I am so honored to have been selected as the 2018 recipient of the American Diabetes Association’s (ADA’s) Richard R. Rubin Award, especially since I was fortunate to have gotten to known Dick quite well over the 25 or so years of our friendship and collegiality. Dick was truly one of the finest, most centered people I have ever known, and I tried in my lecture to emulate some of the unique style he brought to his role as a highly accomplished speaker and motivator. I strongly encourage you to learn more about him in his 2008 autobiographical article in Diabetes Spectrum (1) and in Mark Peyrot’s touching memorial to Dick that was published in Diabetes Care in 2017 (2), a few years after Dick’s untimely passing in 2013. You can also hear directly from him in a YouTube video that ADA produced when Dick was ADA President, Health Care & Education, in 2006–2007 (3).

Dick Rubin lives on in the hearts and minds of thousands of people with diabetes and clinicians who have benefitted from his wisdom and compassion over the years. He dedicated most of his career to improving the psychological experiences of people with diabetes, and I hope I can help readers develop some of his passion for contributing something of yourselves to behavioral science research in diabetes and to advocate for its broad dissemination into clinical practice.

In approaching this task, it became clear that I am not very comfortable with the concept of individual awards for accomplishments in a clinical/scientific domain such as this one, in which the major steps forward consist increasingly of transdisciplinary and multicenter collaborations, stakeholder engagement, and international arrangements. Acknowledging the droves of fine people—my loving wife, Marcia; kids with diabetes, their parents, and families; countless pediatric endocrinologists, diabetes educators, nurses, and dietitians; my colleagues in psychology, psychiatry, and various behavioral sciences, especially the 13 past recipients of this award who are listed in Table 1; industry representatives; and advocates within ADA, JDRF, the International Society for Pediatric and Adolescent Diabetes, the International Diabetes Federation, and the National Institutes of Health who have bolstered my ability to contribute to this science and its clinical application—would consume all of my available space. So, let me just...
Where Have We Been?

In the past four decades or so, there has been an explosion of behavioral science research across the life span on how living with diabetes affects, and is affected by, a plethora of psychological processes and mechanisms at the levels of individual patients, family and spousal relationships, extra-familial social networks, the health care system, and broader communities. This extensive research has yielded a massive body of knowledge that provides many answers about how diabetes affects people’s psychological adjustment and how psychological variables influence diabetes self-management behavior (4–13). Application of this knowledge has led to the development and validation of many psychometrically sound measures (14–17) and demonstrations of the utility and merits of routine psychosocial screening (18–20) of people with diabetes and their families.

Numerous longitudinal studies have identified putative affective, behavioral, cognitive, and social determinants of diabetes outcomes in varied clinical populations (21–28). Many of the mechanisms that have been specified in such studies have been targeted in trials of behavioral and psychological interventions (29–39).

These related bodies of evidence have matured to the point that the ADA and the American Psychological Association have collaborated to initiate a training program offering continuing education credits to qualified psychologists, mental health counselors, and psychotherapists that equips these mental health professionals to better meet the needs of patients across the life span who are living with diabetes (40,41). Further affirmation that this evidence base is gaining influence on health care policy and clinical practice is manifest in the level of attention to psychosocial issues that appears in current treatment guidelines issued by major organizations (42–45), as well as in standards for accreditation of diabetes education programs (46) and certification of diabetes educators (47).

Where Have We Fallen Short?

Although there have been major strides in developing and expanding the evidence base, there is also considerable room for improvement in the contributions made by behavioral scientists to improving the behavioral, affective, cognitive, and social lives of people with diabetes. So, I’ve summarized in this section a few targets that I think represent valuable near-term directions for the field.

Organizations that develop and disseminate guidelines for clinical practice use one of several evidence-grading systems (48). For example, in a recent ADA position statement (43) on psychosocial care for people with diabetes, only 5 of the 31 treatment recommendations put forth were supported by the highest level of evidence (grade A). Certainly, research that can yield the most credible levels of empirical evidence is difficult and expensive, but the field must move beyond subjective, self-reported outcome measures, small sample sizes, short follow-ups, and single-center studies to maximize its impact on health care policy. Researchers should plan their work with the intention of informing and influencing decision-makers and other key stakeholders.

In the past decade, science has become increasingly open and transparent (49,50), with grant agencies and scientific journals increasingly requiring investigators to share with their scientific peers their research data, statistical syntax and output files, data dictionaries, procedural manuals, and other materials to facilitate both the understanding and replication of their investigations. Given the complexity of behavioral science protocols, particularly for intervention trials, these steps can be challenging, labor-intensive, and costly for behavioral researchers. The sensitivity of confidential psychological data also entails ethical and...
patient-protection considerations that tend to be far more salient in behavioral science research than in other domains of scientific inquiry. When studies are long since completed, the expectation that researchers can and will share such materials with others may run counter to commitments made in the informed consent process that may appear to prohibit the sharing of certain data. Moving forward, behavioral scientists working in diabetes should prepare to meet increased obligations to design and implement their research studies openly and transparently.

In my opinion, early behavioral research on diabetes was designed, conducted, and disseminated largely for the benefit of other behavioral scientists. It is time for the field to move beyond that perspective and toward a better understanding of how the accumulated evidence can now be brought to bear to improve the lives of people with diabetes and to minimize the adverse psychological impact of living with diabetes. The introspective stance that has characterized the field must now give way to research that penetrates clinical practice across the life span, normalizes the integration of medical and psychological care for people with diabetes, and demonstrates the conditions under which such services have favorable impact on clinical, financial, and patient-reported outcomes.

Relatively little behavioral research in diabetes to date could be classified as dissemination and implementation science (51). Such research includes rigorous economic analyses (51–53) of psychological screening, assessment, and intervention strategies; variables affecting the adequacy of communication of scientific methods and evidence base to clinical colleagues; and influences on the mobilization of stakeholder energy among patients, family members, parents, and clinicians to promote the dissemination of behavioral science research into clinical practice. Contributions in these directions will be necessary to move this field to the next level, and early-career researchers should develop expertise in these critical methods.

Diabetes and Behavior: What’s Next?

There could not be a more exciting time to begin or nurture a career emphasizing the generation of behavioral science research in diabetes or its active dissemination into clinical practice for the benefit of people with diabetes everywhere. When I contemplate certain mega-trends that appear to be converging, I see a world of infinite possibilities and opportunities for behavioral scientists to make valuable contributions that can improve the lives of people with diabetes. Here are a few observations that support this optimism:

• Science is becoming increasingly collaborative and transparent, as manifest by the open science movement, growth in transdisciplinary research teams, multisite and international networks and collaborations, and data-sharing initiatives (49–51).

• There is likely to be continued growth of trends in clinical research that amplify the potential real-world relevance and value of that research, including stakeholder engagement in all phases of clinical care and research, shared medical decision-making, and patient- and family-centered care (54). Behavioral scientists are well-positioned to play a leading role in conducting research that embodies these developments.

• There are many potential applications of dissemination and implementation science in behavioral diabetes research, and this is the domain in which the most valuable contributions remain to be made.

• Technological advances in communication technology, glucose monitoring, insulin delivery, social media, and behavioral assessment may provide feasible, innovative alternatives to self-reported measurement of study outcomes.

• There may be an increased role of simulation methods such as standardized patients, virtual reality, and avatar-based computerized training (55).

• Continued advances in quantitative methods that permit sophisticated analyses of complex multivariate and longitudinal relationships could enable researchers to pose more nuanced research questions and put forth more complex hypotheses (56). Rather than simple tests of aggregated effects of a specific behavioral intervention, researchers should be better prepared to put forth and evaluate questions such as, “Under what conditions does this intervention yield its most robust effects on the primary outcome?” and “What baseline characteristics differentiate people who derive clinically meaningful benefit from this intervention from those who do not?”

What Makes Me Go “Hmmmm . . .”? Although the observations above may engender considerable optimism about behavioral science research in diabetes and its application to improve the lives of people with diabetes everywhere, some perplexing observations and questions remain.

• How can we more effectively mobilize patients, families, and other stakeholders to demand access to evidence-based mental health services?

• How can evidence derived from studies employing self-reported, subjective, recall-based measures influence policy and financing decisions in medical settings in which quantifiable, objective evidence is at a premium?

• What kind of evidence will convince administrators, insurers, and purchasers of health care coverage that meaningful integration of mental health services into diabetes care makes good sense from
financial, medical, and societal perspectives?

- Optimal delivery of evidence-based psychological and behavioral assessment and intervention services for diabetes patients typically requires time, expertise, and frequent contact, all of which are in short supply. Are there more creative financing strategies that could support the routine integration of those services into care for all people with diabetes? What sources of waste can be identified and eliminated and what efficiencies can be explored?

- How can new diabetes technologies be introduced and disseminated in ways that reduce, rather than exacerbate, disparities in health care outcomes along racial, ethnic, socioeconomic, and health literacy dimensions?

- What messages to patients, families, and other health care providers will reduce the stigma associated with seeking, obtaining, and maintaining mental health services to promote healthy coping with diabetes?

A large segment of the population harbors considerable distrust of science and other “fact-based” professions and institutions, tending to view with suspicion any expression of expert opinion based on expertise and methods that are difficult for nonexperts to comprehend (57). These attitudes may well impede recruitment of study participants, fulfillment of research commitments among those who do enroll, retention of participants, translation of research findings into clinical practice, and the influence of research on health care policy. Current “self-policing” trends such as training investigators in the responsible conduct of research, the emergence of open science and data sharing, and the inclusion of stakeholders in all aspects of research from conceptualization through dissemination certainly can play constructive roles, but these may do more to convince scientists of the credibility of one another’s work than to influence public opinion, policy decisions, and health care practice. Perhaps all scientists (and friends of science) share a responsibility to apply their energy and creativity to countering the anti-scientific perspective that stands to impede societal benefits from their valuable research.

Duality of Interest

No potential conflicts of interest relevant to this article were reported.

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