

position STATEMENT

Standards for Outcomes Measurement of Diabetes Self-Management Education

American Association of Diabetes Educators

This is an official position statement of the American Association of Diabetes Educators (AADE). AADE is dedicated to advancing the role of the diabetes educator and improving the quality of diabetes education and care.

AADE Board approval: June 2002



**AMERICAN ASSOCIATION
OF DIABETES EDUCATORS**

The primary purposes (goals) of diabetes education are to provide knowledge and skill training, help individuals identify barriers, and facilitate problem solving and coping skills to achieve effective self-care behavior and behavior change. It is the position of the American Association of Diabetes Educators (AADE) that all educators should measure both individual and aggregate patient self-care behaviors at a minimum of preintervention and postintervention. Additional follow-up measurements are ideal and should be applied as appropriate to the practice setting. Through adoption of a core measurement set, educators will be able to determine their effectiveness with individuals and populations, compare their performance with the established benchmarks, and establish the unique contribution that diabetes self-management education (DSME) plays in the overall context of diabetes care. The AADE “Standards for Outcomes Measurement of Diabetes Self-Management Education” are intended to complement the 2000 “National Standards for Diabetes Self-Management Education”¹ and build on the foundation of structure and process that has already been well established. In particular, the AADE outcomes standards will support Standards 7 and 10 of the 2000 “National Standards for DSME”¹ (Figure 1).

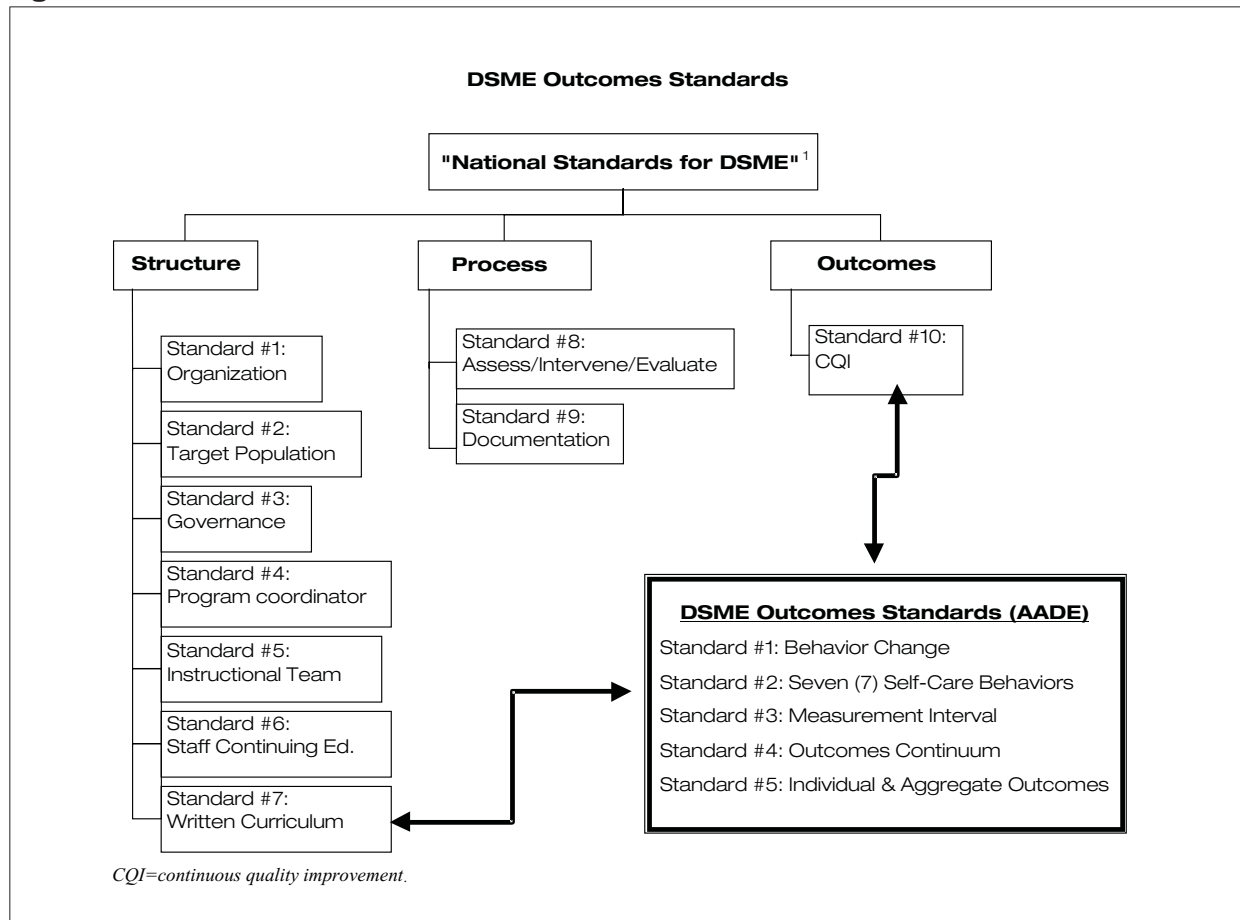
BACKGROUND

Diabetes education has long been held to be the cornerstone of effective diabetes care. Since 1986, the National Standards for DSME have quantified the processes and

structure that result in quality diabetes education programs. The importance of evaluating the quality of DSME has been addressed in all versions of the National Standards. The advisory process, annual review of program objectives, and requirement for patient-focused behavioral objectives are examples of the strong evaluative and outcomes-oriented direction established by the standards. In spite of the historically strong emphasis on outcomes and program evaluation, there remains an absence of specifically defined indicators for what the outcomes of diabetes education are, and no direction regarding how to measure the educational outcomes. When diabetes educators are asked to describe the attributes of effective education, there is great variation in their responses.² Consequently, diabetes educators are left with little specificity in what those measures should be. At the 1999 AADE Research Summit, an important question was asked: “Is diabetes education effective and what methods are the best?” Answers such as “It depends” led to additional questions concerning what treatment, for what population, delivered by whom, under what set of conditions, and, ultimately, for what outcome?³ The 2002 “National Standards for DSME”⁴ continued the evolution toward addressing the importance of measuring aggregate outcomes through the application of continuous quality improvement (CQI) in program evaluation. The importance of using outcomes of both patient behavior and other clinical measures to identify the need for revising and improving program services and interventions was

position STATEMENT

Figure 1.



clearly addressed and based on scientific evidence. Although this was an important aspect of establishing DSME as an evidenced-based practice, the logical progression is to identify and define what indicators should be measured. Once specific outcomes of DSME are defined, measured consistently at specific time intervals, and used to guide or support interventions at an individual level, they can be aggregated. The aggregation of outcomes involves pooling, collating, and analyzing outcomes from multiple individuals. Subpopulations are formed at every level of aggregation that can, in turn, be pooled into larger populations. For example, population-based outcomes may exist for a specific program service, a specific DSME site, or a

multisite DSME program. As with using outcomes measurement to guide an intervention on an individual level, population-based outcomes measurement can be used to monitor and improve DSME at a program level.

WHY POPULATION OUTCOMES MEASUREMENT IS CRITICAL TO THE SUCCESS OF DSME

Population-based evaluation is critical to the future of diabetes self-management education programs. The effectiveness of interventions must be documented to have a better understanding of which interventions are most appropriate for a given population. Some advantages of measuring outcomes include the following⁵:

- Informs the practice about the effectiveness of specific interventions
- Informs patients about their health status
- Identifies processes or practice guidelines that will improve patient care
- Provides economic information for the health system
- Identifies high-risk patients
- Informs the payer of the effectiveness of a program

The success of DSME programs will ultimately be based on a process of consistent measurement of specific indicators (outcomes measurement), the frequency and interval of measuring these indicators (outcomes monitoring), and how these outcomes are used

position STATEMENT

Table 1.

Standards for Outcomes Measurement of Diabetes Self-Management Education

1. Behavior change is the unique outcome measurement for diabetes self-management education.
2. Seven diabetes self-care behavior measures determine the effectiveness of diabetes self-management education at individual, participant, and population levels (see Table 2).
3. Diabetes self-care behaviors should be evaluated at baseline and then at regular intervals after the education program.
4. The continuum of outcomes, including learning, behavioral, clinical, and health status, should be assessed to demonstrate the interrelationship between DSME and behavior change in the care of individuals with diabetes.
5. Individual patient outcomes are used to guide the intervention and improve care for that patient. Aggregate population outcomes are used to guide programmatic services and for continuous quality improvement activities for the DSME and the population it serves.

DSME=diabetes self-management education.

to drive educational and clinical decision making (outcomes management). All of these must be achieved in a cost-effective manner and must occur for both the individual and the population.

FEDERAL AND ACCREDITATION AGENCIES IN DIABETES

The need to examine outcomes in diabetes care has been heavily influenced by mandates from the Center for Medicare and Medicaid Services (CMS) and the Agency for Healthcare Research and Quality (AHRQ), as well as accrediting bodies such as the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), the National Council on Quality Assurance (NCQA), and the American Diabetes Association (ADA) Provider and Education Recognition programs.⁶⁻¹⁰ For the most part, the accountability standards from these agencies only reference DSME as a process measure of whether the education was done, and in many cases it is not even mentioned. To evaluate performance, we must not only evaluate what the diabetes education service delivers (process) but also what it is able to achieve (outcomes). Therefore, it is incumbent upon the AADE to clearly define new standards of outcomes measurement for diabetes education that are

Table 2.

Diabetes Self-Care Behaviors

1. Being active: physical activity (exercise)
2. Eating
3. Medication taking
4. Monitoring of blood glucose
5. Problem solving especially for blood glucose: high and low levels, and sick days
6. Reducing risks of diabetes complications
7. Living with diabetes (psychosocial adaptation)

practical, feasible, informative, and consistent across DSME programs (Table 1).

DSME OUTCOMES STANDARD 1 Behavior change is the unique outcome measurement for diabetes self-management education.

The fundamental goal of DSME is to prepare participants to make informed decisions, engage in effective diabetes self-management, and implement self-care behaviors that allow individuals to maximize their physical and psychological well-being.

Outcomes measurement for diabetes education has primarily focused on program evaluations

of the structure and process of services.¹¹ Lack of definition of outcomes specific to diabetes education has led to the use of metabolic measures such as hemoglobin A1c (A1C) as a determinant of success for diabetes programs. Diabetes education affects these metabolic outcomes but so do other factors such as medical management and participant involvement in self-care.¹²⁻¹⁴ The educational process is not solely accountable for glycemic control, which is influenced largely by factors that may not be within the educator's or participant's control. In fact, as important as glycemic control is to the overall health of an individual with diabetes, there are multifaceted contributors, including physician counseling, participant knowledge and behavior, educators and other health team interventions, prescribed therapies,

position STATEMENT

and environmental factors that may be outside any individual's control.

Diabetes demands daily self-management, and people with diabetes generally need to make lifestyle modifications to achieve successful glycemic control. These behavior changes often require training and ongoing support, which are central to DSME. Therefore, behavior change for diabetes self-management activities is directly affected by the education and is an indicator of overall program achievement.

DSME OUTCOMES

STANDARD 2

Seven diabetes self-care behavior measures determine the effectiveness of diabetes self-management education at individual participant and population levels.

Based on an extensive review of the literature and expert consensus, 7 health-related self-care behaviors have been identified as the unique and measurable outcomes of effective diabetes education.^{11,15-17} The paradigm for diabetes education has shifted from a content-driven practice to an outcomes-driven practice.¹⁸ Educators no longer only ask, "Did we deliver the right content?" but also "Did the patients achieve their desired outcomes?" The AADE Outcomes Task Force categorized these self-care behavior changes into 7 domains with outcomes.^{19,20}

Individual Level

Educator assessment of the individual participant should include all 7 behaviors and, depending on the treatment plan, the outcomes that

are tracked for those behaviors that are relevant. It is not cost effective in terms of time and effort to track behaviors that are not relevant or on which the participant is doing well, except as a periodic assessment. Each behavior is important to the overall management of diabetes. However, one or more behaviors become the focus depending on participant choice, situation, idiosyncratic factors, readiness, level of disease, support resources, and barriers present. For each self-care behavior, the individual participating in DSME has specific knowledge, skills, and barriers. Effective use of self-care knowledge and skills requires the formulation of collaboratively established patient-specific goals. For example, it is not enough to teach someone about dietary principles and then suggest that they eat properly or follow a standard diet. Individuals may decide that they want to limit the intake of certain foods but not others, or they may decide that one food would be an acceptable substitute for another. Treatment recommendations must be tailored to the particular individual, and this requires the participant to set specific behavioral goals that they choose to work toward.

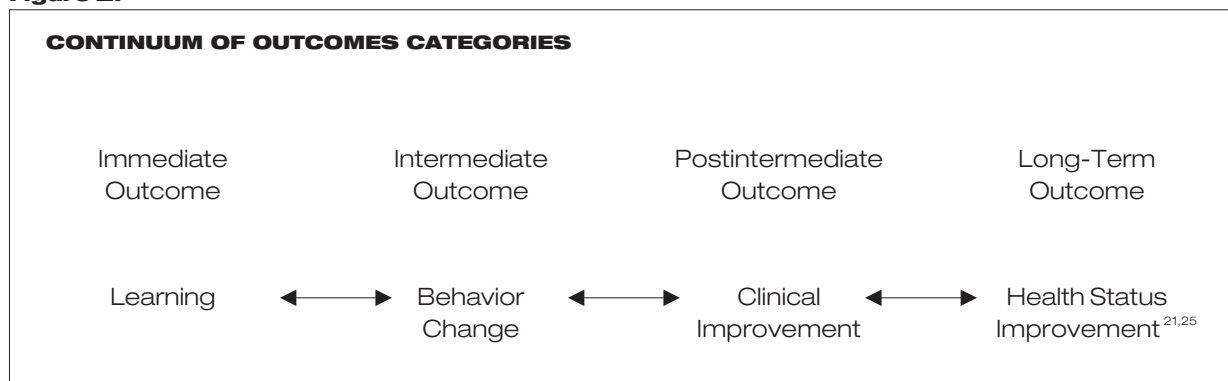
The person with diabetes identifies a specific priority for change, and the educator should use this priority to guide the education plan and intervention. Individuals experience barriers when implementing self-care goals. With each priority for change, barriers must be assessed. As barriers are identified, the educator works with the participant to problem solve for resolution or to identify coping

strategies to be used when the circumstances cannot be changed. These barriers may be cognitive (attitudes and beliefs), social (lack of support), financial (lack of resources), medical (regimen demands), physical (vision), and environmental (safety).²¹ Most factors that inhibit effective self-care can be regarded as barriers (eg, lack of self-efficacy and no safe place to exercise). Although it may not be possible to eliminate barriers, one important purpose of comprehensive DSME is to help participants find ways to overcome these roadblocks to effective self-care. Sometimes this may involve helping the person identify different behavioral steps to achieve the goal or setting a different plan, such as doing indoor calisthenics rather than outdoor exercise such as walking. At other times, overcoming roadblocks may involve addressing factors that are associated with the behaviors, such as helping family members to be more supportive. Addressing barriers generally requires developing behavioral strategies, such as learning how to remember to test blood or take medications, how to overcome or avoid embarrassment, and how to avoid becoming demoralized by lapses in self-care or fluctuations in glycemic control.

As participants achieve initial goals they may set new goals.²¹ DSME has not been completed if patients have not been provided with an opportunity to apply the knowledge and skills they have developed. Educators have the specialized skills to help patients determine actions that are likely to produce the desired effects,

position STATEMENT

Figure 2.



and, in helping to identify achievable goals and strategies for their attainment, educators foster patient success.

Program/Population Level

At the program level, one or more of the population behavioral outcomes should be tracked for quality improvement and program evaluation efforts. Determining which behavior to track and for how long may be based on administrative, operational, and regulatory purposes. See DSME Outcomes Standard 5 for more details.

DSME OUTCOMES

STANDARD 3

Diabetes self-care behaviors should be evaluated at baseline and then at regular intervals during and after the education program.

Depending on the structure of the program, preprogram and post-program measurement may be adequate. Optimal measurement of population behavior change may vary with the behavior. However, evaluation intervals of 3 to 6 months are appropriate in most practice settings. The interval of measurement for individual participants must be customized to their unique management plan and needs, recognizing that behavior change needs to be practiced for at least 2 weeks before reevaluation and should be differentiated from

simple skill acquisition. The interval of measurement for program/aggregate data is usually determined by internal and external organizational factors, such as operational demands of the parent organization, external accrediting and regulatory bodies, and quality improvement efforts.

Many clinical measures have been standardized and validated. Clinicians and educators can use these measures with confidence that they are meaningful. Some behavioral, psychosocial, and attitudinal measures have also been validated. This means that they have met scientific standards for reliability (the measure yields consistent results), validity (it measures what it purports to measure), and sensitivity (it is able to distinguish one state from another). Most educators and clinicians would not develop their own clinical measure (eg, a new measure of glycemic or blood pressure control) because they understand the scientific effort required to do so. Developing an acceptable behavioral measure requires scientific expertise, and most educators and clinicians may not be qualified or may not have the resources to undertake such an effort. Therefore, it is recommended that persons seeking to measure behavioral outcomes should make use of preexisting measures that

have been shown to have the desirable properties of reliability, validity, and sensitivity. There may be many such measures for any particular outcome. However, using one of these measures is more important than whether one selects the single best measure.

DSME OUTCOMES

STANDARD 4

The continuum of outcomes, including learning, behavioral, clinical, and health status, should be assessed to demonstrate the interrelationship between DSME and behavior change in the care of individuals with diabetes.

There are multiple types and levels of outcomes for DSME. When the system of diabetes education and care is evaluated incrementally, a continuum of outcomes categories emerges. Figure 2 illustrates a simple model of this continuum with feedback loops.^{19,22,23}

Immediate outcomes are those that can be measured at the time of the intervention. Learning can be assessed by testing or direct observation after the DSME intervention. Intermediate and postintermediate outcomes result over time, require more than a single measurement, are sensitive to change, and may show a statistical change. Behavior changes result

position STATEMENT

from participant self-management activities and the DSME process, and can be measured through self-report. Clinical improvement results from DSME, participant self-management, and clinical management, and can be measured with laboratory and procedural testing. Long-term health status outcomes result from multiple variables over an extended time. The educator works collaboratively with the participant to maintain healthy self-management behaviors, which influence quality of life and health status improvement.²⁰

Learning Outcomes

One of the goals of diabetes education is to improve overall health status by empowering the person with diabetes to

- Acquire knowledge (*what to do*)
- Acquire skills (*how to do it*)
- Develop confidence and motivation to perform the appropriate self-care behaviors (*want to do it*)
- Develop the problem-solving and coping skills to overcome any barriers to self-care behavior (*can do it*)

A central purpose of DSME is to help patients make informed decisions and to facilitate their self-care behavior. However, there are several more immediate objectives that contribute to the behavior changes. The immediate objective of DSME is to help participants develop self-care knowledge and skills to achieve self-care behavior and, in turn, enhance well-being. Yet, all of these factors are important only to the degree that they facilitate individuals achieving their diabetes self-care goals.

Teaching knowledge for its own sake is not consistent with the fundamental goal of DSME. Moreover, failure to address the other essential elements of behavior change results in incomplete and ineffective DSME.

Clinical Outcomes

In the overall context of diabetes care, self-care behaviors, along with appropriate therapeutic regimens, can enhance clinical status, reduce diabetes complications, and improve health status. Educators play an important role in monitoring the patient's clinical status and in recommending or referring for appropriate clinical tests or interventions. Some examples of clinical measures are A1C, blood pressure, body mass index, lipids, dilated eye exam, and foot exam.

Health Status Outcomes

The goal of all diabetes care is improved overall health status. This improvement can result in quality-of-life and economic benefits for people with diabetes as well as for society as a whole.²⁵

DSME OUTCOMES

STANDARD 5

Individual patient outcomes are to be used to guide the intervention and improve care for that patient.

Aggregate patient outcomes are to be used to guide programmatic services and for continuous quality improvement activities for DSME and for the population served.

Central to measuring quality improvement is having variables related to quality that are measured consistently, longitudinally, and at appropriate intervals. These quality

indicators must also promote changes in practice. The unit of measurement, the purpose of measurement, and the consumer of the information largely drive outcomes measurement for accountability. Performance measurement for accountability is driven by what is measurable and accessible. Thus, accountability measures are generally guided by larger accreditation agencies that serve provider organizations or health plans, such as the NCQA and the JCAHO. Recommended diabetes measures to evaluate and benchmark performance are often laboratory measurements that monitor processes and that are widely documented and obtainable, as well as process measures such as whether an annual eye exam occurred. In some instances, these same accountability measurements are used for assessing quality but may not influence quality performance or improvement.

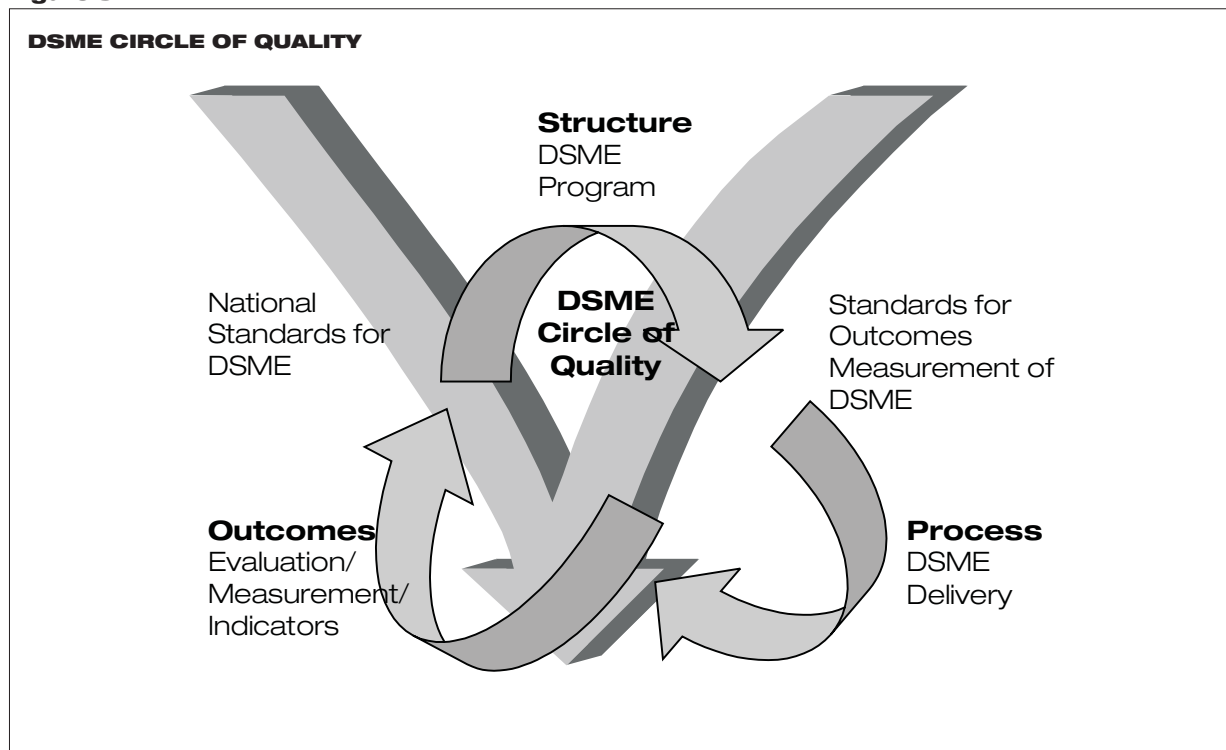
Applying CQI to daily operations is an important organizational decision because all of the staff, not just the manager, are committed to its application. Implementing a CQI program for DSME is one of the National Standards for DSME as defined in Standard 10⁴ and adopted by the ADA Education Recognition Program.⁹ Setting targets for educational, behavioral, and clinical outcomes is an important function of quality programs.

CONCLUSIONS

In this day of evidenced-based medicine, diabetes educators must gather the evidence to support their practices and modify their approaches in response to the evidence. Applying the new AADE Standards for Outcomes Measurement of Diabetes Self-Management

position STATEMENT

Figure 3.



Education will provide the educator with the tools to understand what is working and what is not working. As the profession of diabetes education matures, we must establish our own core of knowledge about our practice. The 5 DSME Outcomes Standards will complement the foundation of the 2000 “National Standards for Diabetes Self-Management Education”¹ to create a full circle of quality in the delivery of education and care to people with diabetes (Figure 3). It is only

with the clear understanding and adoption of standards and core measures for DSME outcomes measurement that the profession will progress to a level of maturity that establishes DSME as an essential therapeutic intervention in the care of people with diabetes.

DEVELOPMENT OF THIS DOCUMENT

This position statement was developed by a multidisciplinary task force of the American Association of Diabetes Educators. The

following members were selected for their expertise, professional discipline, and geographical location to ensure a broad representation of perspectives and practices.

Position Paper Writing Team

Kathy Mulcahy, RN, MSN, CDE
(Chair)
Melinda Maryniuk, RD, MEd,
CDE
Malinda Peebles, RN, MS, CDE
Mark Peyrot, PhD
Donna Tomky, RN, MS, C-ANP,
CDE
Todd Weaver, MPH, PhD
Peggy Yarborough, RPh, MS,
BC-ADM, CDE

Position Paper Reviewers

Bob Anderson, EdD, CDE
Martha Funnell, RN, MSN, CDE
Carole Mensing, RN, MEd, CDE
Maggie Powers, RD, MS, CDE
Richard Rubin, PhD, CDE
Russ Glasgow, PhD
Lois Mauer, RD, MS, CDE
Linda Edwards, RN, MHS, CDE
Gary Arsham, MD, PhD
Linda Haas, MN, RN, CDE, PhC

REFERENCES

- Mensing C, Boucher J, Cypress M, et al. National standards for diabetes self-management education. *Diabetes Care*. 2000;23: 682-689.
- Tomky D, Weaver T, Mulcahy K, Peebles M. Diabetes education outcomes: what educators are doing. *Diabetes Educ*. 2000;26:951-954.
- American Association of Diabetes Educators. Diabetes Educational and Behavioral Research Summit. *Diabetes Educ*. 1999; 25(suppl).
- Mensing C, Boucher J, Cypress M, et al. National standards for diabetes self-management education. *Diabetes Care*. 2002;25(suppl 1):140-S147.
- Mulcahy K. Management of diabetes education programs. In: Franz MJ, ed. *A Core Curriculum for Diabetes Education. Diabetes Education and Program Management*. 6th ed. Chicago: American Association of Diabetes Educators; 2003.

position STATEMENT

- 6.** Health Care Finance Administration. Medicare Program. Expanded coverage for outpatient diabetes self-management training and diabetes measurements. 42 Federal Register 410.44 (2000).
- 7.** Diabetes outcomes research. Available at: <http://www.AHRQ.org>.
- 8.** Joint Commission on Accreditation of Health-care Organizations. Framework for improving performance. Oakbrook Terrace, Ill: Joint Commission on Accreditation of Health Care Organizations; 1994.
- 9.** Common diabetes outcome measures. Available at: <http://www.NCQA.org/communication/news/commonmeasures>.
- 10.** American Diabetes Association Provider Recognition Program. Available at: <http://www.diabetes.org>. Accessed June 2000.
- 11.** Glasgow RE, Osteen VL. Evaluating diabetes education; are we measuring the most important outcomes? *Diabetes Care*. 1992;15:1423-1432.
- 12.** Brown SA. Interventions to promote diabetes self-management: state of the science. *Diabetes Educ*. 1999;25(suppl):52-61.
- 13.** Glasgow RE. Outcomes of and for diabetes education research. *Diabetes Educ*. 1999;25(suppl):74-88.
- 14.** Peyrot M. Behavior change in diabetes education. *Diabetes Educ*. 1999; 25(suppl):62-73.
- 15.** Brown SA. Predicting metabolic control in diabetes: a pilot study using meta-analysis to estimate a linear model. *Nurs Res*. 1994;43:362-368.
- 16.** McGlynn E. Choosing and evaluating clinical performance measures. *Joint Commission*. 1998;24:470-479.
- 17.** Peyrot M, Rubin R. Modeling the effect of diabetes education on glycemic control. *Diabetes Educ*. 1994;20:143-148.
- 18.** Mulcahy K. Architects of the diabetes team. *Diabetes Educ*. 1999;25:161-162.
- 19.** Peeples M, Mulcahy K. Diabetes education outcomes and measurements. *AADE News*. 1998;25(6):4-5.
- 20.** Peeples M, Mulcahy K, Tomky D, Weaver T. The conceptual framework of the National Diabetes Education Outcomes System (NDEOS). *Diabetes Educ*. 2001;27:547-562.
- 21.** Bandura A. Self-efficacy: toward a unifying theory of behavior change. *Psychol Rev*. 1977;84:191-215.
- 22.** Mulcahy KA, Peeples M, Tomky D, Weaver T, Upham P. National Diabetes Education Outcomes System: application to practice. *Diabetes Educ*. 2000;26:957-964.
- 23.** Weaver T. Measuring outcomes: what, when, why, and how. *ADA: On the Cutting Edge [newsletter]*. 2000;6:6-8.
- 24.** American Association of Diabetes Educators (AADE) Outcomes Measurement Task Force. National Diabetes Education Outcomes System: Diabetes Educator Outcomes Guide. Chicago, Ill: American Association of Diabetes Educators; 1999.
- 25.** Ratner RE. Long-term health care outcomes in diabetes. Economic and political implications. *Endocrinol Metab Clin North Am*. 1997;26:487-498.