2022 National Standards for Diabetes Self-Management Education and Support

INTRODUCTION

By the most recent estimates, 34.2 million people in the U.S. have diabetes. At the same time, 88 million people are at increased risk for developing type 2 diabetes. The U.S. also sees an increasing prevalence of both type 1 and type 2 diabetes in children and adolescents. Thus, more than 122 million Americans are at risk of developing devastating complications associated with chronic hyperglycemia. As defined in the Diabetes Self-management Education and Support in Adults with Type 2 Diabetes: A Consensus Report of the ADA, ADCES, Academy of Nutrition and Dietetics, AAFP, AAPA, AANP, and APhA, “diabetes self-management education and support (DSMES) is a critical element of care for all people with diabetes (PWD). 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.” DSMES interventions include activities that support PWD to implement and sustain the self-management behaviors and strategies to improve quality of life on an ongoing basis. Despite progress in diabetes treatment modalities, glycemic and blood pressure management continue to decline in the U.S. Now, more than ever, the provision of DSMES is a vital component of the full treatment for diabetes.

PWD are at risk for distress, life stress, and clinical depression, which can lead to poor health outcomes. The National Standards for Diabetes Self-Management Education and Support (hereinafter referred to as ‘the National Standards’) encourage the provider of DSMES to acknowledge and address both quality of life and treatment burden of living with diabetes—in essence, the work of managing diabetes—and consider the multitude of daily decisions placed on PWD. To further illustrate, PWD generally visit their primary care provider (PCP) two to four times per year, where the average appointment lasts 15–20 minutes and addresses four or more health conditions. This equates to the person with diabetes (PWD) spending less than 1% of their life with their health care provider. Therefore, diabetes management decisions largely fall on PWD, further highlighting the importance of increasing access to DSMES services that support ongoing self-management and decision making.

The National Standards define timely, evidence-based, quality DSMES services that meet or exceed the Centers for Medicare & Medicaid Services (CMS) quality standards. While the acronym DSMES is used in the literature and in current practice, it is important to note that the term diabetes self-management training (DSMT) is exclusively used when describing the Medicare benefit for diabetes self-management. The Medicare benefit for DSMT was established by Balanced Budget Act (BBA) of 1997 with a final rule (65 FR 83130) published on December 29, 2000, implementing the BBA provisions and DSMT regulations (Title 42 of the Code of Federal Regulation (CFR) sections 410.140 to 410.146). Neither the statute nor the regulations have been updated since that time.
The National Standards provide guidance and evidence-based, quality practice for all DSMES services, including those with no plan to seek reimbursement. The evidence supporting the 2022 National Standards clearly identifies the need to provide person-centered services that embrace cultural differences, social determinants of health (SDOH), and the ever-increasing technological engagement platforms and systems. This requires flexibilities, like allowing DSMES to be provided in individual settings without additional administrative requirements, which are not afforded under the current Medicare DSMT benefit. The DSMES team must work within statutory and regulatory limitations to provide evidence-based, person-centered DSMES services. Because the National Standards aim to promote health equity, technological advancements can often be used to achieve equitable access to DSMES; however, technology is not a requirement for delivery of DSMES.

Payers are invited to review the National Standards as a tool to inform and modernize DSMES reimbursement requirements and to align with the evolving needs of beneficiaries. In the U.S., less than 5% of Medicare beneficiaries with diabetes and 6.8% of privately insured people with diagnosed diabetes have used DSMES services.\textsuperscript{9-11} Reimbursement policies that are complicated and cumbersome for referring providers, DSMES teams, and PWD must change in order to increase DSMES access and utilization. All PWD should have access to this critical service proven to improve outcomes, both related to and beyond diabetes. Numerous studies have proven the benefits of DSMES, which include improved clinical outcomes and quality of life, while reducing hospitalizations and health care costs.\textsuperscript{10,12-16} Engagement in DSMES services lowers hemoglobin A1C (A1C) by at least 0.6%, as much as many diabetes medications—however with no side effects.\textsuperscript{12} Greater A1C reductions have been associated with more than 10 hours of DSMES services.\textsuperscript{12}

The 2022 National Standards update is meant to be a universal document that is easy to understand and can be implemented by the entire health care community to reduce burden by improving continuity of care and overcoming therapeutic inertia.\textsuperscript{17} While the National Standards can be implemented in any care setting, the Chronic Care Model (CCM) replaced the Acute Care Model as a leading practice in the 1990’s, focusing on proactively managing chronic diseases.\textsuperscript{18} Additionally, Minimally Disruptive Medicine (MDM) is a person-centered approach to health care that prioritizes the PWD’s self-determined and self-chosen goals for life and health while minimizing the health care disruption on their lives. The goal of MDM is to maximize outcomes for the PWD without additional burden, so this approach can be incorporated with the CCM and diabetes self-management to reduce complexity.\textsuperscript{19,20}

The National Standards are applicable to all care models including solo practice, community, large practice, technology-enabled models of care, and others.\textsuperscript{21} The National Standards can provide structure and consistency to care coordination and population health. DSMES services can utilize financial models within or outside of fee for service billing to CMS for sustainability.\textsuperscript{22,23}

DSMES services must be supported and broadly incorporated in emerging models of care, including Accountable Care Organizations, Patient-Centered Medical Homes, Population Health
Programs, and Value-Based Payment Models. The National Standards are the basis for recognition by the American Diabetes Association (ADA) and accreditation by the Association of Diabetes Care & Education Specialists (ADCES), the two accrediting organizations certified by Medicare. The National Standards also serve as a guide for all members of the care team as well as insurance providers to ensure PWD receive DSMES services that are evidence-based and up to date.

The present revision within the 2022 National Standards urges payers, providers, advocates, and supporters of DSMES to embrace a contemporary view of the new complexities within the evolving health care landscape. This revision strongly advocates for person-centered DSMES services offered throughout the life span of a PWD instead of a rigid program structure. The National Standards do not endorse any one approach, but rather seek to delineate the commonalities among effective and evidence-based DSMES strategies. Since the last revision, the terminology for the diabetes educator has changed to the diabetes care and education specialist (DCES). The DCES is defined as “A compassionate teacher and expert who, as an integral member of the care team, provides collaborative, comprehensive, and person-centered care and education for people with diabetes.” The new title more accurately reflects this range of diverse skills and specialization and conveys the broad clinical management skill set and expanded role of technology. The Certification Board for Diabetes Care and Education also changed the Certified Diabetes Educator (CDE) to Certified Diabetes Care and Education Specialist (CDCES) in recognition of this change and conveys the level of expertise held by those with this credential.

**Guiding Principles for the 2022 Revision of the National Standards**

Due to the dynamic nature of health care and diabetes research, the National Standards are reviewed and revised approximately every five years by key stakeholders and experts within the diabetes care and education community. For each revision, the Task Force is charged with reviewing the current National Standards for appropriateness, relevance, and scientific basis, and updating them based on the current evidence and expert consensus. In 2021, the group was tasked with reducing administrative burden related to DSMES implementation across diverse care settings. The goal is to increase access to this critical service while focusing more on person-centered care and decreasing administrative complexities outlined in previous revisions. The group was tasked with increasing clarity in documentation requirements to enhance communication and continuity of services and reduce ambiguity across all DSMES care team members. As a result, the National Standards have been revised to eliminate administrative burden while maintaining the highest quality services for PWD and decreasing burnout for all diabetes care providers, including the DSMES team. It must be acknowledged that some language contained in the 2022 National Standards revision is from the 2017 National Standards. Guiding principles of the 2022 National Standards revision can be found in Appendix 1.

For definitions of terms, the National Standards’ Glossary can be found in Appendix 2.
Resources to aid in increasing the awareness of DSMES services are the ADA’s Education Recognition Program and the ADCES’s Diabetes Education Accreditation Program.

**Standard 1: Support for DSMES Services**

*Standard Description*

The DSMES team will seek leadership support for implementation and sustainability of DSMES services. The sponsor organization will recognize and support quality DSMES services as an integral component of diabetes care. Sponsor organizations will provide guidance and support for DSMES services to facilitate alignment with organizational resources and the needs of the community being served.

Support from the sponsor organizations and internal leadership is crucial for the success of DSMES services. This is needed to overcome the low utilization of DSMES services due to various barriers (e.g., payer, health care system, provider, individual, environmental, etc.) that impede access to and utilization of DSMES services. Support of DSMES services also involves inclusive health care teams, which at minimum, include the PWD, the referring provider, and the DCES. The inclusion of and communication between various health care team members, specifically DCESs, has effectively improved diabetes care. Ultimately, organizational support of evidence-based DSMES is necessary to ensure that these services are available in the delivery method preferred and accessible by the PWD and adequately utilized. Support could also be from expert stakeholders, who can provide purposeful input and advocacy to promote awareness, value, access, increased utilization, and quality. Stakeholders can be identified from DSMES participants’ referring providers, other health care professionals (within and outside the organization), and community- and affinity-based groups that support DSMES (e.g., fitness clubs and social media networks).

**Standard 2: Population and Service Assessment**

*Standard Description*

The DSMES service will evaluate their chosen target population to determine, develop, and enhance the resources, design, and delivery methods that align with the target populations’ needs and preferences.

To best plan, design, deliver, evaluate, and improve DSMES services, providers must identify and understand their target populations’ demographics and SDOH. Demographic characteristics may include ethnic/cultural background, sex, age, geographic location, technology access, levels of formal education, literacy level, health literacy, and numeracy. The populations’ perception of risk associated with diabetes, related complications, and co-occurring conditions are also key characteristics to consider. This information is available from a variety of sources, including but not limited to community needs assessments by local or
state health departments, health system/organizations specific to the populations, and DSMES provider data.

Currently, the majority of PWD do not receive DSMES or referral to DSMES services, even when a clinical need according to guidelines is present. While there are many barriers to DSMES, one crucial issue is access and awareness among health care providers and PWD.

It is essential to promote access to DSMES services by identifying and addressing population barriers and health inequities. Barriers may include socioeconomic, cultural factors, misaligned schedules, health insurance shortfalls, perceived lack of need, or limited encouragement from other health care providers to engage in DSMES. SDOH related to the target population should guide service design and delivery.

**Standard 3: DSMES Team**

*Standard Description*

All members of a DSMES team will uphold the National Standards and implement collaborative DSMES services, including evidence-based service design, delivery, evaluation, and continuous quality improvement. At least one team member will be identified as the DSMES quality coordinator and will oversee effective implementation, evaluation, tracking, and reporting of DSMES service outcomes.

The DSMES team may include one or a variety of health care professionals. The evidence recommends that inclusion of dietitians, nurses, pharmacists, or all other disciplines with special certifications that demonstrate mastery of diabetes knowledge and training, such as Board Certified in Advanced Diabetes Management (BC-ADM) and Certified Diabetes Care and Education Specialists (CDCES), can support all DSMES services, including clinical assessment, and serve as the quality coordinator. The quality coordinator needs to ensure the DSMES services are person-centered and understand the process of identifying, analyzing, and communicating quality data. The quality coordinator may partner with other team members to support quality improvement. Although the quality coordinator does not require additional degrees or certifications in informatics, developing an understanding of these skills—as well as marketing, health care administration, and business management—will be helpful as the health care environment continues to evolve. The quality coordinator will manage the overall DSMES services and may or may not be part of the instructional team.

Other members of the health care team, including diabetes community care coordinators (previously referred to as paraprofessionals in the 2017 National Standards), are also valuable members of the DSMES team. As DSMES team members, diabetes community care coordinators may include, but are not limited to community health workers, health promotores, dietetic technicians, medical assistants, pharmacy technicians, peer educators, and trained peer leaders. Diabetes community care coordinator team members can provide instruction, reinforce self-management skills, support behavior change, facilitate group discussion, provide
psychosocial support, provide on-going self-management support, and serve as a quality coordinator with appropriate training and supervision.44,45

To maintain competence and expertise in the expanding diabetes care and education services, all DSMES team members are required to participate in and have documented continuing education, specific to the role they serve within the team.21,44-46 For services outside of the scope of practice of the DSMES team or services, the DSMES team should document communication with referring providers to support person-centered care.

**Standard 4: Delivery and Design of DSMES Services**

**Standard Description**

DSMES services will utilize a curriculum to guide evidence-based content and delivery, to ensure consistency of teaching concepts, methods, and strategies within the team, and to serve as a resource for the team. Providers of DSMES will have knowledge of and be responsive to emerging evidence, advances in education strategies, pharmacotherapeutics, technology-enabled treatment, local and online peer support, psychosocial resources, and delivery strategies relevant to the population they serve.

The options for delivery of DSMES have grown dramatically in recent years as technology has been incorporated into health care, and simultaneously as more people have become comfortable using technology for communication, teaching, and learning. Various modes of delivery can support increased communication between PWD and the DSMES team and improve diabetes related outcomes. Strong evidence supports DSMES delivery through virtual, telehealth, telephone, text messaging, and web-based/mobile phone applications.47-52

Creative, culturally appropriate,53,54 person-centered, and evidence-based delivery methods beyond the mere acquisition of knowledge are most effective for supporting informed decision making, addressing psychosocial concerns of the PWD and encouraging meaningful behavior change.55,56 The curriculum content and delivery should be adapted as necessary for type of diabetes, age, race, ethnicity, sexual orientation, developmental stage, disabilities, SDOH, lived experiences, religion, culture, literacy level, comorbidities, and personal preferences, among others.57-61 Furthermore, culturally-tailored services have been shown to be effective in improving diabetes care outcomes.54,62 Moving beyond static lecture methodology, incorporating meaningful discussions to address individual needs, using interactive teaching styles, and fostering a culture of positivity within the DSMES services are recommended.

A curriculum provides guidance for the DSMES team, effective teaching strategies, and methods for evaluating learning outcomes and including all aspects of diabetes care.63-65 DSMES should integrate each of the content areas across topics rather than creating/focusing on a silo of content. The delivery of curriculum content must be dynamic, based on continuing assessment of need, preferences, and evaluation of outcomes.53,65-68
Recent education research endorses the inclusion of practical problem-solving and self-advocacy approaches, as well as collaborative care, including family and peer support, addressing psychosocial issues, behavior change, diabetes devices, and strategies to sustain self-management efforts. The ADCES7 Self-Care Behaviors™ is an evidence-based framework and outline to provide and document diabetes care and education that can be used in conjunction with the chosen curricula.

A DSMES curriculum must include the following core content areas, and content must be prioritized to meet the individual PWD’s current needs and goals:

- Pathophysiology of diabetes
- Healthy coping
- Healthy eating
- Being active
- Taking medication (treatment options including diabetes devices)
- Monitoring (including use of diabetes devices)
- Reducing risk (treating acute complications, such as hypoglycemia and hyperglycemia, and chronic complications, such as cardiometabolic, vision, hearing, dental, and foot care)
- Problem solving and behavior change strategies

DSMES follow up and ongoing support

While initial DSMES is necessary, it is not sufficient for sustaining a lifetime of diabetes self-management because initial improvements in outcomes have been shown to diminish six months after conclusion of the intervention. To maintain self-care behavior at the level needed to effectively sustain diabetes management over time, PWD benefit from ongoing diabetes self-management support. Ongoing support helps the PWD implement and sustain the ongoing skills, knowledge, coping and behavioral strategies needed to manage diabetes. Because family members and peers can be an effective resource for ongoing support but often don’t know how to help, it can be beneficial to include family members throughout the DSMES intervention. Connecting PWD to peer groups within the local or online community can encourage practical integration of diabetes self-management and psychosocial support into the existing daily routine between and beyond DSMES sessions.

Standard 5: Person-Centered DSMES

Standard Description
Person-centered DSMES is a recurring process over the life span for a PWD. Each person’s DSMES plan will be unique, based on their concerns, needs, and priorities collaboratively determined as part of a DSMES assessment. The DSMES team will monitor and communicate the outcomes of the DSMES services to the diabetes care team and/or referring provider.
To ensure that DSMES is addressing the current concerns, needs, and priorities of the PWD, DSMES should be assessed, provided or modified at the four critical times.\textsuperscript{3} The four critical times are at diagnosis, annually and/or when not meeting treatment targets, when complicating factors develop, and when transitions in life or care occur.\textsuperscript{3,63}

Every DSMES intervention should be a person-centered process that addresses timely education and supports individual needs throughout a person’s lifetime.\textsuperscript{3,63,78,79} A DSMES intervention can include individual and/or group sessions and is initiated with an assessment of the PWD’s current concerns, needs, and priorities to create a DSMES plan of care guided by the PWD’s preferred delivery method and timing. The DSMES plan is implemented through a series of sessions, utilizing a variety of methods, while supporting and tracking related outcomes to identify trends and reinforce effective self-management behaviors.\textsuperscript{3,63,78}

Communicating the progress and related outcomes to the PWD’s diabetes care team contributes to the continuum of person-centered collaborative care and assists in overcoming therapeutic inertia.\textsuperscript{63,80-82}

**Assessment**

To implement a person-centered DSMES plan, the DCES must closely work in partnership with each PWD to better understand how to (e.g., modality, content, and frequency) best suit that person. The assessment process is a collaborative conversation between a health care professional and the PWD to identify needs and agree on the PWD’s preferred educational and behavioral interventions that will be used to develop needed problem-solving, decision making and self-management skills and strategies.\textsuperscript{12,83}

The assessment incorporates information about the PWD’s health history, age, cultural influences, health beliefs and attitudes, diabetes knowledge, emotional response to diabetes, clinical needs, disease burden, ability, readiness to learn, diabetes self-management skills and behaviors, literacy level, physical limitations, family support, peer support (e.g., in person or via social networking sites), SDOH and health inequities (e.g., safe housing, transportation, access to nutritious foods, access to health care, financial status and limitations), and other potential promotors and barriers.\textsuperscript{19,43,80,84-88}

This information can be provided by the PWD as well as obtained from the health record/electronic health record (EHR) and identified support persons or caregivers. This information should be reviewed by the DSMES team to inform and promote person-centered understanding. The assessment process can be supported by a variety of collection/intake modalities, such as online assessments via consumer portals and EHR, tablet computers that integrate with EHR, text messaging, web-based tools, automated telephone follow-up, and remote monitoring tools.\textsuperscript{22,89-91} Although not an exhaustive list or applicable to all populations, examples of assessment tools can be found in Appendix 3.
While it would be ideal to have all this information before the first session, the realities of the health care environment often require providers to conduct focused assessments in specific areas throughout subsequent sessions of the DSMES intervention. After the initial assessment, ongoing assessments will be incremental over time based on individual need.\textsuperscript{3,92} A PWD’s concerns and needs change throughout their lifetime due to changes in physical and emotional health, cultural and religious practices, availability of food, ability to exercise, care support system, etc.\textsuperscript{43,80,85,92}

The assessment can also identify factors that affect the PWD’s ability to effectively manage their diabetes that go beyond the scope of practice of the DSMES team. For example, DSMES services play a critical role in closing gaps in care by helping to facilitate necessary referrals beyond DSMES that increase access to resources to assist the PWD.\textsuperscript{84,93-96}

\textit{Implementing person-centered DSMES sessions}

After the initial assessment, the PWD and DSMES team member(s) develop a person-centered DSMES plan. The ADCES7 Self-Care Behaviors\textsuperscript{TM,56} can be used as a base for documentation of the content areas and setting of behavior goals to promote continuity of care with all members of the DSMES team and across DSMES services. The content and teaching methods are drawn from the specific curriculum chosen by the DSMES team.

The DSMES team member(s) use person-centered and strengths-based plain language,\textsuperscript{97} jargon-free and culturally relevant information, language and literacy appropriate educational materials,\textsuperscript{98} and interpreter services when indicated.\textsuperscript{99} Evidence-based communication strategies, such as goal-setting, action-planning, empowerment-based principles and strategies, motivational interviewing, shared decision making, cognitive behavioral therapy, problem-solving, self-efficacy enhancement, teach-back method, and relapse-prevention strategies are also effective.\textsuperscript{73,100-103} The DSMES team will use non-judgmental, non-stigmatizing, and gender inclusive language when speaking and in writing with and about PWD.

The DSMES plan, sessions, and the outcomes of the intervention are documented in the DSMES record for each person. Documentation of each DSMES session, topics covered, and the outcome of the intervention provides evidence of person-centered DSMES and communication among other members of the person’s health care team. This also demonstrates adherence to documentation guidelines, all of which assist in long-term management and continuity of diabetes care, education, and support.\textsuperscript{104} Using technology tools and EHRs, in turn, increase access to information for all team members to work collaboratively and have access to documentation.\textsuperscript{105}

\textit{Supporting and tracking person-centered self-management outcomes}

Clinical outcome measures reflect the impact of the DSMES services on the health status of the PWD.\textsuperscript{106} To demonstrate the benefits of DSMES and/or the need for treatment plan adaptation, it is important for DSMES services to track relevant evidence-based individual outcomes, such
as knowledge, quality of life, health behaviors, clinical outcomes (e.g., A1C, hypoglycemia), and participant satisfaction. Use of patient-generated health data (PGHD) has rapidly increased with wearable devices and apps, and PGHD can assist in setting and tracking outcomes and goals. There is increasing adoption of PGHD diabetes devices, such as continuous glucose monitors (CGM). For example, CGM can assist PWD in setting and tracking behavioral and clinical outcomes with real-time feedback for indicators, such as glucose time in, below, or above range and glucose management index. Incorporating PGHD into decision making individualizes self-management and empowers PWD to fully engage in personal problem-solving towards evaluating and changing behaviors and improving outcomes.

It is crucial for each PWD to collaboratively develop action-oriented behavior change plans to reach their chosen behavioral goals and clinical targets. The DSMES team will explain and demonstrate psychosocial and behavior change strategies that can be used to help PWD meet their personal targets. The DSMES team provides support in problem solving during the goal-setting process. The ADCES7 Self-Care Behaviors™ can be used for documentation for setting and progress in behavior goals.

Person-centered self-management outcomes should be measured and tracked. For some areas, the indicators, measures, and timeframes will depend on evidence-based guidelines from professional organizations or government agencies.

**Standard 6: Measuring and Demonstrating Outcomes of DSMES Services**

*Standard Description*

DSMES services will have ongoing continuous quality improvement (CQI) strategies in place that measure the impact of the DSMES services. Systematic evaluation of process and outcome data will be conducted to identify areas for improvement and to guide services redesign and optimization.

To demonstrate the benefits of DSMES, members of the DSMES team need to track relevant individual PWD outcomes (Standard 5). Then, these individual outcomes are aggregated to report practice population outcomes. Examples include quality of life, diabetes distress, depression, behavioral and clinical outcomes, attendance, cost-savings, emergency room and hospital utilization, and satisfaction outcomes. The diabetes self-management education core outcomes measures specify behavior change as a key outcome, and the ADCES7 Self-Care Behaviors™ (i.e., healthy coping, healthy eating, being active, taking medication, monitoring, reducing risk, and problem solving) provide a useful framework for assessment, documentation, and evaluation. The DSMES team should select validated instruments or assessment tools (see Appendix 3) whenever possible and consider utilizing, contributing to, or reflecting upon assessment tools within their organization to accurately track progress and outcomes.

Service models that include population health and disease management, an interprofessional team, and ongoing social support improve both individual-level and aggregated practice-level
outcomes.\textsuperscript{3,118} Formal CQI strategies provide a framework to strive for excellence, quantify successes, and identify future opportunities. In addition, formal CQI strategies are best informed through stakeholder input and have been shown to improve diabetes outcomes,\textsuperscript{119} which in turn may be used as evidence to inform payment models and policy for support of DSMES services.

Quality improvement initiatives may target DSMES services at an individual practice, multicenter system, or national DSMES effort level.\textsuperscript{120} By measuring and monitoring both process and outcome data on an ongoing basis, the DSMES team can identify areas for improvement. They can then adjust engagement strategies and service offerings to optimize outcomes. Evaluation of reach, effectiveness, and adoption achieved via quality improvement initiatives generates evidence to support the business case for maintenance and/or expansion of the DSMES services. Positive results from quality initiatives can be used in marketing efforts and shared with the administration. A focus on quality is also part of overall health care quality initiatives. DSMES services can make a substantial impact on many of the measured outcomes, including the Medicare Access and Children's Health Insurance Program (CHIP) Reauthorization Act (MACRA) and the Quality Payment Program, which have shifted the focus of provider payment from unit of service to quality and outcomes. As an example of promoting quality as an outcome, participating clinicians can be rewarded based on annual pre-determined quality measure data, and requirements may change each performance year.\textsuperscript{121}

Once areas for DSMES services improvement are identified, timelines for data collection with internal audits for verification of data integrity, analysis, and presentation of results should be established.

Outcomes are broadly considered as process, clinical, behavioral, patient-reported, and PGHD. Examples for each of these outcome types are provided in Table 1. Process outcomes indicate what a provider does to maintain or improve health.\textsuperscript{106} They provide information to inform what will lead to desired behavioral and clinical outcomes improvement (e.g., attendance at DSMES sessions, medication taking behaviors, or preventive services involvement).\textsuperscript{122} Clinical outcomes indicate the result of the process (e.g., whether treatment or behavioral changes are leading to improvements, such as a change in A1C) and should align with the greater organizational performance measures, when applicable.

Table 1. Outcome Examples

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<tr>
<th>Outcome Type</th>
<th>Examples</th>
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<tr>
<td><strong>Process Outcomes</strong></td>
<td>Referral Process</td>
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<td>Patient Satisfaction</td>
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<td>Attendance</td>
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<td>Education Mapping</td>
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<td>Social Determinants of Health</td>
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<td>Education Timing (e.g., class times that meet the PWD needs)</td>
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<td><strong>Clinical Outcomes</strong></td>
<td>A1C</td>
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<td>Hypoglycemia Rates</td>
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<td>Pregnancy Outcomes</td>
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</table>
### Cholesterol Levels
- Body Mass Index
- Blood Pressure

### Psychosocial and Behavioral Outcomes
- Healthy Coping
- Healthy Eating
- Being Active
- Taking Medication
- Monitoring
- Reducing Risk
- Problem Solving

### Patient-reported Outcomes
- Health-related Quality of Life
- Diabetes-related Quality of Life
- Diabetes Distress
- Self-efficacy
- Functional Status
- Patient Experiences

### Patient Generated Health Data
- Glucose
- Time in Range (TIR)
- CGM Glucose Management Indicator (GMI)
- Activity, Steps
- Food/Beverage Intake
- Sleep
- Blood Pressure

Process outcome measures examine activities driving the most important outcomes of interest from the DSMES services perspective. Process outcome measures generally recommended for DSMES services are operational measures (e.g., characteristics of PWD receiving services, results of marketing efforts, attendance and factors impacting attendance, financial metrics including billing and reimbursement rates, co-pays, and facility fees, PWD and provider satisfaction, referrals to DSMES, and attainment rates for recommended diabetes-related surveillance testing). For DSMES services, SDOH must also be considered as process measures as elements of SDOH are deemed essential to achieving health equity from the individual PWD, program, and population health perspectives. 

A wide variety of methods can be used to guide quality improvement initiatives at the individual practice or system levels. The Institute for Healthcare Improvement suggests the Model for Improvement as a framework to guide improvement work. The model consists of three fundamental questions that should be answered by an improvement process: 1) “What are we trying to accomplish?” 2) “How will we know a change is an improvement?” and 3) “What changes can we make that will result in an improvement?” Evidence-based examples of such methods include the Plan-Do-Study-Act model, Six Sigma, Lean, workflow mapping, the Re-AIM framework, and the Chronic Care Model. There are resources available to assist those initiating quality improvement programs for the first time or for those looking for new options. The Centers for Disease Control and Prevention (CDC) DSMES Technical Assistance Guide and accompanying toolkit also provide guidance for planning and implementing activities to increase use of DSMES services and address quality improvement.
components. Quality and Performance groups at hospitals and in health systems are also a resource for those embarking on DSMES services Quality Improvement efforts.

**DISCUSSION**

In keeping with the theme of minimally disruptive medicine and the advancing role of the DCES, this revision of the National Standards focuses on clarifying key concepts and reducing administrative tasks associated with DSMES services that have little to no impact on person-centered outcomes. While the COVID-19 pandemic and public health emergency have had a major impact on health care systems, providers, and PWD, it is imperative that evidence-based solutions are supported, and every effort is made across government agencies, payers, and providers to empower and expand the role of and access to DSMES across the country. As we have learned from the disruption in all aspects of people’s daily lives from the COVID-19 pandemic, it is clear that structured DSMES programs do not benefit everyone, and delivery of evidenced-based, person-centered care is needed to drive quality outcomes. It also reinforces the importance of assessing diabetes related distress and addressing healthy coping strategies for effective self-management of diabetes. Alternative methods of delivery, such as one on one audio and audio-video contact, can also improve outcomes similar to in-person DSMES and allows the PWD to choose the option that best meets their needs and preferences.

Evidence supports an expanded role of the DCES as an effective change agent in overcoming therapeutic inertia. Research studies show that DCESs can support intensification of treatment plans to achieve glycemic, blood pressure, and lipid targets through the implementation of diabetes management protocols.\(^{127}\) Furthermore, a recent systematic review and meta-analysis adds to the growing body of evidence that nonphysician providers, such as the DCES are well positioned and should be empowered to initiate and intensify treatment plans when supported by appropriate guidelines.\(^{17}\) Use of digital technology (cloud-based, telehealth, data management platforms, apps, and social media) enhances the ability to employ a technology enabled self-management feedback loop with four key elements: two-way communication, analysis of PGHD, customized education, and person-centered feedback to provide real-time engagement in self-management, as well as enable and empower PWD.\(^{22}\) While technology can aid in better outcomes, it may require additional assessment and judgement to determine if there are barriers to use and if those barriers can be overcome.\(^{128,129}\)

On a final note, implementation science is an emerging and cost-effective way to study real world methods that promote integration of research and evidence into practice and policy.\(^{130}\) DSMES is an area well established for healthcare professionals to evaluate a robust body of evidence to evaluate outcomes, reduce costs, and decrease health disparities.
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Appendix 1. Guiding Principles for the 2022 National Standards Revision

The following summarizes the restructuring of the 2022 National Standards:

- Standards 1 and 2 were consolidated. The Task Force determined that standard 2’s advisory group is another form of support that can be utilized to assist in providing guidance and support for DSMES services to facilitate alignment with organizational resources and the needs of the community being served. Standard 3 evaluates the population served or planned to serve and the resources, personnel, and method of delivery to serve these populations. Standards 4 and 5 were consolidated as they both define the DSMES team, and much of the language in the two standards was repetitious.

- Standards 6 and 8 were consolidated because both standards identify the delivery and design of the content for DSMES. Standards 7 and 9 were consolidated because both standards define the elements of the person-centered participants’ DSMES cycle. Consolidation of the standards also helps clarify and streamline the required DSMES documentation while ensuring that person-centered care for the DSMES participant is placed over paperwork.

- Standard 10 was streamlined to include Quality Improvement specifically for the DSMES service.

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Appendix 2. Glossary of Terms

Assessment. A process to gather information about the individual’s current concerns, needs, and priorities to create a DSMES plan of care guided by the PWD’s preferred delivery method and timing. The DSMES assessment must be completed by a health care professional. See Appendix 3 for examples of validated assessment tools that may or may not require a fee for use.

Behavioral goal setting. The practice of identifying health behaviors to modify, setting a target to reach, and planning a course to achieve the target.

Culture. “Culture is often described as the combination of a body of knowledge, a body of belief, and a body of behavior. It involves several elements that are often specific to ethnic, racial, religious, geographic, or social groups. This includes personal identification, language, thoughts, communications, actions, customs, beliefs, values, and institutions.”\(^{131}\)

Diabetes community care coordinator. A person with a non-medical background who can provide support as part of a diabetes care team.

DSMES intervention. A DSMES intervention refers to all encounters, engagement, and interactions with the PWD. A DSMES intervention includes individual and/or group sessions and is initiated with an assessment of the individual’s current concerns, needs, and priorities to create a DSMES plan of care guided by the PWD’s preferred delivery method and timing. The DSMES plan guides the delivery of sessions, utilizing a variety of methods, while supporting and reinforcing positive self-care behaviors.

DSMES services. Services replaced the terminology of ‘program’ in the 2017 National Standards, as program, indicates a set of structured activities. When focusing on the needs of an individual, this term is no longer relevant. The use of DSMES services more clearly delineates the need to individualize and identify the elements of DSMES appropriate for an individual.

DSMES session. A DSMES session includes one encounter/visit, whether in person, over the phone or virtually occurring in a group or individually with the PWD and a member of the DSMES team in real time.

DSMES stakeholder. Anyone involved in or affected by the financing, implementation, or outcome of a service, practice, process, or decision made by another—e.g., health care, health policy. Examples of stakeholders with interest in health care are providers, patients (health care consumers), payers, etc.

Electronic health records (EHR). The digital version of a patient’s chart, also referred to as electronic medical record (EMR). EHRs are available in real time and available to patients and their care team immediately.

Interprofessional team. “An interprofessional team is comprised of team members from two or more different professions (e.g., nurses and physicians, physicians and community health workers, social workers and psychologists, pharmacists and respiratory therapists) who learn
with, from, and about each other to enable effective collaboration and improve health outcomes.”

**Patient-generated health data (PGHD).** “Patient-generated health data (PGHD) are health-related data created, recorded, or gathered by or from patients (or family members or other caregivers) to help address a health concern.”

**Patient-reported outcomes (PRO).** “Any information providing the status of a patient’s health outcome which comes directly from the patient without interpretation of that patient’s response by a clinician or anyone else.”

**Person- and family- centered care.** “Care that involves persons living with multiple chronic conditions and their families in every decision, and that empowers them to be partners in their own care.”

**Preference.** “Qualitative or quantitative statement of the relative desirability or acceptability of attributes that differ among alternative health interventions. Preference refers to the tradeoffs that individuals consider or exhibit in making decisions or choices for themselves.”

**Promotores.** “Promotores and Community Health Workers are liaisons (links) between their communities and health and social service providers. Because they share the same language, culture, ethnicity, status and experiences of their communities, Promotores are able to reduce the barriers to health education and services that are common for native-born and immigrant communities.”

**Sexual orientation.** “An inherent or immutable enduring emotional, romantic or sexual attraction to other people.”

**Shared decision making.** “Shared Decision Making (SDM) is a key component of person-centered health care. It is the process in which clinicians and patients work together to make decisions.”

**Social determinants of health (SDOH).** “Social determinants of health are the conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks.”

**Sponsor organization.** Person or entity (organization) that sponsors Medicare billing and reimbursement for DSMES services. For DSMES services billing Medicare, a Part B supplier with an NPI# must be listed as a sponsor. The sponsor also supports long term sustainability of the DSMES services for those who do not bill Medicare for DSMT.

**Therapeutic inertia.** “Failure to advance therapy or to de-intensify therapy when appropriate to do so.”

**Tool.** An instrument, measure, questionnaire, or survey used in practice to collect information from a person.
Appendix 3. Example Assessment Tools

General Self-Care
- Summary of Diabetes Self-Care Activities (SDSCA)
  - An 11-item or expanded 25-item measure of diabetes self-care behaviors.\textsuperscript{142}
- Self-Care Inventory-Revised (SCI-R)
  - A survey that measures what people with diabetes do, versus what they are
    advised to do in their diabetes treatment plan.\textsuperscript{143}

Psychosocial
- The Diabetes Distress Scale (short form)
  - A two-question initial screening tool to assess diabetes-specific distress (followed
    by the full 17-item scale when indicated).\textsuperscript{144}
- Problem Areas In Diabetes (PAID)
  - A 20-item measure of diabetes-specific distress identifying emotional distress
    and burden associated with diabetes\textsuperscript{145} (pediatric, teen, and parent versions\textsuperscript{146-148}
    are also available).
- Generalized Anxiety Disorder Scale (GAD-7)
  - A 7-item measure to screen persons for generalized anxiety disorder.\textsuperscript{149}
- Patient Health Questionnaire (PHQ-9)
  - A nine-item measure to assess depressive symptoms over the past two
    weeks.\textsuperscript{150}
- Diabetes Strengths and Resilience Measure (DSTAR)
  - A 12-item, self-report measure of adaptive attitudes and behaviors related to
    living with type 1 diabetes.\textsuperscript{151}
- Diabetes Self-Efficacy
  - An eight-item self-report scale designed to assess confidence in performing
    diabetes self-care activities.\textsuperscript{152}

Social Needs
- The Social Needs Screening tool
  - A 15-item measure for five core health-related social needs (housing, food,
    transportation, utilities, and personal safety). The tool is available within the
    EveryONE Project Toolkit from the American Academy of Family Physicians.\textsuperscript{153}

Quality of Life
- The WHO-5 Brief Quality of Life survey
  - Validated in many languages, is a reliable measure of emotional functioning and
    screen for depression and has been used extensively in research and clinical
    care,\textsuperscript{154} including the DAWN2 study (Diabetes Attitudes Wishes and Needs 2).\textsuperscript{155}

Eating Habits
- Starting The Conversation (STC)
  - An eight-item simplified food frequency instrument designed for use in primary
    care and health-promotion settings.\textsuperscript{156}

Medication Taking
- Adherence Starts with Knowledge (ASK-12)
  - A 12-item measure of medication taking behaviors and barriers to medication
    taking.\textsuperscript{157}
Health Literacy
  • Three-Item Screen
    o A tool to measure health literacy. It asks how often someone needs help reading hospital materials, how confident they are filling out forms, and how often they have difficulty understanding their medical condition.\textsuperscript{158}