Consensus Report

Diabetes Self-management Education and Support in Adults With Type 2 Diabetes

A Consensus Report of the American Diabetes Association, the Association of Diabetes Care & Education Specialists, the Academy of Nutrition and Dietetics, the American Academy of Family Physicians, the American Academy of PAs, the American Association of Nurse Practitioners, and the American Pharmacists Association

Margaret A. Powers, PhD, RD, CDCES
Joan K. Bardsley, MBA, RN, CDCES
Marjorie Cypress, PhD, C-ANP, CDCES
Martha M. Funnell, MS, RN,CDCES
Dixie Harms, ARNP
Amy Hess-Fischl, MS, RD, LDN, BC-ADM, CDCES
Beulette Hooks, MD
Diana Isaacs, PharmD, BCPS, BCACP, BC-ADM, CDCES
Ellen D. Mandel, DMH, MPA, PA-C, RDN, CDCES
Melinda D. Maryniuk, MEd, RD, CDCES
Anna Norton, MS
Joanne Rinker, MS, RDN, CDCES, LDN
Linda M. Siminerio, RN, PhD, CDCES
Sacha Uelmen, RDN, CDCES

From HealthPartners, Bloomington, Minnesota (Powers); Medstar Health Research Institute, MedStar Diabetes Institute and MedStar Health System Nursing, Hyattsville, Maryland (Bardsley); Independent consultant, Albuquerque, New Mexico (Cypress); University of Michigan Medical School, Ann Arbor, Michigan (Funnell); MercyOne Clive Internal Medicine, Clive, Iowa (Harms); Section of Adult and Pediatric Endocrinology, Diabetes, and Metabolism, University of Chicago, Chicago, Illinois (Hess-Fischl); Martin Army Community Hospital, Fort Benning, Georgia (Hooks); Cleveland Clinic Diabetes Center, Cleveland, Ohio (Isaacs); Johnson & Wales University, Providence, Rhode Island (Mandel); Maryniuk & Associates, Boston, Massachusetts (Maryniuk); DiabetesSisters, Chicago, Illinois (Norton); Association of Diabetes Care & Education Specialists, Chicago, Illinois (Rinker, Uelmen); and University of Pittsburgh, Pittsburgh, Pennsylvania (Siminerio).

Correspondence to Margaret A. Powers, HealthPartners, MS61N07C 3800 Park Nicollet Blvd Minneapolis, MN 55416 (margaret.powers@parknicollet.com).

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Introduction

Diabetes is a complex and challenging disease that requires daily self-management decisions made by the person with diabetes. Diabetes self-management education and support (DSMES) addresses the comprehensive blend of clinical, educational, psychosocial, and behavioral aspects of care needed for daily self-management and provides the foundation to help all people with diabetes navigate their daily self-care with confidence and improved outcomes.[1,2]

The prevalence of diagnosed diabetes is projected to increase in the U.S. from 22.3 million (9.1% of the total population) in 2014, to 39.7 million (13%) in 2030, and to 60.6 million (17%) in 2060.[3] Approximately 90-95% of those with diabetes have type 2 diabetes.[4] Diabetes is an expensive disease, and the medical costs of health care alone for a person with diabetes are 2.3 times more than for a person without diabetes.[5] Confounding the diabetes epidemic and high costs, therapeutic targets are not being met.[6] There is a lack of improvement in reaching clinical target goals since 2005 despite advancements in medication and technology treatment modalities. Indeed, between 2010 and 2016, improved outcomes stalled or reversed.[6]

The goals of this Consensus Report are to improve clinical care and education services, to improve the health of individuals and populations, and to reduce diabetes-associated per capita health care costs.[1,7] This article is specifically directed toward health care providers (physicians, nurse practitioners, physician assistants [PAs]), referred to herein as providers, as it outlines the benefits of DSMES, defines four critical times to provide and modify DSMES (see Figure 1), proposes how to locate DSMES-related resources, and discusses potential solutions to access and utilization barriers. This report provides guidance to others as well: Health systems and organizations can use this report to anticipate and address the needs of persons with diabetes and create access to DSMES services; persons with diabetes can increase their awareness of DSMES services as part of quality care and can advocate for self-management education and support; and payers and policymakers can work to design reimbursement processes that support participation in DSMES. The Consensus Report's recommendations are listed in Table 1.

This Consensus Report focuses on a component of diabetes care that is often not accessed or utilized effectively—DSMES. DSMES is identified as one of the essential elements of comprehensive diabetes medical

Figure 1. The four critical times to provide and modify diabetes self-management education and support.

Table 1

DSMES Consensus Report Recommendations

DSMES Improves Health Outcomes, Quality of Life, and Is Cost Effective, and People With Diabetes Deserve the Right to DSMES Services. Therefore, It Is Recommended That:
Providers:
1. Discuss with all persons with diabetes the benefits and value of initial and ongoing DSMES.
2. Initiate referral to and facilitate participation in DSMES at the 4 critical times: (1) at diagnosis, (2) annually and/or when not meeting treatment targets, (3) when complicating factors develop, and (4) when transitions in life and care occur.
3. Ensure coordination of the medical nutrition therapy plan with the overall management strategy, including the DSMES plan, medications, and physical activity on an ongoing basis.
4. Identify and address barriers affecting participation with DSMES services following referral.
Health policy, payers, health systems, providers, and health care teams:
5. Expand awareness, access, and utilization of innovative and nontraditional DSMES services.
6. Identify and address barriers influencing providers' referrals to DSMES services.
7. Facilitate reimbursement processes and other means of financial support in consideration of cost savings related to the benefits of DSMES services.

care, along with medical nutrition therapy (MNT) (see "Medical Nutrition Therapy as a Core Component of Quality Diabetes Care"). DSMES improves health outcomes and quality of life and is cost effective (see "Benefits Associated With DSMES"). Current utilization is quite low because of a variety of barriers, yet solutions are available (see "Providing DSMES" and "Identifying and Reducing Barriers"). Solutions begin with an organizational commitment to the value of access to, and participation in, DSMES. Financial support for DSMES services is available yet requires special attention (see "Reimbursement"). Key stakeholders can use this Consensus Report and the current *Standards of Medical Care in Diabetes* from the American Diabetes Association (ADA)[8] to develop action plans for increased referral to and utilization of DSMES. These efforts are needed to increase the focus on achieving treatment targets early and maintaining them throughout a person's lifetime.

The purpose of DSMES is to give people with diabetes the knowledge, skills, and confidence to accept responsibility for their self-management. This includes collaborating with their health care team, making informed decisions, solving problems, developing personal goals and action plans, and coping with emotions and life stresses.[9] This Consensus Report focuses on the particular needs of adults with type 2 diabetes. DSMES needs are critical to all who are living with other types of diabetes (type 1 diabetes, prediabetes, and gestational diabetes mellitus); however, the evidence and examples referred to in this Consensus Report are for adults with type 2 diabetes.

A call to action for all health care systems and organizations is to engage needed resources and to effectively and efficiently manage and address this expensive epidemic affecting health outcomes. We must address barriers that result in therapeutic inertia created by health policy, health systems, providers, people with diabetes, and the environment, including social determinants of health,[10] which encompass the conditions in which people live, work, learn, and play.[11] Rather than being overwhelmed and nonattentive to this crisis, all stakeholders must be creative and responsive to the needs of all involved and make it their priority.

Methods

This Consensus Report is an update of the 2015 joint position statement on DSMES.[12] The panel of experts authoring this report includes representatives from the three national organizations that jointly published the original article (ADA, American Association of Diabetes Educators [AADE], and Academy of Nutrition and Dietetics), and in an effort to widen the reach and stakeholder input, the American Academy of Family Physicians, American Academy of PAs, American Association of Nurse Practitioners, American Pharmacists Association, and a patient advocate were invited to participate. At the beginning of the writing process, all members of the expert panel participated in 2 surveys related to the 2015 joint position statement and its impact and the desired future use of this Consensus Report: 1 survey from their perspective and 1 completed while interviewing colleagues. The expert panel agreed on the direction for this Consensus Report, established writing teams to author the various sections of the report, and reviewed the entire updated manuscript after each step. An outside market research company was used to conduct the literature search and was paid using ADA funds. Monthly calls were held between March 2019 and December 2019, with additional e-mail and web-based collaboration. Two in-person meetings were conducted to provide organization to the process, establish the review process, reach consensus on the content and key definitions (see Table 2), and discuss and deliberate the recommendations. Once the draft was completed, the structured peer review process was implemented, and the report was sent to 2 additional representatives from each of the 7 participating organizations. A final draft was completed and submitted to all 7 national organizations for final review and approval. The recommendations are the informed, expert consensus of the 7 contributing organizations.

Benefits Associated With DSMES

Consensus Recommendation

- Providers should discuss with all persons with diabetes the benefits of initial and ongoing DSMES.

The benefits of DSMES are multifaceted and include clinical, psychosocial, and behavioral outcomes benefits. Key clinical benefits are improved hemoglobin A_{1c} (A1C) with reductions that are additive to lifestyle and drug therapy.[13-16] Based on recent data,[13,14,16] DSMES results in an average A1C reduction of 0.45-0.57% when compared with usual care for people with type 2 diabetes treated with a variety of modalities (lifestyle alone, oral and

Table 2

Key Definitions

Diabetes Self-Management Education and Support (DSMES)
• *DSMES*[40]: The ongoing process of facilitating the knowledge, skills, and ability necessary for diabetes self-management as well as activities that assist a person 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. This process incorporates the needs, goals, and life experiences of the person with diabetes.
• *Support*[40]: Helps implement informed decision-making, self-management behaviors, problem solving, and active collaboration with the health care team to improve clinical outcomes, health status, and quality of life.
Note: Diabetes services and specialized providers and educators often provide both education and support. Yet ongoing support from the primary health care team, family and friends, specialized home services, and the community are necessary to maximize implementation of needed self-management.
Note: CMS uses the term "training" (DSMT) instead of "education" (DSMES) when defining the reimbursable Medicare benefit. Education is used in the National Standards for Diabetes Self-Management Education and Support and more commonly used in practice. In the context of this article, the terms have the same meaning.
Person-centered care[96]
• Providing care and education that is respectful of and responsive to an individual person's preferences, needs, and values and ensuring that those values guide all clinical decisions.
Diabetes-related distress[23,26,97]
• Diabetes-related distress is defined as the emotional burden of diabetes, the constant demands from diabetes self-management (taking and adjusting medications, monitoring blood glucose, meal planning, and physical activity) and the possibility of developing complications, and the lack of support and access to care.
• The emotional burden of diabetes has the greatest impact on diabetes distress and outcomes.
Diabetes care and education specialist (DCES)[98]
• A trusted expert of the integrated care team who provides collaborative, comprehensive, and person-centered care and education to persons with diabetes and related cardiometabolic conditions.
Note: In 2019 a new title to identify health professionals who specialize in diabetes care and education was created by the Association of Diabetes Care & Education Specialists. Clinical staff who qualify for this title may or may not be a CDCES or BC-ADM, yet all who hold the CDCES and BC-ADM certifications are diabetes care and education specialists.
Certified Diabetes Care and Education Specialist (CDCES)[99]
• A health care professional who has completed a minimum number of hours in clinical diabetes practice, passed the Certification Examination for Diabetes Care and Education (administered by the Certification Board for Diabetes Care and Education [CBDCE]), and has responsibilities that include the direct provision of diabetes education.
Note: The Certified Diabetes Educator (CDE) certification title is now CDCES.
Board Certified-Advanced Diabetes Management (BC-ADM)[100]
• A health care professional who has completed a minimum number of hours in advanced diabetes management, holds a graduate degree, passed the BC-ADM certification exam (administered by the Association of Diabetes Care & Education Specialists), and has responsibilities of an increased complexity of decision-making related to diabetes management and education.
Social determinants of health[11,83]
• The conditions in which people live, work, learn, and play and the wider set of forces and systems shaping the conditions of daily life. These forces and systems include economic policies and systems, development agendas, social norms, social policies, and political systems.

injected medication)[13-17] as well as reduction in the onset and/or worsening of diabetes-related complications[18,19] and reduction of all-cause mortality.[20] DSMES improves quality of life[15,21-23] and promotes lifestyle behaviors including healthful meal planning and engagement in regular physical activity.[24] In addition, participation in

Table 3

Comparing the Benefits of DSMES/MNT Versus Metformin Therapy[17]

	Benefits Rating	
Criteria	**DSMES/MNT**	**Metformin**
Efficacy	High	High
Hypoglycemia risk	Low	Low
Weight	Neutral/loss	Neutral/loss
Side effects	None	Gastrointestinal
Cost	Low/savings	Low
Psychosocial benefits[a]	High	N/A

Abbreviation: N/A, not applicable.
[a]Psychosocial benefits include *improvements to* quality of life, self-efficacy, empowerment, healthy coping, knowledge, self-care behaviors, meal planning, healthier food choices, more activity, use of glucose monitoring, lower blood pressure and lipids and *reductions in* problems in managing diabetes, diabetes distress, and the risk of long-term complications (and prevention of acute complications).

DSMES services shows enhancement of self-efficacy and empowerment,[25] increased healthy coping,[26] and decreased diabetes-related distress.[27] These improvements clearly affirm the importance and benefits of utilizing DSMES and justify efforts to facilitate participation as a necessary part of quality diabetes care. Table 3 highlights the multiple and varied benefits that make DSMES services a critical component of quality diabetes care and compares its effects to metformin therapy.[17]

Evidence supports that better health outcomes are associated with an increased amount of time spent with a diabetes care and education specialist.[13,28,29] People with diabetes who completed more than 10 hours of DSMES over the course of 6-12 months and those who participated on an ongoing basis were found to have significant reductions in mortality[20] and A1C (decrease of 0.57%)[16] compared with those who spent less time with a diabetes care and education specialist.

Research shows that those who participate in diabetes education are more likely to use their best practices and have lower health care costs.[28,30] Even though outpatient and pharmacy costs are higher for those who use diabetes education, these costs are offset by lower acute care costs.[28] DSMES is cost-effective by reducing emergency department visits, hospital admissions, and hospital readmissions.[28,30-33] The cost of diabetes in the U.S. in 2017 was reported to be $327 billion including direct medical costs ($176 billion) and lost productivity ($69 billion).[5] The cost of care for people with diabetes accounts for about 1 in 4 health care dollars spent in the U.S.; 61% of costs are attributed to people over age 65 and are incurred by Medicare.[5] The U.S. health care system cannot sustain the costs of care associated with the increasing incidence of diabetes and diabetes-related complications. DSMES offers a pathway to decrease these costs and improve outcomes.

DSMES improves quality of life and health outcomes and is cost-effective. All members of the health care team and health systems should promote the benefits, emphasize the value, and support participation in initial and ongoing DSMES for all people with diabetes (see Table 4).

Providing DSMES

Consensus Recommendation

- Health policy, payers, health systems, providers, and health care teams need to expand awareness, access, and utilization of innovative and nontraditional DSMES services.

A variety of DSMES approaches and settings need to be presented and discussed with people with diabetes, thus enabling self-selection of a method that best meets their specific needs.[34] Historically, DSMES services were provided in a formal series of didactic classes where people with diabetes and their family members participated at a hospital-based/health care facility location. Evolving health care delivery systems, primary care needs, and the needs of people with diabetes have resulted in the incorporation of DSMES services into additional and nontraditional settings such as those located within patient-centered medical homes, community health centers, pharmacies, and accountable care organizations (ACOs), as well as faith-based organizations and home settings.

Technology-based services including web-based programs, telehealth, mobile applications, and remote monitoring enable and promote increased access and connectivity for ongoing management and support.[35] Recent health care concerns are rapidly expanding the use of these services, especially telehealth. In conjunction with formal DSMES, online peer support communities are growing in popularity. Involvement in these groups can be a beneficial adjunct to learning, serving as

Table 4

Summary of DSMES Benefits to Discuss With People With Diabetes[15-28,30-33,40,89]

• Provides critical education and support for implementing treatment plan • Reduces hypoglycemia • Addresses weight maintenance or loss • Enhances self-efficacy and empowerment • Increases healthy coping • Decreases diabetes-related distress • Promotes lifestyle behaviors including healthful meal planning and engagement in regular physical activity • Improves quality of life • Reduces all-cause mortality • Reduces emergency department visits, hospital admission, and hospital readmission • Lowers A1C
No negative side effects
Medicare / most insurers covers costs

an option for ongoing diabetes peer support[36,37] (see Supplementary Table 1).

Creative, person-centered approaches to meet individual needs that consider various learning preferences, literacy, numeracy, language, culture, physical challenges, scheduling challenges, social determinants of health, and financial challenges should be widely available. It is important to ensure access in communities at highest risk for diabetes, such as racial and ethnic minorities and underserved communities.

Office-based health care teams without in-house resources can partner with local diabetes care and education specialists within their community to explore opportunities to reach people with diabetes and overcome some barriers to participation at the point of care.[38] If the office-based care team assumes responsibility for providing diabetes education and support, every effort should be made to ensure they receive up-to-date training in diabetes care and education and utilize the details in Tables 5 and 6.

Regardless of the DSMES approach or setting, personalized and comprehensive methods are necessary to promote effective self-management required for day-to-day living with diabetes. Effective delivery involves expertise in clinical, educational, psychosocial, and behavioral diabetes care.[39,40] It is essential for the referring provider to mutually establish personal treatment plans and clinical goals with the person with diabetes and communicate these to the DSMES team. Ongoing communication and support of recommendations and progress toward goals between the person with diabetes, education team, referring provider, and other members of the health care team are critical.

A person-centered approach to DSMES beginning at diagnosis of diabetes provides the foundation for current and future decisions. Without the focus on a person's beliefs and desires, ongoing treatment goals can rarely be met. Diabetes self-management is not a static process and requires ongoing assessment and modification, as identified by the 4 critical times (see Figure 1). Initial and ongoing DSMES helps the person overcome barriers and cope with the enduring and changing demands throughout the continuum of diabetes treatment and life transitions.

Providers and other members of the immediate health care team have an important role in providing education and ongoing support for self-management needs. New behaviors can be difficult to maintain and require reinforcement at a minimum of every 6 months.[41] In addition to the providers, the care team may include diabetes care and education specialists (DCES); registered dietitian nutritionists (RDNs); nutrition and dietetics technicians, registered (NDTRs); nurse educators; care managers; pharmacists; exercise and rehabilitation specialists; and

Table 5

Factors That Indicate Referral to DSMES Services Is Needed

At diagnosis	• Newly diagnosed—all newly diagnosed people with type 2 diabetes should receive DSMES
	• Ensure that both nutrition and emotional health are appropriately addressed in education or make separate referrals
Annually and/or when not meeting treatment targets	• Review of knowledge, skills, psychosocial, and behavioral outcomes or factors that inhibit or facilitate achievement of treatment target and goals
	• Long-standing diabetes with limited prior education
	• Treatment ineffective for attaining therapeutic target
	• Change in medication, activity, or nutritional intake or preferences
	• Maintenance of positive clinical and quality-of-life outcomes
	• Unexplained hypoglycemia or hyperglycemia
	• Support to attain or sustain improved behavioral or psychosocial outcomes
When complicating factors develop	Change in:
	• Health conditions, such as renal disease and stroke, need for steroids, or complicated medication plan
	• Health status requiring changes in nutrition, physical activity, etc
	• Planning pregnancy or pregnant
	• Physical limitations such as cognitive impairment, visual impairment, dexterity issues, movement restrictions
	• Emotional factors such as diabetes distress, anxiety, and clinical depression
	• Basic living needs such as access to shelter, food, health care, medicines, and financial limitations
When transitions in life and care occur	Change in:
	• Living situation such as inpatient or outpatient or other change in living situation (ie, living alone, with family, assisted living, etc)
	• Clinical care team
	• Initiation or intensification of insulin, new devices or technology, and other treatment changes
	• Insurance coverage that results in treatment change (ie, provider changes, changes in medication coverage)
	• Age-related changes affecting cognition, vision, hearing, self-management, etc

behavioral or mental health care providers. In addition, others have a role in helping to sustain the benefits gained from DSMES, including community health workers, nurses, care managers, trained peers, home health care service workers, social workers, and mental health counselors and other support people (eg, family members).[42-46] Professional associations may help identify specific services in the local area such as the Visiting Nurse Association and block nurse programs (see Supplementary Table 1).

Family members and peers are an underutilized resource for ongoing support and often struggle with how to best provide help.[47,48] Including family members in the DSMES process can help facilitate their involvement.[49-51] Such support people can be especially helpful and serve as cultural navigators in health care systems and as liaisons to the community.[52] Community programs such as healthy cooking classes, walking groups, peer support communities, and faith-based groups may lend support for implementing healthy behavior changes, promoting emotional health, and meeting personal health goals.[12]

All health care providers and/or systems need to identify adequate resources available in their respective communities, demonstrate commitment to support these services, and offer them as part of quality diabetes care. Health care providers need to be aware of the DSMES

Table 6

Checklist for Providing and Modifying DSMES at Four Critical Times

Four Critical Times	Primary Care Provider/Endocrinologist/Clinical Care Team's Role in Diabetes Education	Diabetes Care and Education Specialist's Role in Diabetes Education
At diagnosis (series of visits)	• Answer questions and provide emotional support regarding diagnosis	• Assess cultural influences, social determinants of health, health beliefs, current knowledge, physical limitations, family support, financial and work status, medical history, learning preferences and barriers, literacy, and numeracy to determine which content to provide and how
	• Shared decision-making of treatment and treatment targets	• Medication – choices, access, action, titration, side effects
	• Teach survival skills to address immediate requirements (safe use of medication, hypoglycemia treatment if needed, introduction of eating guidelines)	• Monitoring blood glucose – when to check, interpreting and using glucose pattern management for feedback
	• Identify and discuss resources for education and ongoing support	• Physical activity – safety, short-term versus long-term goals/recommendations
	• Make referrals for DSMES and MNT	• Preventing, detecting, and treating acute and chronic complications
		• Nutrition – food plan, planning meals, purchasing food, preparing meals, portioning food
		• Risk reduction – smoking cessation, foot care, cardiac risk
		• Developing personal strategies to address psychosocial issues and concerns; adjusting to a life with diabetes
		• Developing personal strategies to promote health and behavior change
		• Problem identification and solutions
		• Identifying and accessing resources
Annually and/or when not meeting treatment targets	• Refer for new techniques, technology, and updated information	• Review and reinforce treatment goals and self-management needs
	• Assess and refer if self-management targets not met to address barriers to self-care	• Review barriers to treatment effectiveness
		• Emphasize reducing risk for complications and promoting quality of life
		• Discuss how to adjust diabetes treatment and self-management to life situations and competing demands
		• Support efforts to sustain initial behavior changes and cope with the ongoing burden of diabetes
When complicating factors develop	• Identify presence of factors that inhibit or facilitate achievement of treatment targets and personal goals	• Provide support for the provision of self-management skills in an effort to delay progression of the disease and prevent new complications
	• Discuss impact of complications and successes with treatment and self-management	• Provide/refer for emotional support for diabetes-related distress and depression

(continued)

Table 6

(continued)

Four Critical Times	Primary Care Provider/Endocrinologist/Clinical Care Team's Role in Diabetes Education	Diabetes Care and Education Specialist's Role in Diabetes Education
		• Develop and support personal strategies for behavior change and healthy coping • Develop personal strategies to accommodate sensory or physical limitation(s), adapt to new self-management demands, and promote health and behavior change
When transitions in life and care occur	• Develop diabetes transition plan • Communicate transition plan to new health care team members • Establish DSMES regular follow-up care	• Adjust diabetes self-management plan as needed • Provide support for independent self-management skills and self-efficacy • Identify level of significant other involvement and facilitate education and support • Assist with facing challenges affecting usual level of activity, ability to function, health benefits, and feelings of well-being • Maximize quality of life and emotional support for the person with diabetes (and family members) • Provide education for others now involved in care • Establish communication and follow-up plans with the provider, family, and others • Develop goals and personal strategies to promote health and behavioral change and improve quality of life

resources in their health system and communities and make appropriate referrals.

Four Critical Times to Refer to DSMES

Consensus Recommendation

- Providers should initiate referral to and facilitate participation in DSMES at the 4 critical times (1) at diagnosis, (2) annually and/or when not meeting treatment targets, (3) when complicating factors develop, and (4) when transitions in life and care occur.

There are 4 critical times to provide and modify DSMES: (1) at diagnosis, (2) annually and/or when not meeting treatment targets, (3) when complicating factors develop, and (4) when transitions in life and care occur. These critical times are moments when people with diabetes may need the most assistance to achieve and/or adjust their goals and care plans for successful daily self-management. Although these 4 critical times are listed, it is important to recognize diabetes is a chronic disease that progresses over time and requires vigilant care to meet changing physiologic needs and goals.[53]

The existing treatment plan may become ineffective due to changing situations that can arise at any time. Such situations include progression of the disease, changes in personal goals, unmet targets, major life changes, or new barriers identified when assessing social determinants of health.

It is prudent to be proactive when changes are identified or emerging. Additional support from the entire care team and referral to DSMES are appropriate responses to any of these needs. Quality ongoing, routine diabetes care includes continuous assessment, ongoing education and learning, self-management planning, and ongoing support.

The AADE7 Self-Care Behaviors provide the overarching framework for identifying key components of education and support.[54] The 7 self-care behaviors are healthy coping, healthy eating, being active, taking medication, monitoring, reducing risks, and problem

Table 7

Sample Questions to Guide a Person-Centered Assessment[56]

- How is diabetes affecting your daily life and that of your family?
- What questions do you have?
- What are 1 to 2 positive things you are doing right now to manage your diabetes?
- What is the hardest part about your diabetes right now, causing you the most concern, or is most worrisome to you about your diabetes?
- How can we best help you?

solving. Mastery of skills and behaviors related to each of these areas requires practice and experience. Often, a series of ongoing education and support visits are necessary to allow participants the time to practice new skills and behaviors, to develop problem-solving skills, and to improve their ability and self-efficacy to set and reach personal self-management goals.[55] Targeted questions, such as those now used in social determinants of health surveys utilized by many organizations, systems, and credentialed DSMES programs, can identify and facilitate addressing the immediate needs of the person with diabetes[56] and/or facilitate referral to the most appropriate team member (see Table 7).

Care and education plans at each of the 4 critical times focus on the needs and personal goals of the individual. Therefore, the plan should be based on personal experiences that are relevant to self-management and applicable to personal goals, treatment targets, and objectives and acknowledge that adults possess expertise about their own lives.[57] Tables 5and 6 serve as checklists to ensure clinical teams and health systems offer necessary diabetes services (factors that indicate DSMES needs and what DSMES provides).

At Diagnosis

For an individual and family, the diagnosis of diabetes is often overwhelming,[58,59] with fears, anger, myths, and personal, family, and life circumstances influencing this reaction. Immediate care addresses these concerns through listening, providing emotional support, and answering questions. Providers typically first set the stage for a lifetime chronic condition that requires focus, hope, and resources to manage on a daily basis. A person-centered approach at diagnosis is essential for establishing rapport and developing a personal and feasible treatment plan.

Despite the wide range of knowledge and skills that are required to self-manage diabetes, caution should be taken to not confound the overwhelming nature of the diagnosis but to determine what the person needs from the care team at this time to safely navigate self-management during the first days and weeks. Responses to such questions as shown in Table 7 (also see Tables 5 and 6) guide and set direction for each person. Immediate referral to DSMES services establishes a personal education and support plan and highlights the value of initial and ongoing education. Initial DSMES at diagnosis typically includes a series of visits or contacts to build on clinical, psychosocial, and behavioral needs. See Table 6 for suggested content.

Education at diagnosis focuses on safety concerns, often referred to as survival-level skills education, and addresses “What do I need to do once I leave your office?” To begin the process of managing the diagnosis and incorporating self-management into daily life, a diabetes care and education specialist and/or other members of the health care team work closely with the person with diabetes and his or her family members and/or significant others to answer questions, address initial concerns, and provide support and referrals to needed resources.

It is recommended that all persons with diabetes be offered a referral for individualized MNT with a registered dietitian, knowledgeable and skilled in diabetes-specific MNT, and a mental health assessment, as indicated, from qualified providers with expertise in diabetes management[60] (see Supplementary Table 1 for resources). These team members are critical at all 4 critical times.

Important discussions at diagnosis include the natural history of type 2 diabetes, what the journey will involve in terms of lifestyle and possibly medication, and acknowledgment that a range of emotional responses is

common. Emphasizing the importance of involving family members and/or significant others in ongoing education and support is also a key part of the process.[47-51] Diabetes is largely self-managed, and care management involves trial and error. The role of the health care team is to provide information and discuss effective strategies to reach chosen treatment targets and goals. The many tasks of self-management are not easy, yet worth the effort[61] (see "Benefits Associated With DSMES").

Annually and/or When Not Meeting Treatment Targets

The health care team and others support the adoption and maintenance of daily self-management tasks,[8,40] as many people with diabetes find sustaining these behaviors difficult. They need to identify education and other needs expeditiously in order to address the nuances of self-management and highlight the value of ongoing education. Table 6 provides details of DSMES at this critical time. Annual assessment of knowledge, skills, and behaviors is necessary for those who achieve diabetes treatment targets and personal goals as well as for those who do not.

Primary care visits for people with diabetes typically occur every 3-6 months.[60] These visits are opportunities to assess all areas of self-management, including laboratory results, and a review of behavioral changes and coping strategies, problem-solving skills, strengths and challenges of living with diabetes, use of technology, questions about medication therapy and lifestyle changes, and other environmental factors that might impact self-management.[40] It is challenging for primary care providers to address all assessments during a visit, which points to the need to utilize established DSMES resources and champion new ones to meet these needs, ensuring personal goals are met. See Table 5 for indications for referral.

Possible barriers to achieving treatment goals, such as financial and psychosocial issues, life stresses, diabetes-related distress, fears, side effects of medications, misinformation, cultural barriers, or misperceptions, should be assessed and addressed. People with diabetes are sometimes unwilling or embarrassed to discuss these problems unless specifically asked.[62,63]

Frequent DSMES visits may be needed when the individual is starting a new diabetes medication such as insulin,[64] is experiencing unexplained hypoglycemia or hyperglycemia, has worsening clinical indicators, or has unmet goals. Importantly, diabetes care and education specialists are charged with communicating the revised plan to the referring provider and assisting the person with diabetes in implementing the new treatment plan.

When Complicating Factors Develop

The identification of diabetes-related complications or other individual factors that may influence self-management should be considered a critical indicator of the need for DSMES that requires immediate attention and adequate resources. During clinical care, the provider may identify factors other than diabetes that may influence the individual's diabetes treatment and associated self-management plan (see Tables 5 and 6). These factors may require a change in self-management or affect an individual's ability to manage their diabetes and may involve additional medications, new physical limitations, and/or new emotional needs. Examples could include a new diagnosis of renal disease or visual impairment, starting steroids, planning pregnancy, and/or psychosocial factors such as depression and anxiety.

The diagnosis of other health conditions often makes management more complex and adds additional tasks onto daily management. DSMES addresses the integration of multiple medical conditions into overall care with a focus on maintaining or appropriately adjusting medication, meal plans, and physical activity levels to maximize outcomes and quality of life. In addition to the need to adjust or learn new self-management skills, effective coping, defined as a positive attitude toward diabetes and self-management, positive relationships with others, and enhanced quality of life are addressed in DSMES services.[16,26] Focused emotional support may be needed for anxiety, stress, and diabetes-related distress and/or depression.

The progression of diabetes can increase the emotional and treatment burden of diabetes and distress.[65,66] Diabetes-related distress, which is distinct from major depressive disorder, is particularly common, with overall prevalence rates reported to be 36%.[67] It has a greater impact on behavioral and metabolic outcomes than does depression.[66] Diabetes-related distress is responsive to intervention, including DSMES-focused interventions[68] and family support.[49] However, additional mental health resources are generally required to address severe diabetes-related distress, clinical depression, and anxiety.[65] It is important to recognize the psychological issues related to diabetes and prescribe treatment as appropriate.

When Transitions in Life and Care Occur

Throughout the life span, many factors such as aging, living situation, schedule changes, or health insurance coverage may require a reevaluation of diabetes treatment and self-management needs (see Tables 5 and 6). Critical transition periods may include transitioning into adulthood, living on one's own, hospitalization, and moving into an assisted living or skilled nursing facility, correctional facility, or rehabilitation center. They may also include life milestones: marriage, divorce, becoming a parent, moving, death of a loved one, starting or completing college, loss of employment, starting a new job, retirement, and other life circumstances. Changing health care providers can also be a time at which additional support is needed.

DSMES affords important benefits to people with diabetes during transitions in life and care. Providing input into the development of practical and realistic self-management and treatment plans can be an effective asset for successful navigation of changing situations.

The health care provider can make a referral to a diabetes care and education specialist to add input to the transition plan, provide education and problem solving, and support successful transitions. The goal is to minimize disruptions in therapy during any transition while addressing clinical, psychosocial, and behavioral needs.

Medical Nutrition Therapy as a Core Component of Quality Diabetes Care

Consensus Recommendation

- Providers should ensure coordination of the medical nutrition therapy plan with the overall management strategy, including the DSMES plan, medications, and physical activity on an ongoing basis.

MNT can reduce A1C by up to 2%, making it an essential component of initial and ongoing diabetes care.[1,69,70] Additionally, MNT helps prevent, delay, or treat other complications commonly found with diabetes such as hypertension, cardiovascular disease, renal disease, celiac disease, and gastroparesis. MNT provided by an RD/RDN is cost-effective, and people who have received MNT show improved clinical outcomes and quality of life.[69] MNT is integral to quality diabetes care and should be incorporated into the overall care plan, medication plan, and DSMES plan on an ongoing basis[1,40,69-72] (Table 8).

Referral to the RD/RDN for MNT along with DSMES is recommended as a separate and distinct service provided by an RD/RDN. Although basic nutrition content is covered as part of DSMES, people with diabetes need both initial and ongoing MNT and DSMES; referrals to both can be made through many electronic health records as well as through hard copy or faxed referral methods (see Supplementary Table 1 for specific resources).

Everyday decisions about what to eat must be driven by evidence and personal, cultural, religious, economic, and other preferences and needs.[69-71] With an in-depth understanding of a person's food intake, factors influencing eating behaviors, coping strategies related to stress, and nutrition goals, the RD/RDN can work closely with the health care team to attain treatment goals, optimize medication management, or minimize the need for medications to meet glycemic targets and support progress toward other goals influenced by food intake.

The entire health care team should provide consistent messages and recommendations regarding nutrition therapy and its importance as a foundation for quality diabetes care based on national recommendations.[70] Ongoing collaboration and communication with RD/RDNs can facilitate this aspect of care and support self-management and everyday food decisions.

Identifying and Addressing Barriers

Consensus Recommendations

- Providers should identify and address barriers affecting participation with DSMES services following referral.
- Health policy, payers, health systems, providers, and health care teams should identify and address barriers influencing referrals for DSMES services.

Despite the proven value and effectiveness of DSMES, a looming threat to its success is low utilization due to a variety of barriers. In order to reduce barriers, a focus on processes that streamline referral practices must be implemented and supported system wide. Once this major barrier is addressed, the diabetes care and education specialist can be invaluable in addressing other barriers that the person may have. Without this, it will be increasingly difficult to access DSMES services, particularly in rural and underserved communities. With focus

Table 8

Overview of MNT: An Evidence-Based Application of the Nutrition Care Process Provided by the RDN[a,1,40,69-72]

1. Characteristics of MNT reducing A1C by 0.5-2% for type 2 diabetes:
   - Initial series of MNT encounters
   - 3-6 during first 6 months of diagnosis
   - Determine if more encounters are needed based on a personal assessment and person's goals

   MNT follow-up encounters are based on needs
   - Health care team assesses needs at critical times and makes referrals – change in medication, health status, schedule, activity, stress, access to food, need for ongoing support, etc
   - Minimum of 1 annual follow-up encounter
   - Key areas of focus and action steps for positive outcomes: Persons with diabetes should have knowledge of food plan, planning meals, purchasing food, preparing meals, and portioning food. If they are not confident in these areas, it is difficult to take advantage of the full impact of nutrition therapy. Implementation and assessment will drive confidence
2. MNT provides nutrition assessment, nutrition diagnosis, and an intervention and management plan including the creation of personal food plan and support
   - Development of food plan/physical activity/medication dosing for improved postprandial glucose level, hypoglycemia prevention, and overall glycemic improvement
   - Ongoing weight management planning and coaching
   - Development of food plan for managing related complications and comorbidities such as hypertension, celiac disease, gastroparesis, eating disorders/disordered eating, kidney disease, disorders of lipid metabolism, etc

[a]The Academy of Nutrition and Dietetics recognizes the use of registered dietitian (RD) and registered dietitian nutritionist (RDN). RD and RDN can only be used by those credentialed by the Commission on Dietetic Registration.

and effort, the challenges can be addressed and benefits realized.

The Centers for Disease Control and Prevention reported that only 6.8% of privately insured individuals with newly diagnosed type 2 diabetes participated in DSMES within 12 months of diagnosis.[73] Furthermore, the Centers for Medicare and Medicaid Services (CMS) state that only 5% of Medicare participants receive DSMES during the first year of diagnosis.[74] This low initial participation in DSMES was also reported in a recent AADE practice survey, with most people engaging in a diabetes program diagnosed for more than a year.[75] These low numbers are seen even in areas where cost is less of a barrier because of national health insurance. Analysis of National Health Service data in the U.K. reveals that only 8% of those referred to formal diabetes education, an annually reviewed standard of care, attended. This highlights the need to identify and utilize resources that address all barriers, including those related to health systems, health care providers, participants, and the environment. In addition, efforts are being made by national organizations to correct the identified access and utilization barriers.

Health system or programmatic barriers include lack of administrative leadership support, limited numbers of diabetes care and education specialists, geographic location, limited or lack of access to services, referral to DSMES services not effectively embedded in the health system service structure, limited resources for marketing, and limited or low reimbursement rates.[76]

Despite the value and proven benefits of these services, barriers within the benefit design of Medicare and other insurance programs limit access. Using Medicare as an example, some of these barriers include the following: Hours allowed in the first year the benefit is used and subsequent years are predefined and not based on individual needs; a referral is required and must be made by the primary provider managing diabetes; there is a requirement of diabetes diagnosis using methods other than A1C; and costly copays and deductibles apply. A person cannot have Medicare DSMES and MNT visits either face to face or through telehealth on the same day,

thus requiring separate days to receive both of these valuable services and possibly delaying questions, education, and support.

Referring health care providers' barriers include lack of awareness of DSMES services, limitations of referring providers to those providing ongoing treatment of diabetes, misunderstanding of the necessity and effectiveness of DSMES, confusion regarding when and how to make referrals, and inconvenient or limited access.[77-80] Referrals may also be limited by unconscious or implicit bias, which perpetuates health care disparities and leads to therapeutic inertia. The provider may too quickly judge an individual's potential to benefit from DSMES[81] and may incorrectly assume the person's willingness/ability to participate. To address these barriers, providers can meet with those currently providing DSMES services in their area to better understand the benefits, access, and referral processes and to develop collaborative partnerships.

Participant-related barriers include logistical factors such as cost, timing, transportation, and medical status.[34,77,78,82] For those who avail themselves of DSMES services, few complete their planned education due to such factors. The 2017 AADE practice survey of over 4696 diabetes educators reported that only 23% of participants in diabetes education services completed 75% or more of the program.[75] Underutilization of services may be because of a lack of understanding or knowledge of the benefits, cultural factors, a desire to keep diabetes private due to perceived stigma and shame, lack of family support, and perceptions that the standard program did not meet their needs and is not relevant for their life, and the referring providers may not emphasize the value and benefits of initial and ongoing DSMES.[34,79,80,82]

Health systems, clinical practices, people with diabetes, and those providing DSMES services can collaborate to identify solutions to the barriers to utilization of DSMES for the population they serve. Creative and innovative solutions include offering a variety of DSMES options that meet individual needs within a population such as telehealth formats, coaching programs, just-in-time services, online resources, discussion groups, and intense programs for select groups while maximizing community resources related to supporting healthy behaviors.

Credentialed DSMES programs as well as individual diabetes care and education specialists perform a comprehensive assessment of needs for each participant, including factors contributing to social determinants of health such as food access, financial means, health literacy and numeracy, social support systems, and health beliefs and attitudes. This allows the diabetes care and education specialist to individualize a plan that meets the needs of the person with diabetes and provide referrals to resources that address those factors that may not be directly addressed in DSMES. It is best that all potential participants are not funneled into a set program; classes based on a person-centered curriculum designed to address social determinants of health and self-determined goal setting can meet the varied needs of each person.

Environment-related barriers include limited transportation services and inadequate offerings to meet the various cultural, language, and ethnic needs of the population. Additionally, these types of barriers include those related to social determinants of health—the economic, environmental, political, and social conditions in which one lives.[83] The health system may be limited in changing some of these conditions but needs to help each person navigate their personal situation to maximize their choices that affect their health. It is important to recognize that some individuals are less likely to attend DSMES services, including those who are older, male, nonwhite, less educated, of lower socioeconomic status, and with clinically greater disease severity.[84,85] Further, studies support the importance of cultural considerations in achieving successful outcomes.[84-87] Solutions include exploring community resources to address factors that affect health behaviors, providing seamless referral and access to such programs, and offering flexible programming that is affordable and engages persons from many backgrounds and living situations. The key is creating community-clinic partnerships that provide the right interventions, at the right time, in the right place, and using the right workforces.[88]

Reimbursement

Consensus Recommendation

- Health policy, payers, health systems, providers, and health care teams need to facilitate reimbursement processes and other means of financial support in consideration of cost savings related to the benefits of DSMES services.

Several common payment models and newer emerging models that reimburse for DSMES services are described in the following. For a list of diabetes education codes that

can be submitted for reimbursement, see Supplementary Table 2 (billing codes to maximize return on investment [ROI] in diabetes care and education).

CMS has reimbursed diabetes education services billed as diabetes self-management training since 2001.[40,89] DSMES services must receive accreditation by one of the current national accrediting organizations (Association of Diabetes Care & Education Specialists and ADA) to be eligible for reimbursement. In order to meet the requirements, DSMES services must adhere to National Standards for Diabetes Self-Management Education and Support and meet the billing provider requirements.[40,89]

Ten hours are available for the first year of receiving this benefit and 2 hours in subsequent years. Any provider (physician, nurse practitioner, PA) who is the primary provider of diabetes treatment can make a referral; there is a copay to use these services.

CMS also reimburses for diabetes MNT, which expands access to needed education and support. Three hours are available the first year of receiving this benefit, and 2 hours are available in subsequent years. A physician can request additional MNT hours through an MNT referral that describes why more hours are needed, such as a change in diagnosis, medical condition, or treatment plan. There are no specific limits set for additional hours. There is no copayment or need to meet a Part B deductible in order to use these services. Many other payers also provide reimbursement for diabetes MNT.[90] Additional discipline-specific counseling that further enhances DSMES includes medication therapy management delivered by pharmacists and psychosocial counseling offered by mental health professionals, also reimbursed through CMS and/or third-party payers.[40,77]

Reimbursement by private payers is highly variable. Many will match CMS guidelines, and those who recognize the immediate and longer-term cost savings associated with DSMES will expand coverage, sometimes with no copay.

With the transition to value-based health care, organizations may receive financial returns if they meet specified quality performance measures. Diabetes is typically part of a set of contracted quality measures impacting the payment model. Health systems should maximize the benefits of DSMES and factor them into the potential financial structure.

There are reimbursable billing codes available for remote monitoring of blood glucose and other health parameters that are related to diabetes. The use of devices that can monitor glucose, blood pressure, weight, and sleep allow the health care team to review the data, provide intervention, and recommend treatment changes remotely.

Sample referral forms that provide the information required by CMS and other payers for referral to DSMES and MNT are available along with reimbursement resources (see Table 5 and Supplementary Table 1). These or similar forms can be embedded into an electronic health record for easy referral.

Health systems and clinical organizations can maximize billing potential by facilitating the reimbursement process, ensuring all applicable codes are being utilized and submitted appropriately. This usually requires support from those who frequently work with health care codes such as staff in billing and compliance departments. Shared medical appointments can be performed with DSMES, and they are reimbursable medical visits.

Conclusions

This Consensus Report is a resource for the entire health care team and describes the 4 critical times to refer to DSMES services with very specific recommendations for ensuring that all adults with diabetes receive these benefits. Diabetes is a complex condition that requires the person with diabetes to make numerous daily decisions regarding their self-management. DSMES delivered by qualified personnel using best practice methods has a profound effect on the ability to effectively undertake these responsibilities and is supported by strong evidence presented in this report. DSMES has a positive effect on clinical, psychosocial, and behavioral aspects of diabetes. DSMES provides the foundation with ongoing support to promote achievement of personal goals and influence optimal outcomes. Despite proven benefits and demonstrated value of DSMES, the number of people with diabetes who are referred to and receive DSMES is significantly low.[73-75] Barriers will not disappear without intentional, holistic interventions recognizing the roles of the entire health care team, individuals with diabetes, and systems in overcoming issues of therapeutic inertia.[10] The increasing prevalence of type 2 diabetes requires accountability by all stakeholders to ensure these important services are available and utilized.

The U.S. health care system has changed with increased attention on primary care, technology, and quality

measures.[91] DSMES services that directly connect with primary care are effective in improving clinical, psychosocial, and behavioral outcomes.[92-95]

This changing health care environment provides a platform to use DSMES services as an effective, cost-saving, high-impact resource integral to a person's ability to self-manage diabetes. A variety of culturally appropriate services need to be offered in a variety of settings, utilizing technology to facilitate access to DSMES services, support self-management decisions, and decrease therapeutic inertia.

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