Pers Soc Psychol Bull 2005;31:87–98.
12. Gollwitzer PM, Oettingen G. The emergence and implementation of health goals. In: Norman P, Abramam C, Conner M, eds. Understanding and changing health behaviour. From self beliefs to self regulation. Amsterdam: Harwood, 2000:229–260.
13. Milne S, Orbell S, Sheeran P. Combining motivational and volitional interventions to promote exercise participation: protection motivation theory and implementation intentions. Br J Health Psychol 2002;7:163–184.
14. Orbell S, Hodgkins S, Sheeran P. Implementation intentions and the theory of planned behavior. Pers Soc Psychol Bull 1997;23:945–954.
15. Prochaska JO. Systems of psychotherapy: a transtheoretical analysis. Homewood, IL: Dorsey Press, 1979.
16. Broadhead WE, Kaplan BH, James SA, et al. The epidemiologic evidence for a relationship between social support and health. Am J Epidemiol 1983;117: 521–537.
17. Eng E, Parker E. Natural Helper Models to enhance a community's health and competence. In: DiClemente RJ, Crosby RA, Kegler MC, eds. Emerging theories in health promotion: strategies for improving public health. San Francisco: Jossey-Bass, 2002:126–156.
18. Eng E, Smith J. Natural helping functions of lay health advisers in breast cancer education. Breast Cancer Res Treat 1995;35:23–29.
19. Tracey GS, Gussow Z. Self-help groups: a grassroots response to a need for services. J Appl Behav Sci 1976; 12:381–396.
20. Steuart GW, Kark SL. Community health education [originally published in 1962]. Health Educ Q 1993; Suppl 1:S29–S47.
21. Salber EJ, Beery WB, Jackson EJ. The role of the health facilitator in community health education. J Community Health 1976;2:5–20.
22. Service C, Salber EJ, eds. Community health education: the lay health advisor approach. Durham, NC: Health Care Systems, 1979.
23. Eng E, Young R. Lay health advisors as community change agents. Fam Community Health 1992;15: 24–40.
24. Tessaro IA, Taylor S, Belton L, et al. Adapting a natural (lay) helpers model of change for worksite health promotion for women. Health Educ Res 2000;15: 603–614.
25. Earp JA, Viadro CI, Vincus AA, et al. Lay health advisors: a strategy for getting the word out about breast cancer. Health Educ Behav 1997;24:432–451.
26. McLeroy KR, Gottlieb NH, Heaney CA. Social health in the workplace. In: O'Donnell MP, ed. Health promotion in the workplace, 3rd ed. Albany, NY: Delmar, 2002, pp. 459–492.
27. Wolff T. Community coalition building—contemporary practice and research: introduction. Am J Community Psychol 2001;29:165–172.
28. Butterfoss FD, Kegler MC. Community coalitions: moving from practice to theory. In: DiClemente RJ, Crosby RA, Kegler MC, eds. Emerging theories in health promotion: strategies for improving public health. San Francisco: Jossey-Bass, 2002:157–183.
29. Mittelmark MB, Hunt MK, Heath GW, Schmid TL.Realistic outcomes: lessons from community-based research and demonstration programs for the prevention of cardiovascular diseases. J Public Health Policy 1993;14:437–462.

30. Berkowitz B, Wolff T. The spirit of the coalition. Washington, DC: American Public Health Association, 2000.
31. Hathaway BL. Case story #2: growing a healthy community: a practical guide. Am J Community Psychol 2001;29:199–203.
32. Kaye G. Involving and mobilizing the grassroots. In: Kaye G, Wolff T, eds. From the ground up: a workbook on coalition building and community development. Amherst, MA: AHEC/Community Partners, 1997:99–122.
33. Wolff T. A practitioner's guide to successful coalitions. Am J Community Psychol 2001;29:173–191.
34. Wolff T. The future of community coalition building. Am J Community Psychol 2001;29:263–268.
35. Miller WR, Rollnick S. Motivational interviewing: preparing people to change addictive behavior. New York: Guilford Press, 1991.
36. Rubak S, Sandbæk A, Lauritzen T, Christensen B. Motivational interviewing: a systematic review and meta-analysis. Br J Gen Pract 2005;55:305–312.
37. Miller WR. Motivational interviewing with problem drinkers. Behav Psychother 1983;11:147–172.
38. Ershoff DH, Quinn VP, Boyd NR, Stern J, Gregory M, Wirtshafter D. The Kaiser Permanente prenatal smoking-cessation trial: when more isn't better, what is enough? Am J Prev Med 1999;17:161–168.
39. Aubrey LL. A motivational intervention for adolescent smokers. Prev Med 1998;17:161–168.
40. Masterman PW, Kelly AB. Reaching adolescents who drink harmfully: fitting intervention to developmental reality. J Subst Abuse Treat 2003;24:347–355.
41. Resnicow K, Jackson A, Wang T, et al. A motivational interviewing intervention to increase fruit and vegetable intake through Black churches: results of the Eat for Life trial. Am J Public Health 2001;91:1686–1693.
42. Berg-Smith SM, Stevens VJ, Brown KM, et al. A brief motivational intervention to improve dietary adherence in adolescents. The Dietary Intervention Study in Children (DISC) Research Group. Health Educ Res 1999;3:399–410.
43. Scales R, Miller JH. Motivational techniques for improving compliance with an exercise program: skills for primary care clinicians. Curr Sports Med Reports 2003;2:166–172.
44. Hudec JC. Individual counseling to promote physical activity. Dissertation Abstracts International 2000;61: (3-A) 931.
45. Harland J, White M, Drinkwater C, Chinn D, Farr L, Howel D. The Newcastle exercise project: a randomized controlled trial of methods to promote physical activity in primary care. BMJ 1999;319:828–832.
46. Aliotta SL, Vlasnik JJ, Delor B. Enhancing adherence to long-term medical therapy: a new approach to assessing and treating patients. Adv Ther 2004;21:214–231.
47. Kemp R, Kirov G, Everitt B, et al. Randomised controlled trial of compliance therapy. 18-month follow-up. Br J Psychiatry 1998;172:413–419.
48. Woollard J, Beilin L, Lord T, et al. A controlled trial of nurse counseling on lifestyle change for hypertensives treated in general practice: preliminary results. Clin Exp Pharmacol Physiol 1995;22:466–468.
49. Mhurchu CN, Margetts BM, Speller V. Randomized clinical trial comparing the effectiveness of two dietary interventions for patients with hyperlipidaemia. Clin Sci (Lond) 1998;95:479–487.
50. DiLillo V, Siegfried NJ, West DS. Incorporating motivational interviewing into behavioral obesity treatment. Cogn Behav Pract 2003;10:120–130.
51. Smith DE, Heckemeyer CM, Kratt PP, Mason DA. Motivational interviewing to improve adherence to a behavioral weight-control program for older obese women with NIDDM. A pilot study. Diabetes Care 1997;20:52–54.
52. Channon S, Smith VJ, Gregory JW. A pilot study of motivational interviewing in adolescents with diabetes. Arch Dis Child 2003;88:680–683.
53. Knight KM, Bundy C, Morris R, et al. The effects of group motivational interviewing and externalizing conversations for adolescents with Type-1 diabetes. Psychol Health Med 2003;8:149–157.
54. Pill R, Stott NC, Rollnick SR, Rees M. A randomized controlled trial of an intervention designed to improve the care given in general practice to Type II diabetic patients: patient outcomes and professional ability to change behaviour. Fam Pract 1998;15: 229–235.
55. Burke BL, Arkowitz H, Menchola M. The efficacy of motivational interviewing: a meta-analysis of controlled clinical trials. J Consult Clin Psychol 2003;71: 843–861.

Address reprint requests to:
Ariel Linden, Dr.P.H., M.S.
Linden Consulting Group
6208 NE Chestnut St.
Hillsboro, OR 97124

E-mail: alinden@lindenconsulting.org