

# A Call for More Effectively Integrating Behavioral and Social Science Principles Into Comprehensive Diabetes Care

Research has clearly demonstrated that reductions in hyperglycemia, blood pressure, and lipids through medication and healthy living can retard diabetes progression and reduce cardiovascular risk (1). The Diabetes Prevention Program (2) has convincingly shown that healthy living and appropriate medication can reduce or even halt the progression to full diabetes for individuals with pre-diabetes. These studies used large samples of individuals who were able to adhere to the lifestyle change and medication protocols included in these clinical trials so that the effects of the interventions could be adequately documented.

Applying the results of these landmark studies to the world of clinical practice has been somewhat more difficult than anticipated (3). Providing access to care for all patients, incorporating guideline-based care in clinical practice, motivating patients to initiate and sustain the essential healthy-living life changes that diabetes requires, helping patients cope with diabetes-related distress and depression, and addressing the competing priorities in health care have slowed the full application of knowledge gained by these and related studies. In clinical practice, at national meetings, and in the literature, the question most often voiced by practicing clinicians across the diabetes-related health professions is, "How do I help activate or empower my patients to take better care of their diabetes?" Despite the general consensus that weight control, balanced diet, regular physical activity, blood glucose self-monitoring, medication management, and good diabetes emotional coping and problem solving are some of the primary, evidence-based dimensions of good diabetes self-care, most patients with diabetes continue to have chronic or episodic problems achieving these goals. These problems lead to increased morbidity and mortality, high health care costs, and often high frustration among both patients and practitioners. Despite the enormous advances in sophisticated medications and diabe-

tes-related devices based on recent advances in genetics, biotechnology, and bio-engineering, we are left with the fundamental, continuing problem of human behavior. How do we help people effectively integrate diabetes self-care into their lives and become proactive in adopting and sustaining goal-directed self-management practices over the course of their disease, and how do we help clinicians and health care organizations better support these efforts (4)?

This editorial highlights some of the critical issues regarding the more complete integration of behavioral and social science principles into clinical practice and diabetes-related social policies so that they become more effectively adopted as crucial components of comprehensive diabetes care. This task is of paramount concern if we are to fully implement the knowledge gained from recent clinical research in diabetes and other chronic diseases (5,6). The reviews that follow address different aspects of these issues and serve as benchmarks for rethinking some of the problems at hand and moving the field forward. In the age of clinical and translational science institutes and general translation research (7), it is imperative to integrate advances in the behavioral and social sciences (e.g., theory, assessment, policies, interventions) into all aspects of diabetes clinical care.

An integration of the behavioral and social sciences within diabetes care needs to progress in three primary directions, each independently necessary but none sufficient on its own, including: 1) comprehensively integrating the principles of behavioral change and learning into all aspects of diabetes care for all practitioners, not just for behavioral and educational specialists; 2) reconfiguring the delivery of care in both primary and specialty clinical settings in ways that use behavioral principles effectively; and 3) applying behavioral principles to enhance change in social/environmental perceptions, policies, and resource availability

within communities (8). Each direction is summarized below.

## **INCORPORATING PRINCIPLES OF BEHAVIOR CHANGE INTO ALL ASPECTS OF DIABETES CARE**

— Numerous reviews and meta-analyses have concluded that theory-based, integrated behavioral and educational programs significantly improve self-care behavior and diabetes outcomes (9,10). It has been convincingly shown that programs are most effective when they are patient tailored to address individual needs (11,12), including, for example, collaborative goal setting (13) and identification of patient beliefs concerning treatment efficacy and seriousness of the disease (14,15), and when they address emotional distress and depression (8), focus on patient perspectives (16), and train patients in problem-solving skills (17). Programs that include autonomy motivation and support (18) or motivational interviewing (19) and those that are based on theories of behavioral change (20) have provided frameworks for integrating these evidenced-based components into effective programs of intervention.

A review of the current literature, however, reveals two striking findings regarding these programs. First, few patients with diabetes actually participate in diabetes education/behavioral programs. From a variety of sources (21 and W. Polonsky, personal communication), it is estimated that <50% (probably closer to 35–40%) of all patients with diabetes ever attend a diabetes education/behavioral intervention program, far fewer have attended in the past year, and among all attendees, only ~50% complete the program. Issues of cost and access undoubtedly play a role in these surprisingly low rates, but we wonder how we can expect patients to manage their disease adequately when they do not have even basic knowledge and behavioral tools for good diabetes self-care. Second, few diabetes health care professionals use behavioral principles, such as those listed above, in their day-to-day clinical practice. Although

much has to be accomplished at each clinical encounter, behavioral and educational interventions are often placed at the bottom of the list or the patient is “referred” to an educational or behavioral specialist for this portion of their care. We suggest that all members of the diabetes care team need to be “behavioral experts” insofar as all members ask patients to engage in specific behavioral practices (e.g., follow a medication regimen, test their blood glucose, see a specialist, attend a follow-up appointment, increase physical activity, etc.).

This does not mean that all patients must experience a time-consuming behavioral intervention at each encounter; rather, all clinicians must be knowledgeable and sensitive to the behavioral implications of their care and integrate behavioral issues with each recommendation. For example, in its simplest form, it makes little sense for a clinician to provide a recommendation for a change in medication if a brief exchange about the patient’s understanding of the medication and the probabilities of the patient’s use of that medication does not take place (e.g., access to the medication, barriers to use). The 5As (ask, advise, assess, assist, arrange) Model has been recommended as a practical and efficient evidence-based approach for clinicians to ask about, advise, agree on goals, assist with problem solving, and arrange follow-up (22,23). The use of well-documented best behavioral practices can improve clinical outcomes when they are applied systematically, conscientiously, and uniformly; when they are applied by all diabetes health professionals; and when they are considered part of each clinical team member’s skill set. Each of the three Bench to Clinic Symposia in this issue of *Diabetes Care* (24–26) addresses the application of behavioral principles to different aspects of clinical care.

**RECONFIGURING CARE** — Recent Institute of Medicine reports on chronic illness care (27) and programs based on the Chronic Care Model (28) are helping care systems provide more clinically effective and cost-efficient care (13). In addition to these broader systems-based approaches, much can be done by individual practitioners to improve care for individual patients in ways that make use of well-documented, evidenced-based behavioral principles. Use of behavioral and social interventions need to be revised from the current narrow frame-

work based on an acute care model that usually includes a single intervention and possibly a brief follow-up to a perspective that views behavioral intervention as part of a longer, ongoing program of chronic care. As with medication management over time, the behavioral and educational components of diabetes care need to be an ongoing rather than onetime experience.

The assumptions that once learned, major life style changes can be easily maintained and that new challenges posed by diabetes over time do not require new knowledge and new techniques for problem resolution are contradicted by a long line of behavioral research (29–31). Most patients require ongoing support and reevaluation to sustain behavioral change (8). Likewise, as patients age and diabetes progresses, new medical and behavioral interventions are required to help patients adapt to their changing experiences and to make effective use of current treatments. These may include enhanced programs of glucose monitoring; provision of additional support; ongoing assessment or screening of mood, depression, or distress; creation of new behavioral goals; completion of new education or reeducation programs; use of new methods of care delivery; or change in the specifics of self-management practices (32). This strategy creates continuous behavioral and educational interventions as parallel processes to continuous biomedical interventions, with each required to assure the successful implementation of the other.

A shift in strategy from rare to ongoing behavioral/educational intervention that includes these components can take many forms, depending on the needs of the clinical setting and the patients they serve. Some practitioners have improved patient behavioral care by addressing issues of within-practice patient flow and by changing the roles of members of the office team to find time for brief behavioral assessment or intervention (33). For example, some practices now have non-physician staff help patients complete a behavioral and depression screen before being seen by the physician (33). Others have shifted their care for diabetic patients from one-on-one to group medical visits (34,35). Still others have adopted automated within-practice systems to track, monitor, and record self-management behaviors and care in ways that free up time for additional patient screening and intervention (36). Making care more cost-effective and including a major behavioral

component as part of general diabetes care is not a zero-sum game—both can be accomplished with careful planning and awareness, and behavioral interventions can in the long run lead to cost savings as patients collaborate more successfully on their treatment plan.

There are a host of new, often automated programs that focus on bringing care to patients rather than bringing patients to care. These programs extend the reach of the clinical setting from the brick and mortar clinic building to the patient’s home or work setting. They generally enhance clinician-patient interaction through a population-based approach that addresses the entire panel of patients under care by the clinician rather than only those patients who come to the office (37). They include automated prompts for upcoming appointments; interactive behavioral change programs; ongoing clinician-patient interaction regarding blood glucose levels; periodic diabetes education programs tailored to patient need delivered via e-mail, Internet, or telephone; and periodic clinician-patient follow-up via telephone to check on patient status, symptoms, and medications (38). These programs are particularly effective when they are flexible and patient tailored, when they are integrated with the patient’s program of care, and when they are linked to a member of the care team with whom patients can interact personally, even if they do so infrequently (38). The crucial requirement among programs that reconfigure how care is delivered is that the clinical teams fully integrate patients’ beliefs, knowledge, preferences, behavior, and social context into their continually evolving system of care.

## **PATIENT EXPECTATIONS AND COMMUNITY RESOURCES**

Traditional models of health care delivery that are based on an acute care model coupled with systems of care that emphasize provider-focused as opposed to patient-focused care have fostered two common misperceptions among patients: 1) that treatments for diseases like diabetes are curative and 2) that patients can remain passive as they are “fixed” by knowledgeable and caring health care practitioners. The explosion of chronic disease, including diabetes and obesity, as a major challenge of 21st century health care and the requirement that patients become proactive partners in caring for chronic disease contrast sharply with these traditional beliefs and expecta-

tions (27,39). At present, most chronic diseases, like diabetes, cannot be “cured” for the vast majority of patients, and the successful care of patients with chronic disease is significantly related to changes in lifestyle and the integration of self-care activities into everyday life over long periods of time in ways that require proactive patient behavior (4). A realignment of expectations to match the current realities of chronic disease management requires the combined efforts of patients, health care, community, and public health leaders. Clinicians have at least three powerful and often neglected roles to play in this process.

First, all health care professionals involved in diabetes care can contribute to efforts to change social norms regarding major lifestyle issues (e.g., smoking, diet, physical activity) through their own modeling and through patient education and awareness. Being sensitive to patient age, health literacy, cultural, and gender issues, clinicians can foster changes in social perceptions of diabetes and healthy living among the patients they serve and their family members by, for example, adopting patient-focused care approaches (40); entering more fully into collaborative, autonomy-supportive rather than hierarchical relationships with patients (16,18); addressing family, work, and social issues that patients face as they care for their disease; suggesting resources for patients to use on their own that can be reviewed in subsequent visits (8); and structuring proactive patient decision making around management options.

Second, clinicians can actively and publicly support social and environmental changes and policies that promote healthy living in the communities they serve (41). This may include support for food labeling, availability and accessibility of healthy foods to community residents, safe areas for physical activity, and patient advocacy groups. Research has shown that changes in health-related social resources affect the health of community members.

Third, designers of new practice-based clinical programs need to include a well-articulated plan (42) that includes recommendations for increasing the relevance, reach, implementation, and sustainability of the program across different community settings (5). These recommendations expand the impact of the program by embedding it in an integrated way into the community in which it resides. This might include collaborative ar-

rangements with community agencies for joint sponsorship of physical activity programs or development of health libraries or activity groups for socially isolated diabetic patients. In an age of decreasing health care resources, clinicians must make increasing use of community resources and design programs of care that address the patient within their social and community context. Documenting effectiveness in an academic setting is simply not sufficient—designing programs in ways that make them attractive, flexible, practical, cost-efficient, and integrated within their respective communities is crucial.

**CONCLUSIONS** — The relatively infrequent and uneven inclusion of behavioral and social science principles in diabetes care has limited the effective use of new knowledge gained from biomedical clinical trials. A focus on biomedical intervention without integration of behavioral and social science principles into clinical care severely limits the impact of biotechnology and biomedicine. The Bench to Clinic Symposia in this issue of *Diabetes Care* illustrate three specific areas of importance in reaching these goals: psychosocial interventions, eHealth behavioral technologies, and care transitions among adolescent and young adult patients. The authors of these articles have been asked to do more than the traditional literature review. In addition to identifying and summarizing key issues, they were asked to outline how practitioners can make use of programs that incorporate behavioral principles into the practice setting. Finally, the authors were encouraged to propose areas for future research, policy, and practice that can lead to major advances in diabetes care.

Peyrot and Rubin (24) summarize and integrate current findings in behavioral interventions for diabetes, list the major components of interventional programs that are tied to theory, and translate their review into practical recommendations for clinical application. Piette (25) summarizes and critiques interactive behavioral change technology as a promising strategy to address the reduced resources of clinical care while at the same time addressing the increasing needs of patients with diabetes. He outlines the benefits and limitations of these approaches and suggests creative directions for their use in clinical settings. Weissberg-Benchel, Wolpert, and Anderson (26) use developmental theory to review

the often unaddressed, unique problems concerning the transition from pediatric to adult care among those with type 1 diabetes and provide a set of care guidelines for this vulnerable patient group for use in clinical practice.

These Bench to Clinic Symposia highlight opportunities for effectively incorporating behavioral principles into diabetes care. We call for systematic research, review, and synthesis on methods, assessments, programs, and policies that advance principles of behavioral and social science as part of comprehensive diabetes care. In particular, these may include gathering new knowledge about the effective components of theory-driven behavioral programs and practices; innovative ideas for working with the underserved and reducing health disparities; sustaining and expanding the reach and effectiveness of new behavioral programs in clinical practice; developing and evaluating family, neighborhood, work, school, and broader community interventions; creating novel team configurations and modalities of care that include non-traditional team members; developing and evaluating practical assessment techniques for use in clinical practice; and evaluating comprehensively the behavioral, social, and emotional effects of innovative biotechnologies and pharmaceuticals on patients and family members. Although admittedly ambitious goals, we also call for studies that address the related policy and health care delivery issues of making the assessment of patient mood and self-care practices as common as the assessment of A1C and that report on the effects of including patient-centered and behavioral self-management support among the performance criteria for high-quality diabetes care (33,43).

Behavioral technologies have been crucial but relatively neglected partners in diabetes care. The emerging advances in biomedical research require that closer attention be paid to the emotional, social, economic, family, and behavioral responses of patients to these advances as patients struggle to integrate diabetes and its care into their lives over time.

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