

# National Standards for Diabetes Self-Management Education and Support

LINDA HAAS, PHC, RN, CDE (CHAIR)<sup>1</sup>  
 MELINDA MARYNIUK, MED, RD, CDE (CHAIR)<sup>2</sup>  
 JONI BECK, PHARM, D, BC-ADM<sup>3</sup>  
 CARLA E. COX, PHD, RD, CDE, CSSD<sup>4</sup>  
 PAULINA DUKER, MPH, RN, BC-ADM, CDE<sup>5</sup>  
 LAURA EDWARDS, RN, MPA<sup>6</sup>  
 EDWIN B. FISHER, PHD<sup>7</sup>  
 LENITA HANSON, MD, CDE, FACE, FACP<sup>8</sup>  
 DANIEL KENT, PHARM, D, BS, CDE<sup>9</sup>  
 LESLIE KOLB, RN, BSN, MBA<sup>10</sup>

SUE McLAUGHLIN, BS, RD, CDE, CPT<sup>11</sup>  
 ERIC ORZECK, MD, FACE, CDE<sup>12</sup>  
 JOHN D. PIETTE, PHD<sup>13</sup>  
 ANDREW S. RHINEHART, MD, FACP, CDE<sup>14</sup>  
 RUSSELL ROTHMAN, MD, MPP<sup>15</sup>  
 SARA SKLAROFF<sup>16</sup>  
 DONNA TOMKY, MSN, RN, C-NP, CDE, FADE<sup>17</sup>  
 GRETCHEN YOUSSEF, MS, RD, CDE<sup>18</sup>  
 ON BEHALF OF THE 2012 STANDARDS  
 REVISION TASK FORCE

**B**y the most recent estimates, 18.8 million people in the U.S. have been diagnosed with diabetes and an additional 7 million are believed to be living with undiagnosed diabetes. At the same time, 79 million people are estimated to have blood glucose levels in the range of prediabetes or categories of increased risk for diabetes. Thus, more than 100 million Americans are at risk for developing the devastating complications of diabetes (1).

Diabetes self-management education (DSME) is a critical element of care for all people with diabetes and those at risk for developing the disease. It is necessary in order to prevent or delay the complications of diabetes (2–6) and has elements related to lifestyle changes that are also essential for individuals with prediabetes as part of efforts to prevent the disease (7,8).

The National Standards for Diabetes Self-Management Education are designed to define quality DSME and support and to assist diabetes educators in providing evidence-based education and self-management support. The Standards are applicable to educators in solo practice as well as those in large multicenter programs—and everyone in between. There are many good models for the provision of diabetes education and support. The Standards do not endorse any one approach, but rather seek to delineate the commonalities among effective and excellent self-management education strategies. These are the standards used in the field for recognition and accreditation. They also serve as a guide for non-accredited and nonrecognized providers and programs.

Because of the dynamic nature of health care and diabetes-related research, the Standards are reviewed and revised approximately every 5 years by key stakeholders and experts within the diabetes education community. In the fall of 2011, a Task Force was jointly convened by the American Association of Diabetes Educators (AADE) and the American Diabetes Association (ADA). Members of the Task Force included experts from the areas of public health, underserved populations including rural primary care and other rural health services, individual practices, large urban specialty practices, and urban hospitals. They also included individuals with diabetes, diabetes researchers, certified diabetes educators, registered nurses, registered dietitians, physicians, pharmacists, and a psychologist. The Task Force was charged with reviewing the current National Standards for Diabetes Self-Management Education for their appropriateness, relevance, and scientific basis and updating them based on the available evidence and expert consensus.

The Task Force made the decision to change the name of the Standards from the National Standards for Diabetes Self-Management Education to the National Standards for Diabetes Self-Management Education and Support. This name change is intended to codify the significance of ongoing support for people with diabetes and those at risk for developing the disease, particularly to encourage behavior change, the maintenance of healthy diabetes-related behaviors, and to address psychosocial concerns. Given that self-management does not stop when a patient leaves the educator's office, self-management support must be an ongoing process.

Although the term “diabetes” is used predominantly, the Standards should also be understood to apply to the education and support of people with prediabetes. Currently, there are significant barriers to the provision of education and support to those with prediabetes. And yet, the strategies for supporting successful behavior change and the healthy behaviors recommended for people with prediabetes are largely identical to those for

From the <sup>1</sup>Va Puget Sound Health Care System Hospital and Specialty Medicine, Seattle, Washington; the <sup>2</sup>Joslin Diabetes Center, Boston, Massachusetts; <sup>3</sup>Pediatric Diabetes and Endocrinology, The University of Oklahoma Health Sciences Center College of Medicine, Edmond, Oklahoma; the <sup>4</sup>Western Montana Clinic, Missoula, Montana; the <sup>5</sup>Diabetes Education/Clinical Programs, American Diabetes Association, Alexandria, Virginia; the <sup>6</sup>Center for Healthy North Carolina, Apex, North Carolina; <sup>7</sup>Peers for Progress, American Academy of Family Physicians Foundation and Department of Health Behavior, Gillings School of Global Public Health, The University of North Carolina at Chapel Hill, Chapel Hill, North Carolina; <sup>8</sup>Ultracare Endocrine and Diabetes Consultants, Venice, Florida; the <sup>9</sup>Group Health Central Specialty Clinic, Seattle, Washington; the <sup>10</sup>Diabetes Education Accreditation Program, American Association of Diabetes Educators, Chicago, Illinois; <sup>11</sup>On Site Health and Wellness, LLC, Omaha, Nebraska; <sup>12</sup>Endocrinology Associates, Main Medical Plaza, Houston, Texas; the <sup>13</sup>VA Center for Clinical Management Research and the University of Michigan Health System, Ann Arbor, Michigan; <sup>14</sup>Johnston Memorial Diabetes Care Center, Abingdon, Virginia; the <sup>15</sup>Center for Health Services Research, Vanderbilt University Medical Center, Nashville, Tennessee; <sup>16</sup>Technical Writer, Washington, DC; the <sup>17</sup>Department of Endocrinology and Diabetes, ABQ Health Partners, Albuquerque, New Mexico; and <sup>18</sup>MedStar Diabetes Institute/MedStar Health, Washington, DC.

Corresponding authors: Linda Haas, linda.haas@va.gov, and Melinda Maryniuk, melinda.maryniuk@joslin.harvard.edu.

DOI: 10.2337/dc13-S100

The previous version of this article “National Standards for Diabetes Self-Management Education” was published in *Diabetes Care* 2007;30:1630–1637. This version received final approval in July 2012.

© 2013 by the American Diabetes Association and the American Association of Diabetes Educators. Readers may use this article as long as the work is properly cited, the use is educational and not for profit, and the work is not altered. See <http://creativecommons.org/licenses/by-nc-nd/3.0/> for details.

individuals with diabetes. As barriers to care are overcome, providers of DSME and diabetes self-management support (DSMS), given their training and experience, are particularly well equipped to assist individuals with prediabetes in developing and maintaining behaviors that can prevent or delay the onset of diabetes.

Many people with diabetes have or are at risk for developing comorbidities, including both diabetes-related complications and conditions (e.g., heart disease, lipid abnormalities, nerve damage, hypertension, and depression) and other medical problems that may interfere with self-care (e.g., emphysema, arthritis, and alcoholism). In addition, the diagnosis, progression, and daily work of managing the disease can take a major emotional toll on people with diabetes that makes self-care even more difficult (9). The Standards encourage providers of DSME and DSMS to address the entire panorama of each participant's clinical profile. Regular communication among the members of participant's health care teams is essential to ensure high-quality, effective education and support for people with diabetes and prediabetes.

In the course of its work on the Standards, the Task Force identified areas in which there is currently an insufficient amount of research. In particular, there are three areas in which the Task Force recommends additional research:

1. What is the influence of organizational structure on the effectiveness of the provision of DSME and DSMS?
2. What is the impact of using a structured curriculum in DSME?
3. What training should be required for those community, lay, or peer workers without training in health or diabetes who are to participate in the provision of DSME and to provide DSMS?

Finally, the Standards emphasize that the person with diabetes is at the center of the entire diabetes education and support process. It is the individuals with diabetes who do the hard work of managing their condition, day in and day out. The educator's role, first and foremost, is to make that work easier (10).

## DEFINITIONS

**DSME:** The ongoing process of facilitating the knowledge, skill, and ability necessary for prediabetes and diabetes self-care. This process incorporates the needs, goals,

and life experiences of the person with diabetes or prediabetes and is guided by evidence-based standards. The overall objectives of DSME are to support informed decision making, self-care behaviors, problem solving, and active collaboration with the health care team and to improve clinical outcomes, health status, and quality of life.

**DSMS:** Activities that assist the person with prediabetes or diabetes in implementing and sustaining the behaviors needed to manage his or her condition on an ongoing basis beyond or outside of formal self-management training. The type of support provided can be behavioral, educational, psychosocial, or clinical (11–15).

## STANDARD 1

### Internal structure

*The provider(s) of DSME will document an organizational structure, mission statement, and goals. For those providers working within a larger organization, that organization will recognize and support quality DSME as an integral component of diabetes care.*

Documentation of an organizational structure, mission statement, and goals can lead to efficient and effective provision of DSME and DSMS. In the business literature, case studies and case report investigations of successful management strategies emphasize the importance of clear goals and objectives, defined relationships and roles, and managerial support. Business and health policy experts and organizations emphasize written commitments, policies, support, and the importance of outcomes reporting to maintain ongoing support or commitment (16,17).

Documentation of an organizational structure that delineates channels of communication and represents institutional commitment to the educational entity is critical for success. According to The Joint Commission, this type of documentation is equally important for both small and large health care organizations (18). Health care and business experts overwhelmingly agree that documentation of the process of providing services is a critical factor in clear communication and provides a solid basis from which to deliver quality diabetes education. In 2010, The Joint Commission published the *Disease-Specific Care Certification Manual*, which outlines standards and performance measurements for chronic

care programs and disease management services, including "Supporting Self-Management" (18).

## STANDARD 2

### External input

*The provider(s) of DSME will seek ongoing input from external stakeholders and experts in order to promote program quality.*

For both individual and group providers of DSME and DSMS, external input is vital to maintaining an up-to-date, effective program. Broad participation of community stakeholders, including individuals with diabetes, health professionals, and community interest groups, will increase the program's knowledge of the local population and allow the provider to better serve the community. Often, but not always, this external input is best achieved by the establishment of a formal advisory board. The DSME and DSMS provider(s) must have a documented plan for seeking outside input and acting on it.

The goal of external input and discussion in the program planning process is to foster ideas that will enhance the quality of the DSME and/or DSMS being provided, while building bridges to key stakeholders (19). The result is effective, dynamic DSME that is patient centered, more responsive to consumer-identified needs and the needs of the community, more culturally relevant, and more appealing to consumers (17,19,20).

## STANDARD 3

### Access

*The provider(s) of DSME will determine who to serve, how best to deliver diabetes education to that population, and what resources can provide ongoing support for that population.*

Currently, the majority of people with diabetes and prediabetes do not receive any structured diabetes education (19,20). While there are many barriers to DSME, one crucial issue is access (21). Providers of DSME can help address this issue by:

- Clarifying the specific population to be served. Understanding the community, service area, or regional demographics is crucial to ensuring that as many people as possible are being reached, including those who do not frequently attend clinical appointments (9,17,22–24).
- Determining that population's self-management education and support

needs. Different individuals, their families, and communities need different types of education and support (25). The provider(s) of DSME and DSMS needs to work to ensure that the necessary education alternatives are available (25–27). This means understanding the population's demographic characteristics, such as ethnic/cultural background, sex, and age, as well as levels of formal education, literacy, and numeracy (28–31). It may also entail identifying resources outside of the provider's practice that can assist in the ongoing support of the participant.

- Identifying access issues and working to overcome them. It is essential to determine factors that prevent individuals with diabetes from receiving self-management education and support. The assessment process includes the identification of these barriers to access (32–34). These barriers may include the socioeconomic or cultural factors mentioned above, as well as, for example, health insurance shortfalls and the lack of encouragement from other health providers to seek diabetes education (35,36).

## STANDARD 4

### Program coordination

*A coordinator will be designated to oversee the DSME program. The coordinator will have oversight responsibility for the planning, implementation, and evaluation of education services.*

Coordination is essential to ensure that quality diabetes self-management education and support is delivered through an organized, systematic process (37,38). As the field of DSME continues to evolve, the coordinator plays a pivotal role in ensuring accountability and continuity in the education program (39–41). The coordinator's role may be viewed as that of coordinating the program (or education process) and/or as supporting the coordination of the many aspects of self-management in the continuum of diabetes and related conditions when feasible (42–49). This oversight includes designing an education program or service that helps the participant access needed resources and assists him or her in navigating the health care system (37,50–55).

The individual serving as the coordinator will have knowledge of the lifelong process of managing a chronic disease and facilitating behavior change, in addition to

experience with program and/or clinical management (56–59). In some cases, particularly in solo or other small practices, the coordinator may also provide DSME and/or DSMS.

## STANDARD 5

### Instructional staff

*One or more instructors will provide DSME and, when applicable, DSMS. At least one of the instructors responsible for designing and planning DSME and DSMS will be a registered nurse, registered dietitian, or pharmacist with training and experience pertinent to DSME, or another professional with certification in diabetes care and education, such as a CDE or BC-ADM. Other health workers can contribute to DSME and provide DSMS with appropriate training in diabetes and with supervision and support.*

Historically, nurses and dietitians were the main providers of diabetes education (3,4,60–64). In recent years, the role of the diabetes educator has expanded to other disciplines, particularly pharmacists (65–67). Reviews comparing the effectiveness of different disciplines for education have not identified clear differences in the quality of services delivered by different professionals (3–5). However, the literature favors the registered nurse, registered dietitian, and pharmacist serving both as the key primary instructors for diabetes education and as members of the multidisciplinary team responsible for designing the curriculum and assisting in the delivery of DSME (1–7,68). Expert consensus supports the need for specialized diabetes and educational training beyond academic preparation for the primary instructors on the diabetes team (69–72). Professionals serving as instructors must document appropriate continuing education or comparable activities to ensure their continuing competence to serve in their instructional, training, and oversight roles (73).

Reflecting the evolving health care environment, a number of studies have endorsed a multidisciplinary team approach to diabetes care, education, and support. The disciplines that may be involved include, but are not limited to, physicians, psychologists and other mental health specialists, physical activity specialists (including physical therapists, occupational therapists, and exercise physiologists), optometrists, and podiatrists (68,74,75). More recently, health educators (e.g., Certified Health Education Specialists and Certified Medical

Assistants), case managers, lay health and community workers (76–83), and peer counselors or educators (84,85) have been shown to contribute effectively as part of the DSME team and in providing DSMS. While DSME and DSMS are often provided within the framework of a collaborative and integrated team approach, it is crucial that the individual with diabetes is viewed as central to the team and that he or she takes an active role.

Certification as a diabetes educator (CDE) by the National Certification Board for Diabetes Educators (NCBDE) is one way a health professional can demonstrate mastery of a specific body of knowledge, and this certification has become an accepted credential in the diabetes community (86). An additional credential that indicates specialized training beyond basic preparation is board certification in Advanced Diabetes Management (BC-ADM) offered by the AADE, which is available for nurses, dietitians, pharmacists, physicians, and physician assistants (68,74,87).

Individuals who serve as lay health and community workers and peer counselors or educators may contribute to the provision of DSME instruction and provide DSMS if they have received training in diabetes management, the teaching of self-management skills, group facilitation, and emotional support. For these individuals, a system must be in place that ensures supervision of the services they provide by a diabetes educator or other health care professional and professional back-up to address clinical problems or questions beyond their training (88–90).

For services outside the expertise of any provider(s) of DSME and DSMS, a mechanism must be in place to ensure that the individual with diabetes is connected with appropriately trained and credentialed providers.

## STANDARD 6

### Curriculum

*A written curriculum reflecting current evidence and practice guidelines, with criteria for evaluating outcomes, will serve as the framework for the provision of DSME. The needs of the individual participant will determine which parts of the curriculum will be provided to that individual.*

Individuals with prediabetes and diabetes and their families and caregivers have much to learn to become effective self-managers of their condition. DSME

can provide this education via an up-to-date, evidence-based, and flexible curriculum (8,91).

The curriculum is a coordinated set of courses and educational experiences. It also specifies learning outcomes and effective teaching strategies (92,93). The curriculum must be dynamic and reflect current evidence and practice guidelines (93–97). Recent education research endorses the inclusion of practical problem-solving approaches, collaborative care, psychosocial issues, behavior change, and strategies to sustain self-management efforts (12,13,19,74,86,98–101).

The following core topics are commonly part of the curriculum taught in comprehensive programs that have demonstrated successful outcomes (2,3,5,91,102–104):

- Describing the diabetes disease process and treatment options
- Incorporating nutritional management into lifestyle
- Incorporating physical activity into lifestyle
- Using medication(s) safely and for maximum therapeutic effectiveness
- Monitoring blood glucose and other parameters and interpreting and using the results for self-management decision making
- Preventing, detecting, and treating acute complications
- Preventing, detecting, and treating chronic complications
- Developing personal strategies to address psychosocial issues and concerns
- Developing personal strategies to promote health and behavior change

While the content areas listed above provide a solid outline for a diabetes education and support curriculum, it is crucial that the content be tailored to match each individual's needs and be adapted as necessary for age, type of diabetes (including prediabetes and diabetes in pregnancy), cultural factors, health literacy and numeracy, and comorbidities (14,105–108). The content areas will be able to be adapted for all practice settings.

Approaches to education that are interactive and patient centered have been shown to be effective (12,13,109–112). Also crucial is the development of action-oriented behavioral goals and objectives (12–14,113). Creative, patient-centered, experience-based delivery methods—beyond the mere acquisition of knowledge—are effective for supporting informed decision

making and meaningful behavior change and addressing psychosocial concerns (114,115).

## STANDARD 7

### Individualization

*The diabetes self-management, education, and support needs of each participant will be assessed by one or more instructors. The participant and instructor(s) will then together develop an individualized education and support plan focused on behavior change.*

Research has demonstrated the importance of individualizing diabetes education to each participant's needs (116). The assessment process is used to identify what those needs are and to facilitate the selection of appropriate educational and behavioral interventions and self-management support strategies, guided by evidence (2,63,116–118). The assessment must garner information about the individual's medical history, age, cultural influences, health beliefs and attitudes, diabetes knowledge, diabetes self-management skills and behaviors, emotional response to diabetes, readiness to learn, literacy level (including health literacy and numeracy), physical limitations, family support, and financial status (11,106,108,117,119–128).

The education and support plan that the participant and instructor(s) develop will be rooted in evidence-based approaches to effective health communication and education while taking into consideration participant barriers, abilities, and expectations. The instructor will use clear health communication principles, avoiding jargon, making information culturally relevant, using language- and literacy-appropriate education materials, and using interpreter services when indicated (107,129–131). Evidence-based communication strategies such as collaborative goal setting, motivational interviewing, cognitive behavior change strategies, problem solving, self-efficacy enhancement, and relapse prevention strategies are also effective (101,132–134). Periodic reassessment can determine whether there is need for additional or different interventions and future reassessment (6,72,134–137). A variety of assessment modalities, including telephone follow-up and other information technologies (e.g., Web based, text messaging, or automated phone calls), may augment face-to-face assessments (72,87,138–141).

The assessment and education plan, intervention, and outcomes will be

documented in the education/health record. Documentation of participant encounters will guide the education process, provide evidence of communication among instructional staff and other members of the participant's health care team, prevent duplication of services, and demonstrate adherence to guidelines (117,135,142,143). Providing information to other members of the participant's health care team through documentation of educational objectives and personal behavioral goals increases the likelihood that all the members will work in collaboration (86,143). Evidence suggests that the development of standardized procedures for documentation, training health professionals to document appropriately, and the use of structured standardized forms based on current practice guidelines can improve documentation and may ultimately improve quality of care (135,143–145).

## STANDARD 8

### Ongoing support

*The participant and instructor(s) will together develop a personalized follow-up plan for ongoing self-management support. The participant's outcomes and goals and the plan for ongoing self-management support will be communicated to other members of the health care team.*

While DSME is necessary and effective, it does not in itself guarantee a lifetime of effective diabetes self-care (113). Initial improvements in participants' metabolic and other outcomes have been found to diminish after approximately 6 months (3). To sustain the level of self-management needed to effectively manage prediabetes and diabetes over the long term, most participants need ongoing DSMS (15).

The type of support provided can be behavioral, educational, psychosocial, or clinical (11–14). A variety of strategies are available for providing DSMS both within and outside the DSME organization. Some patients benefit from working with a nurse case manager (6,86,146). Case management for DSMS can include reminders about needed follow-up care and tests, medication management, education, behavioral goal setting, psychosocial support, and connection to community resources.

The effectiveness of providing DSMS through disease management programs, trained peers and community health workers, community-based programs, information technology, ongoing education, support groups, and medical nutrition

therapy has also been established (7–11,86,88–90,142,147–150).

While the primary responsibility for diabetes education belongs to the provider(s) of DSME, participants benefit by receiving reinforcement of content and behavioral goals from their entire health care team (135). Additionally, many patients receive DSMS through their primary care provider. Thus, communication among the team regarding the patient's educational outcomes, goals, and DSMS plan is essential to ensure that people with diabetes receive support that meets their needs and is reinforced and consistent among the health care team members.

Because self-management takes place in participants' daily lives and not in clinical or educational settings, patients will be assisted to formulate a plan to find community-based resources that may support their ongoing diabetes self-management. Ideally, DSME and DSMS providers will work with participants to identify such services and, when possible, track those that have been effective with patients, while communicating with providers of community-based resources in order to better integrate them into patients' overall care and ongoing support.

## STANDARD 9

### Patient progress

*The provider(s) of DSME and DSMS will monitor whether participants are achieving their personal diabetes self-management goals and other outcome(s) as a way to evaluate the effectiveness of the educational intervention(s), using appropriate measurement techniques.*

Effective diabetes self-management can be a significant contributor to long-term, positive health outcomes. The provider(s) of DSME and DSMS will assess each participant's personal self-management goals and his or her progress toward those goals (151,152).

The AADE Outcome Standards for Diabetes Education specify behavior change as the key outcome and provide a useful framework for assessment and documentation. The AADE7 lists seven essential factors: physical activity, healthy eating, taking medication, monitoring blood glucose, diabetes self-care–related problem solving, reducing risks of acute and chronic complications, and psychosocial aspects of living with diabetes (93,153,154). Differences in behaviors,

health beliefs, and culture as well as their emotional response to diabetes can have a significant impact on how participants understand their illness and engage in self-management. DSME providers who account for these differences when collaborating with participants on the design of personalized DSME or DSMS programs can improve participant outcomes (147,148).

Assessments of participant outcomes must occur at appropriate intervals. The interval depends on the nature of the outcome itself and the time frame specified based on the participant's personal goals. For some areas, the indicators, measures, and time frames will be based on guidelines from professional organizations or government agencies.

## STANDARD 10

### Quality improvement

*The provider(s) of DSME will measure the effectiveness of the education and support and look for ways to improve any identified gaps in services or service quality using a systematic review of process and outcome data.*

Diabetes education must be responsive to advances in knowledge, treatment strategies, education strategies, and psychosocial interventions, as well as consumer trends and the changing health care environment. By measuring and monitoring both process and outcome data on an ongoing basis, providers of DSME can identify areas of improvement and make adjustments in participant engagement strategies and program offerings accordingly.

The Institute for Healthcare Improvement suggests three fundamental questions that should be answered by an improvement process (149):

- What are we trying to accomplish?
- How will we know a change is an improvement?
- What changes can we make that will result in an improvement?

Once areas for improvement are identified, the DSME provider must designate timelines and important milestones including data collection, analysis, and presentation of results (150). Measuring both processes and outcomes helps to ensure that change is successful without causing additional problems in the system. Outcome measures indicate the result of a process (i.e., whether changes are

actually leading to improvement), while process measures provide information about what caused those results (144,150). Process measures are often targeted to those processes that typically impact the most important outcomes.

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

The Task Force acknowledges Paulina Duker, ADA Staff Facilitator; Leslie Kolb, AADE Staff Facilitator; Karen Fitzner, PhD, meeting facilitator (FH Consultants, Chicago, Illinois); and Sara Sklaroff for technical writing assistance.

## References

1. Centers for Disease Control and Prevention. *National Diabetes Fact Sheet: National Estimates and General Information on Diabetes and Prediabetes in the United States, 2011*. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2011
2. Brown SA. Interventions to promote diabetes self-management: state of the science. *Diabetes Educ* 1999;25(Suppl.): 52–61
3. Norris SL, Lau J, Smith SJ, Schmid CH, Engelgau MM. Self-management education for adults with type 2 diabetes: a meta-analysis of the effect on glycemic control. *Diabetes Care* 2002;25:1159–1171
4. Gary TL, Genkinger JM, Guallar E, Peyrot M, Brancati FL. Meta-analysis of randomized educational and behavioral interventions in type 2 diabetes. *Diabetes Educ* 2003;29:488–501
5. Deakin T, McShane CE, Cade JE, Williams RD. Group based training for self-management strategies in people with type 2 diabetes mellitus. *Cochrane Database Syst Rev* 2005;(2):CD003417
6. Renders CM, Valk GD, Griffin SJ, Wagner EH, Eijk Van JT, Assendelft WJ. Interventions to improve the management of diabetes in primary care, outpatient, and community settings: a systematic review. *Diabetes Care* 2001; 24:1821–1833
7. Ratner RE; Diabetes Prevention Program Research. An update on the Diabetes Prevention Program. *Endocr Pract* 2006; 12(Suppl. 1):20–24
8. Diabetes Prevention Program (DPP) Research Group. The Diabetes Prevention Program (DPP): description of lifestyle intervention. *Diabetes Care* 2002;25: 2165–2171
9. Peyrot M, Rubin RR, Funnell MM, Siminiero LM. Access to diabetes self-management education: results of national surveys of patients, educators, and

- physicians. *Diabetes Educ* 2009;35:246–248, 252–246, 258–263
10. Inzucchi SE, Bergenstal RM, Buse JB, et al.; American Diabetes Association (ADA); European Association for the Study of Diabetes (EASD). Management of hyperglycemia in type 2 diabetes: a patient-centered approach. Position Statement of the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD). *Diabetes Care* 2012;35:1364–1379
  11. Anderson RM, Funnell MM, Nwankwo R, Gillard ML, Oh M, Fitzgerald JT. Evaluating a problem-based empowerment program for African Americans with diabetes: results of a randomized controlled trial. *Ethn Dis* 2005;15:671–678
  12. Tang TS, Gillard ML, Funnell MM, et al. Developing a new generation of ongoing diabetes self-management support interventions: a preliminary report. *Diabetes Educ* 2005;31:91–97
  13. Funnell MM, Nwankwo R, Gillard ML, Anderson RM, Tang TS. Implementing an empowerment-based diabetes self-management education program. *Diabetes Educ* 2005;31:53, 55–56, 61
  14. Glazier RH, Bajcar J, Kennie NR, Willson K. A systematic review of interventions to improve diabetes care in socially disadvantaged populations. *Diabetes Care* 2006;29:1675–1688
  15. Fjeldsoe BS, Marshall AL, Miller YD. Behavior change interventions delivered by mobile telephone short-message service. *Am J Prev Med* 2009;36:165–173
  16. Armstrong G, Headrick L, Madigosky W, Ogrinc G. Designing education to improve care. *Jt Comm J Qual Patient Saf* 2012;38:5–14
  17. Martin AL. Changes and consistencies in diabetes education over 5 years: results of the 2010 National Diabetes Education Practice Survey. *Diabetes Educ* 2012;38:35–46
  18. The Joint Commission on Accreditation of Healthcare Organizations. *Disease-Specific Care Certification Manual*. Oakbrook Terrace, IL, The Joint Commission on Accreditation of Healthcare Organizations, 2010
  19. Siminerio LM, Piatt GA, Emerson S, et al. Deploying the chronic care model to implement and sustain diabetes self-management training programs. *Diabetes Educ* 2006;32:253–260
  20. Siminerio LM, Piatt G, Zgibor JC. Implementing the chronic care model for improvements in diabetes care and education in a rural primary care practice. *Diabetes Educ* 2005;31:225–234
  21. Boren SA, Fitzner KA, Panhalkar PS, Specker JE. Costs and benefits associated with diabetes education: a review of the literature. *Diabetes Educ* 2009;35:72–96
  22. McWilliams JM, Meara E, Zaslavsky AM, Ayanian JZ. Health of previously uninsured adults after acquiring Medicare coverage. *JAMA* 2007;298:2886–2894
  23. Bell RA, Mayer-Davis EJ, Beyer JW, et al.; SEARCH for Diabetes in Youth Study Group. Diabetes in non-Hispanic white youth: prevalence, incidence, and clinical characteristics: the SEARCH for Diabetes in Youth Study. *Diabetes Care* 2009;32(Suppl. 2):S102–S111
  24. Glasgow RE. Interactive media for diabetes self-management: issues in maximizing public health impact. *Med Decis Making* 2010;30:745–758
  25. Lorig K, Ritter PL, Villa FJ, Armas J. Community-based peer-led diabetes self-management: a randomized trial. *Diabetes Educ* 2009;35:641–651
  26. Duke SA, Colagiuri S, Colagiuri R. Individual patient education for people with type 2 diabetes mellitus. *Cochrane Database Syst Rev* 2009;(1):CD005268
  27. Siminerio LM, Drab SR, Gabbay RA, et al.; AADE. Diabetes educators: implementing the chronic care model. *Diabetes Educ* 2008;34:451–456
  28. Rosal MC, Ockene IS, Restrepo A, et al. Randomized trial of a literacy-sensitive, culturally tailored diabetes self-management intervention for low-income Latinos: *Latinos en Control*. *Diabetes Care* 2011;34:838–844
  29. Mayer-Davis EJ, Beyer J, Bell RA, et al.; SEARCH for Diabetes in Youth Study Group. Diabetes in African American youth: prevalence, incidence, and clinical characteristics: the SEARCH for Diabetes in Youth Study. *Diabetes Care* 2009;32(Suppl. 2):S112–S122
  30. Liu LL, Yi JP, Beyer J, et al.; SEARCH for Diabetes in Youth Study Group. Type 1 and type 2 diabetes in Asian and Pacific Islander U.S. youth: the SEARCH for Diabetes in Youth Study. *Diabetes Care* 2009;32(Suppl. 2):S133–S140
  31. Hill-Briggs F, Batts-Turner M, Gary TL, et al. Training community health workers as diabetes educators for urban African Americans: value added using participatory methods. *Prog Community Health Partnersh* 2007;1:185–194
  32. Ünützer J, Schoenbaum M, Katon WJ, et al. Healthcare costs associated with depression in medically ill fee-for-service Medicare participants. *J Am Geriatr Soc* 2009;57:506–510
  33. Walker EA, Shmukler C, Ullman R, Blanco E, Scollan-Koliopoulus M, Cohen HW. Results of a successful telephonic intervention to improve diabetes control in urban adults: a randomized trial. *Diabetes Care* 2011;34:2–7
  34. Wubben DP, Vivian EM. Effects of pharmacist outpatient interventions on adults with diabetes mellitus: a systematic review. *Pharmacotherapy* 2008;28:421–436
  35. Remler DK, Teresi JA, Weinstock RS, et al. Health care utilization and self-care behaviors of Medicare beneficiaries with diabetes: comparison of national and ethnically diverse underserved populations. *Popul Health Manag* 2011;14:11–20
  36. Peikes D, Chen A, Schore J, Brown R. Effects of care coordination on hospitalization, quality of care, and health care expenditures among Medicare beneficiaries: 15 randomized trials. *JAMA* 2009;301:603–618
  37. Rothman RL, Malone R, Bryant B, et al. A randomized trial of a primary care-based disease management program to improve cardiovascular risk factors and glycated hemoglobin levels in patients with diabetes. *Am J Med* 2005;118:276–284
  38. Holmes-Walker DJ, Llewellyn AC, Farrell K. A transition care programme which improves diabetes control and reduces hospital admission rates in young adults with Type 1 diabetes aged 15–25 years. *Diabet Med* 2007;24:764–769
  39. Glasgow RE, Nelson CC, Strycker LA, King DK. Using RE-AIM metrics to evaluate diabetes self-management support interventions. *Am J Prev Med* 2006;30:67–73
  40. Baker LC, Johnson SJ, Macaulay D, Birnbaum H. Integrated telehealth and care management program for Medicare beneficiaries with chronic disease linked to savings. *Health Aff (Millwood)* 2011;30:1689–1697
  41. Piatt GA, Anderson RM, Brooks MM, et al. 3-Year follow-up of clinical and behavioral improvements following a multifaceted diabetes care intervention: results of a randomized controlled trial. *Diabetes Educ* 2010;36:301–309
  42. Kerr EA, Heisler M, Krein SL, et al. Beyond comorbidity counts: how do comorbidity type and severity influence diabetes patients' treatment priorities and self-management? *J Gen Intern Med* 2007;22:1635–1640
  43. Bowen ME, Rothman RL. Multidisciplinary management of type 2 diabetes in children and adolescents. *J Multidiscip Healthc* 2010;3:113–124
  44. Dejesus RS, Vickers KS, Stroebel RJ, Cha SS. Primary care patient and provider preferences for diabetes care managers. *Patient Prefer Adherence* 2010;4:181–186
  45. Stuckey HL, Dellasega C, Graber NJ, Mauger DT, Lendel I, Gabbay RA. Diabetes nurse case management and motivational interviewing for change (DYNAMIC): study design and baseline characteristics in the Chronic Care

- Model for type 2 diabetes. *Contemp Clin Trials* 2009;30:366–374
46. Heuer LJ, Hess C, Batson A. Cluster clinics for migrant Hispanic farmworkers with diabetes: perceptions, successes, and challenges. *Rural Remote Health* 2006; 6:469
  47. Cebul RD, Love TE, Jain AK, Hebert CJ. Electronic health records and quality of diabetes care. *N Engl J Med* 2011;365: 825–833
  48. Rosal MC, White MJ, Borg A, et al. Translational research at community health centers: challenges and successes in recruiting and retaining low-income Latino patients with type 2 diabetes into a randomized clinical trial. *Diabetes Educ* 2010;36:733–749
  49. Austin SA, Claiborne N. Faith wellness collaboration: a community-based approach to address type II diabetes disparities in an African-American community. *Soc Work Health Care* 2011;50:360–375
  50. Parekh AK, Goodman RA, Gordon C, Koh HK; HHS Interagency Workgroup on Multiple Chronic Conditions. Managing multiple chronic conditions: a strategic framework for improving health outcomes and quality of life. *Public Health Rep* 2011;126:460–471
  51. Rothman RL, So SA, Shin J, et al. Labor characteristics and program costs of a successful diabetes disease management program. *Am J Manag Care* 2006;12: 277–283
  52. May CR, Finch TL, Cornford J, et al. Integrating telecare for chronic disease management in the community: what needs to be done? *BMC Health Serv Res* 2011;11:131
  53. Williams AS. Making diabetes education accessible for people with visual impairment. *Diabetes Educ* 2009;35:612–621
  54. Reichard A, Stolzle H. Diabetes among adults with cognitive limitations compared to individuals with no cognitive disabilities. *Intellect Dev Disabil* 2011; 49:141–154
  55. Gimpel N, Marcee A, Kennedy K, Walton J, Lee S, DeHaven MJ. Patient perceptions of a community-based care coordination system. *Health Promot Pract* 2010;11:173–181
  56. Welch G, Allen NA, Zagarins SE, Stamp KD, Bursell SE, Kedziora RJ. Comprehensive diabetes management program for poorly controlled Hispanic type 2 patients at a community health center. *Diabetes Educ* 2011;37:680–688
  57. Peterson KA, Radosevich DM, O'Connor PJ, et al. Improving diabetes care in practice: findings from the TRANSLATE trial. *Diabetes Care* 2008;31:2238–2243
  58. Bojadzievski T, Gabbay RA. Patient-centered medical home and diabetes. *Diabetes Care* 2011;34:1047–1053
  59. Wagner EH. The role of patient care teams in chronic disease management. *BMJ* 2000;320:569–572
  60. Koproski J, Pretto Z, Poretzky L. Effects of an intervention by a diabetes team in hospitalized patients with diabetes. *Diabetes Care* 1997;20:1553–1555
  61. Weinberger M, Kirkman MS, Samsa GP, et al. A nurse-coordinated intervention for primary care patients with non-insulin-dependent diabetes mellitus: impact on glycemic control and health-related quality of life. *J Gen Intern Med* 1995;10: 59–66
  62. Spellbring AM. Nursing's role in health promotion. An overview. *Nurs Clin North Am* 1991;26:805–814
  63. Glasgow RE, Toobert DJ, Hampson SE, Brown JE, Lewinsohn PM, Donnelly J. Improving self-care among older patients with type II diabetes: the "Sixty Something..." Study. *Patient Educ Couns* 1992;19:61–74
  64. Delahanty L, Simkins SW, Camelon K; The DCCT Research Group. Expanded role of the dietitian in the Diabetes Control and Complications Trial: implications for clinical practice. *J Am Diet Assoc* 1993;93:758–764, 767
  65. Cranor CW, Bunting BA, Christensen DB. The Asheville Project: long-term clinical and economic outcomes of a community pharmacy diabetes care program. *J Am Pharm Assoc (Wash)* 2003;43:173–184
  66. Garrett DG, Bluml BM. Patient self-management program for diabetes: first-year clinical, humanistic, and economic outcomes. *J Am Pharm Assoc* (2003) 2005;45:130–137
  67. Shane-McWhorter L, Fermo JD, Bultemeier NC, Oderda GM. National survey of pharmacist certified diabetes educators. *Pharmacotherapy* 2002;22: 1579–1593
  68. Emerson S. Implementing diabetes self-management education in primary care. *Diabetes Spectrum* 2006;19:79–83
  69. Anderson RM, Donnelly MB, Dedrick RF, Gressard CP. The attitudes of nurses, dietitians, and physicians toward diabetes. *Diabetes Educ* 1991;17:261–268
  70. Lorenz RA, Bubb J, Davis D, et al. Changing behavior. Practical lessons from the diabetes control and complications trial. *Diabetes Care* 1996;19: 648–652
  71. Ockene JK, Ockene IS, Quirk ME, et al. Physician training for patient-centered nutrition counseling in a lipid intervention trial. *Prev Med* 1995;24:563–570
  72. Leggett-Frazier N, Swanson MS, Vincent PA, Pokorny ME, Engelke MK. Telephone communications between diabetes clients and nurse educators. *Diabetes Educ* 1997;23:287–293
  73. Baksi AK, Al-Mrayat M, Hogan D, Whittingstall E, Wilson P, Wex J. Peer advisers compared with specialist health professionals in delivering a training programme on self-management to people with diabetes: a randomized controlled trial. *Diabet Med* 2008;25:1076–1082
  74. Piatt GA, Orchard TJ, Emerson S, et al. Translating the chronic care model into the community: results from a randomized controlled trial of a multifaceted diabetes care intervention. *Diabetes Care* 2006;29:811–817
  75. Campbell EM, Redman S, Moffitt PS, Sanson-Fisher RW. The relative effectiveness of educational and behavioral instruction programs for patients with NIDDM: a randomized trial. *Diabetes Educ* 1996;22:379–386
  76. Satterfield D, Burd C, Valdez L, et al. The "In-Between People": participation of community health representatives and lay health workers in diabetes prevention and care in American Indian and Alaska Native communities. *Health Promot Pract* 2002;3:66–175
  77. American Association of Diabetes Educators. Community health workers position statement [Internet], 2011. Available from [http://www.diabeteseducator.org/ProfessionalResources/position/position\\_statements.html](http://www.diabeteseducator.org/ProfessionalResources/position/position_statements.html). Accessed 26 June 2012
  78. American Public Health Association. Support for community health workers to increase health access and to reduce health inequities [Internet]. Available from <http://www.apha.org/advocacy/policy/policysearch/default.htm?id=1393>. Accessed 26 June 2012
  79. Norris SL, Chowdhury FM, Van Le K, et al. Effectiveness of community health workers in the care of persons with diabetes. *Diabet Med* 2006;23:544–556
  80. Lewin SA, Dick J, Pond P, et al. Lay health workers in primary and community health care. *Cochrane Database Syst Rev* 2005;(1):CD004015
  81. Lorig KR, Ritter P, Stewart AL, et al. Chronic disease self-management program: 2-year health status and health care utilization outcomes. *Med Care* 2001;39:1217–1223
  82. Ruggiero L, Moadsiri A, Butler P, et al. Supporting diabetes self-care in underserved populations: a randomized pilot study using medical assistant coaches. *Diabetes Educ* 2010;36:127–131
  83. Spencer MS, Rosland AM, Kieffer EC, et al. Effectiveness of a community health worker intervention among African American and Latino adults with type 2 diabetes: a randomized controlled trial. *Am J Public Health* 2011;101: 2253–2260
  84. Heisler M. *Building Peer Support Programs to Manage Chronic Disease: Seven*

- Models for Success*. Oakland, CA, California Health Care Foundation, 2006
85. Long JA, Jahnle EC, Richardson DM, Loewenstein G, Volpp KG. Peer mentoring and financial incentives to improve glucose control in African American veterans: a randomized trial. *Ann Intern Med* 2012;156:416–424
  86. American Association of Diabetes Educators. The Scope of Practice, Standards of Practice, and Standards of Professional Performance for Diabetes Educators [Internet], 2011. Available from [http://www.diabeteseducator.org/DiabetesEducation/position/Scope\\_x\\_Standards.html](http://www.diabeteseducator.org/DiabetesEducation/position/Scope_x_Standards.html). Accessed 26 June 2012
  87. Valentine V, Kulkarni K, Hinnen D. Evolving roles: from diabetes educators to advanced diabetes managers. *Diabetes Educ* 2003;29:598–602, 604, 606
  88. American Association of Diabetes Educators. AADE guidelines for the practice of diabetes self-management education and training (DSME/T). *Diabetes Educ* 2009;35(Suppl. 3):85S–107S
  89. American Association of Diabetes Educators. Competencies for diabetes educators: a companion document to the guidelines for the practice of diabetes education [Internet], 2011. Available from <http://www.diabeteseducator.org/ProfessionalResources/position/competencies.html>. Accessed 26 June 2012
  90. American Association of Diabetes Educators. A sustainable model of diabetes self-management education/training involves a multi-level team that can include community health workers [Internet], 2011. Available from [http://www.diabeteseducator.org/DiabetesEducation/position/White\\_Papers.html](http://www.diabeteseducator.org/DiabetesEducation/position/White_Papers.html). Accessed 26 June 2012
  91. Gillett M, Dallosso HM, Dixon S, et al. Delivering the diabetes education and self management for ongoing and newly diagnosed (DESMOND) programme for people with newly diagnosed type 2 diabetes: cost effectiveness analysis. *BMJ* 2010;341:c4093
  92. Redman BK. *The Practice of Patient Education*. 10th ed. St. Louis, MO, Mosby, 2007
  93. Mulcahy K, Maryniuk M, Peeples M, et al. Diabetes self-management education core outcomes measures. *Diabetes Educ* 2003;29:768–770, 773–784, 787–768
  94. Reader D, Splett P, Gunderson EP; Diabetes Care and Education Dietetic Practice Group. Impact of gestational diabetes mellitus nutrition practice guidelines implemented by registered dietitians on pregnancy outcomes. *J Am Diet Assoc* 2006;106:1426–1433
  95. Boucher JL, Evert A, Daly A, et al. American Dietetic Association revised standards of practice and standards of professional performance for registered dietitians (generalist, specialty, and advanced) in diabetes care. *J Am Diet Assoc* 2011;111:156–166.e27
  96. American Diabetes Association. Standards of medical care in diabetes—2012. *Diabetes Care* 2012;35(Suppl. 1):S11–S63
  97. Bantle JP, Wylie-Rosett J, Albright AL, et al.; American Diabetes Association. Nutrition recommendations and interventions for diabetes: a position statement of the American Diabetes Association. *Diabetes Care* 2008;31(Suppl. 1):S61–S78
  98. Wagner EH, Austin BT, Von Korff M. Organizing care for patients with chronic illness. *Milbank Q* 1996;74:511–544
  99. Norris SL. Health-related quality of life among adults with diabetes. *Curr Diab Rep* 2005;5:124–130
  100. Herman AA. Community health workers and integrated primary health care teams in the 21st century. *J Ambul Care Manage* 2011;34:354–361
  101. Weinger K, Beverly EA, Lee Y, Sitnokov L, Ganda OP, Caballero AE. The effect of a structured behavioral intervention on poorly controlled diabetes: a randomized controlled trial. *Arch Intern Med* 2011;171:1990–1999
  102. Norris SL, Zhang X, Avenell A, et al. Long-term effectiveness of lifestyle and behavioral weight loss interventions in adults with type 2 diabetes: a meta-analysis. *Am J Med* 2004;117:762–774
  103. Ellis SE, Speroff T, Dittus RS, Brown A, Pichert JW, Elasy TA. Diabetes patient education: a meta-analysis and meta-regression. *Patient Educ Couns* 2004;52:97–105
  104. Armour TA, Norris SL, Jack L Jr, Zhang X, Fisher L. The effectiveness of family interventions in people with diabetes mellitus: a systematic review. *Diabet Med* 2005;22:1295–1305
  105. Magee M, Bowling A, Copeland J, Fokar A, Pasquale P, Youssef G. The ABCs of diabetes: diabetes self-management education program for African Americans affects A1C, lipid-lowering agent prescriptions, and emergency department visits. *Diabetes Educ* 2011;37:95–103
  106. Cavanaugh K, Huizinga MM, Wallston KA, et al. Association of numeracy and diabetes control. *Ann Intern Med* 2008;148:737–746
  107. Rothman RL, DeWalt DA, Malone R, et al. Influence of patient literacy on the effectiveness of a primary care-based diabetes disease management program. *JAMA* 2004;292:1711–1716
  108. Schillinger D, Grumbach K, Piette J, et al. Association of health literacy with diabetes outcomes. *JAMA* 2002;288:475–482
  109. Rubin RR, Peyrot M, Saudek CD. The effect of a diabetes education program incorporating coping skills, training on emotional well-being, and diabetes self-efficacy. *Diabetes Educ* 1993;19:210–214
  110. Trento M, Passera P, Borgo E, et al. A 5-year randomized controlled study of learning, problem solving ability, and quality of life modifications in people with type 2 diabetes managed by group care. *Diabetes Care* 2004;27:670–675
  111. Izquierdo RE, Knudson PE, Meyer S, Kearns J, Ploutz-Snyder R, Weinstock RS. A comparison of diabetes education administered through telemedicine versus in person. *Diabetes Care* 2003;26:1002–1007
  112. Garrett N, Hageman CM, Sibley SD, et al. The effectiveness of an interactive small group diabetes intervention in improving knowledge, feeling of control, and behavior. *Health Promot Pract* 2005;6:320–328
  113. Piette JD, Glasgow R. Strategies for improving behavioral health outcomes among patients with diabetes: self-management, education. In *Evidence-Based Diabetes Care*. Gerstein HC, Haynes RB, Eds. Hamilton, Ontario, Canada, BC Decker, 2001, p. 207–251
  114. Boren SA. AADE7 Self-care behaviors: systematic reviews. *Diabetes Educ* 2007;33:866, 871
  115. American Association of Diabetes Educators. AADE7 self-care behaviors, American Association of Diabetes Educators position statement [Internet], 2011. Available from [http://www.diabeteseducator.org/DiabetesEducation/position/position\\_statements.html](http://www.diabeteseducator.org/DiabetesEducation/position/position_statements.html). Accessed 26 June 2012
  116. American Association of Diabetes Educators. AADE position statement. Individualization of diabetes self-management education. *Diabetes Educ* 2007;33:45–49
  117. Gilden JL, Hendryx M, Casia C, Singh SP. The effectiveness of diabetes education programs for older patients and their spouses. *J Am Geriatr Soc* 1989;37:1023–1030
  118. Brown SA. Effects of educational interventions in diabetes care: a meta-analysis of findings. *Nurs Res* 1988;37:223–230
  119. Barlow J, Wright C, Sheasby J, Turner A, Hainsworth J. Self-management approaches for people with chronic conditions: a review. *Patient Educ Couns* 2002;48:177–187
  120. Skinner TC, Craddock S, Arundel F, et al. Four theories and a philosophy: self-management education for individuals newly diagnosed with type 2 diabetes. *Diabetes Spectrum* 2003;16:75–80
  121. Brown SA, Hanis CL. Culturally competent diabetes education for Mexican Americans: the Starr County Study. *Diabetes Educ* 1999;25:226–236
  122. Sarkisian CA, Brown AF, Norris KC, Wintz RL, Mangione CM. A systematic review of diabetes self-care interventions for older, African American, or Latino adults. *Diabetes Educ* 2003;29:467–479



123. Chodosh J, Morton SC, Mojica W, et al. Meta-analysis: chronic disease self-management programs for older adults. *Ann Intern Med* 2005;143:427–438
124. Anderson-Loftin W, Barnett S, Bunn P, Sullivan P, Hussey J, Tavakoli A. Soul food light: culturally competent diabetes education. *Diabetes Educ* 2005;31:555–563
125. Mensing CR, Norris SL. Group education in diabetes: effectiveness and implementation. *Diabetes Spectrum* 2003;16:96–103
126. Brown SA, Blozis SA, Kouzekanani K, Garcia AA, Winchell M, Hanis CL. Dosage effects of diabetes self-management education for Mexican Americans: the Starr County Border Health Initiative. *Diabetes Care* 2005;28:527–532
127. Hoesy GM, Freeman WL, Stracqualursi F, Gohdes D. Designing and evaluating diabetes education material for American Indians. *Diabetes Educ* 1990;16:407–414
128. Thomson FJ, Masson EA. Can elderly patients co-operate with routine foot care? *Diabetes Spectrum* 1995;8:218–219
129. Hawthorne K, Robles Y, Cannings-John R, Edwards AG. Culturally appropriate health education for Type 2 diabetes in ethnic minority groups: a systematic and narrative review of randomized controlled trials. *Diabet Med* 2010;27:613–623
130. Cavanaugh K, Wallston KA, Gebretsadik T, et al. Addressing literacy and numeracy to improve diabetes care: two randomized controlled trials. *Diabetes Care* 2009;32:2149–2155
131. Doak CC, Doak LG, Root JH. *Teaching Patients with Low Literacy Skills*. Philadelphia, PA, Lippincott, 2008
132. Schillinger D, Piette J, Grumbach K, et al. Closing the loop: physician communication with diabetic patients who have low health literacy. *Arch Intern Med* 2003;163:83–90
133. Channon SJ, Huws-Thomas MV, Rollnick S, et al. A multicenter randomized controlled trial of motivational interviewing in teenagers with diabetes. *Diabetes Care* 2007;30:1390–1395
134. Naik AD, Palmer N, Petersen NJ, et al. Comparative effectiveness of goal setting in diabetes mellitus group clinics: randomized clinical trial. *Arch Intern Med* 2011;171:453–459
135. Glasgow RE, Funnell MM, Bonomi AE, Davis C, Beckham V, Wagner EH. Self-management aspects of the improving chronic illness care breakthrough series: implementation with diabetes and heart failure teams. *Ann Behav Med* 2002;24:80–87
136. Estey AL, Tan MH, Mann K. Follow-up intervention: its effect on compliance behavior to a diabetes regimen. *Diabetes Educ* 1990;16:291–295
137. Beverly EA, Ganda OP, Ritholz MD, et al. Look who's (not) talking: diabetic patients' willingness to discuss self-care with physicians. *Diabetes Care* 2012;35:1466–1472
138. Mulvaney SA, Rothman RL, Wallston KA, Lybarger C, Dietrich MS. An Internet-based program to improve self-management in adolescents with type 1 diabetes. *Diabetes Care* 2010;33:602–604
139. Osborn CY, Mayberry LS, Mulvaney SA, Hess R. Patient Web portals to improve diabetes outcomes: a systematic review. *Curr Diab Rep* 2010;10:422–435
140. Mulvaney SA, Ritterband LM, Bosslet L. Mobile intervention design in diabetes: review and recommendations. *Curr Diab Rep* 2011;11:486–493
141. Polonsky WH, Fisher L, Earles J, et al. Assessing psychosocial distress in diabetes: development of the diabetes distress scale. *Diabetes Care* 2005;28:626–631
142. Davis ED. Role of the diabetes nurse educator in improving patient education. *Diabetes Educ* 1990;16:36–38
143. Glasgow RE, Davis CL, Funnell MM, Beck A. Implementing practical interventions to support chronic illness self-management. *Jt Comm J Qual Saf* 2003;29:563–574
144. Daly A, Leontos C. Legislation for health care coverage for diabetes self-management training, equipment and supplies: past, present and future. *Diabetes Spectrum* 1999;12:222–230
145. Grebe SK, Smith RB. Clinical audit and standardised follow up improve quality of documentation in diabetes care. *N Z Med J* 1995;108:339–342
146. Aubert RE, Herman WH, Waters J, et al. Nurse case management to improve glycemic control in diabetic patients in a health maintenance organization. A randomized, controlled trial. *Ann Intern Med* 1998;129:605–612
147. Anderson D, Christison-Lagay J. Diabetes self-management in a community health center: improving health behaviors and clinical outcomes for undeserved patients. *Clin Diabetes* 2008;26:22–27
148. Duncan I, Ahmed T, Li QE, et al. Assessing the value of the diabetes educator. *Diabetes Educ* 2011;37:638–657
149. Institute for Healthcare Improvement. Science of improvement: how to improve [Internet]. Available from <http://www.ihio.org/knowledge/Pages/HowtoImprove/ScienceofImprovementHowtoImprove.aspx>. Accessed 25 June 2012
150. The Joint Commission on Accreditation of Healthcare Organizations. *Joint Commission Resources: Cost-Effective Performance Improvement in Ambulatory Care*. Oakbrook Terrace, IL, Joint Commission on Accreditation of Healthcare Organizations, 2003
151. Glasgow RE, Peeples M, Skovlund SE. Where is the patient in diabetes performance measures? The case for including patient-centered and self-management measures. *Diabetes Care* 2008;31:1046–1050
152. Beebe CA, Schmitt SS. Engaging patients in education for self-management in an accountable care environment. *Clin Diabetes* 2011;29:123–126
153. American Association of Diabetes Educators. Standards for outcomes measurement of diabetes self-management education [Internet], 2011. Available from [http://www.diabeteseducator.org/ProfessionalResources/position/position\\_statements.html](http://www.diabeteseducator.org/ProfessionalResources/position/position_statements.html). Accessed 26 June 2012
154. American Association of Diabetes Educators. Standards for outcomes measurement of diabetes self-management education, technical review [Internet], 2011. Available from [http://www.diabeteseducator.org/ProfessionalResources/position/position\\_statements.html](http://www.diabeteseducator.org/ProfessionalResources/position/position_statements.html). Accessed 26 June 2012