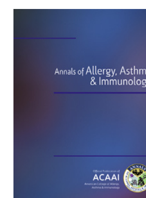
Ann Allergy Asthma Immunol 114 (2015) 178–186

Contents lists available at ScienceDirect



Special Article

National standards for asthma self-management education

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A R T I C L E I N F O

Article history:
Received for publication December 9, 2014.
Accepted for publication December 15, 2014.

A B S T R A C T

Background: Asthma education reimbursement continues to be an issue in the United States. Among the greatest barriers is the lack of a standardized curriculum for asthma self-management education recognized by a physician society, non-physician health care professional society or association, or other appropriate source. The applicable Current Procedural Terminology codes for self-management education and training are 98960 through 98962, stating that "if a practitioner has created a training curriculum for educating patients on management of their medical condition, he or she may employ a non-physician health care professional to provide education using a standardized curriculum for patients with that disease." Without a standardized curriculum, reimbursement from payers is beyond reach.
Objective: Representatives from the Joint Council of Allergy, Asthma, and Immunology; American College of Allergy, Asthma, and Immunology; American Academy of Allergy, Asthma, and Immunology; American Lung Association; American Thoracic Society; National Asthma Educator Certification Board; American College of Chest Physicians; and Association of Asthma Educators gathered to write a standardized curriculum as a guideline for payer reimbursement.
Methods: The Task Force began with a review of the American Lung Association and American Thoracic Society's *Operational Standards for Asthma Education*. Board members of the National Asthma Educator Certification Board incorporated comments, rationale, and references into the document.
Results: This document is the result of final reviews of the standards completed by the Task Force and national health care professional organizations in September 2014.
Conclusion: This document meets the requirements of Current Procedural Terminology codes 98960 through 98962 and establishes the minimum standard for asthma self-management education when teaching patients or caregivers how to effectively manage asthma in conjunction with the professional health care team.
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Problem Statement

Asthma education is an integral part of effective asthma management. *Healthy People 2020* "calls for an increase in the proportion of persons with current asthma who receive appropriate asthma care according to National Asthma Education and Prevention Program (NAEPP) guidelines—which includes increasing the proportion of persons with current asthma who receive written asthma management plans; receive instruction on use of prescribed inhalers; receive education about recognition of early signs and symptoms of an asthma episode and appropriate responses; and advisement to reduce environmental/allergen exposure as appropriate."[1] Clark and Partridge[2] in a literature review discussed the negative and positive influences on patients' ability to manage their asthma, potential barriers to effective behavioral and educational strategies, and 5 clinician actions to

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Disclosure: Dr Brown receives honoraria from, is on the education committee of the Association of Asthma Educators, has received a dean's grant, and is on the Association of Asthma Educator's Speaker Bureau.
Disclaimer: Although representing the American College of Chest Physicians during the original development of the document, neither Lynne Marcus nor Diane Krier-Morrow has any affiliation with the organization at the time of publication.

http://dx.doi.org/10.1016/j.anai.2014.12.014
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make asthma patient education more effective. The most recent Cochrane review of asthma self-management education (AS-ME) reported on numerous controlled trials that provide evidence of positive changes in patient-centered outcomes related to educational and behavioral interventions.[3]

There is a need for an adequate supply of competent and knowledgeable people to provide asthma education. The National Asthma Educator Certification Examination, a national, psychometrically validated, process for certifying individuals to provide effective asthma education is one approach to ensuring educators demonstrate appropriate competencies.[4] Qualified personnel are essential to the success of an asthma self-management education program. Because asthma is a chronic disease often requiring lifestyle changes, skilled and experienced instructors need to be up-to-date on current asthma management standards, educational principles, and behavior change strategies. In asthma self-management, the patient is required to perform any number of skills and behaviors, such as assessing symptoms and deciding on the most beneficial action to manage changes in symptoms. Asthma education programs should be organized and conducted to encourage involvement of a multidisciplinary team in health behavior change, education, and health care (eg, physician, physician assistant, nurse practitioner, nurse, pharmacist, health educator, respiratory therapist, social worker, and trained lay volunteer).[5]

Procedure for Development

The Task Force was charged with developing national standards for AS-ME (SAS-ME) programs, and the process for accomplishing that charge follows:

- examine the Task Force to ensure adequate representation of its members and provide fair, relevant, and impartial development of national SAS-ME
- perform an initial review of current standards to identify areas that need to be addressed
- collect input from individuals and organizations who use current standards
- set a timeline for accomplishing this charge
- critically review each standard and perform a literature review on each
- review new trends in asthma education and care
- review the developed national SAS-ME to ensure quality and consistency with current evidenced-based asthma guidelines from the National Heart, Lung, and Blood Institute, Expert Panel 3 (EPR-3),[6] and Global Initiative for Asthma[7]
- obtain critiques from secondary sources interested or involved in asthma care
- perform a final review of the developed national SAS-ME
- submit the national SAS-ME to the organizations represented on the Task Force for their review, endorsement, and implementation
- publish the new national SAS-ME

Representation on the Task Force

Representation on the Task Force consisted of individuals from major stakeholder organizations and disciplines with significant interest in the accessibility of quality asthma care and self-management education.

Organizations Represented on the Task Force

- American Academy of Allergy, Asthma, and Immunology (AAAAI)
- American College of Allergy, Asthma, and Immunology (ACAAI)
- American College of Chest Physicians (CHEST)
- American Lung Association (ALA)
- American Thoracic Society (ATS)
- Association of Asthma Educators (AAE)
- Joint Council of Allergy, Asthma, and Immunology (JCAAI)
- National Asthma Education Certification Board (NAECB)

Disciplines Represented on the Task Force

- Certified Asthma Educators (AE-C)
- Physicians (MD)
- Registered Nurses (RN, APRN)
- Respiratory Therapists (RT)
- Pharmacists (PharmD)
- Physician Assistants (PA-C)

Method

The Task Force began with a review of the ALA and ATS's *Operational Standards for Asthma Education* by all members of the Task Force. These SAS-MEs were modeled after the *National Standards for Diabetes Self-Management Education* published in 2007.[8,9] Comments, rationale, and references for each standard included in the SAS-ME were researched and incorporated into the document by board members of the NAECB, which included experts in disciplines of nursing, respiratory therapy, pharmacy, behavioral science, epidemiology, and medicine. This document is the result of final reviews of the standards completed by the Task Force and professional organizations in September 2014.

Standards

Standard 1. The AS-ME entity, whether a health care provider or other agency, shall have a written policy that (1) emphasizes education as an integral component of asthma care and (2) accepts responsibility for ensuring integration of clinical care and education.

The structure necessary to provide quality AS-ME consists of human and material resources and management systems needed to achieve program and participant goals. The organization should have defined goals and objectives that reflect a commitment to the asthma education program.[10–12] This includes the support and commitment of the sponsoring organization, the program administration and management system, the qualifications and diversity of the personnel involved in the program, the curriculum and instructional methods and materials, and accessibility to the program.[13] These concepts have been prominent in the business literature and have become an integral component of quality improvement in health care organizations.[14–16] The ideals also are described in the continuous quality improvement literature that emphasizes the importance of policies, procedures, and guidelines.[10,13] Documentation is equally important for small and large organizations.

This documentation should include a written statement from the AS-ME entity that reflects that self-management education is an integral component of the medical care of asthma and that delineates that organization's role in the integration of education and medical care.

The AS-ME entity shall recognize that asthma management has 7 interrelated parts[6,7,17]:

- provide ongoing education at each encounter with patients to develop a partnership in asthma management
- counsel to identify and avoid or control asthma triggers
- establish individual optimal medication plans for long-term management
- establish individual written asthma action plans for managing exacerbations
- assess and monitor asthma severity at the initial visit, with symptom reports and, as appropriate, measurements of lung function (eg, spirometry at $\geq$5 years old)

- provide regular follow-up care
- assess level of asthma control and reevaluate at each follow-up visit

The AS-ME entity must provide the support and structure within which the program functions. Organizational commitment to co-management education, including operational support, adequate space, personnel, budget, and materials, must be clearly evident. Clear lines of authority and efficient communication systems should be established.

Standard 2. The AS-ME entity should have written policies, approved by an advisory committee, concerning operation of the program. The program shall be conveniently and regularly available and shall be responsive to requests for information and referrals from consumers, health care professionals, health care agencies, and other potential referral sources.

The organizational relationships, lines of authority and communication, staffing, job descriptions, and operational policies shall be clearly defined and documented.[18–20] The AS-ME entity organizational chart should delineate the placement of the asthma educational program, staff, and advisory committee. A description for each staff member should include:

- qualifications
- role in the program
- teaching and educational responsibilities
- responsibility in coordinating education with the primary asthma care of the participants
- methods of documentation of time spent and outcomes for the program

Resources should be assessed periodically. An annual list of community resources and available services should be provided to participants of the program.[21,22]

Standard 3. The service area shall be assessed to define the target population(s) (including its access to medical care providers) and determine appropriate allocation of personnel and resources to serve the educational needs of the target population(s).

A successful program is based on the needs of the population(s) that the program is intended to serve. Because asthma populations vary, each organization should assess its service area and match resources to the needs of the defined target population(s). Needs assessments should guide program planning and management. Periodic reassessment should be done to allow the program to adapt to changing needs.

The target population is defined based on an assessment of the service area in the following respects:

- potential number to be served
- severity of disease and level of control
- access and barriers to medical care providers
- age and sex distribution
- language
- race and ethnicity
- culture
- environmental, occupational, and other epidemiologic features
- other unique characteristics and special educational needs, such as literacy, socioeconomic status, and morbidity and mortality

The implications of all features of the needs assessment should be clearly reflected in the development and characteristics of the educational program.[23,24]

Standard 4. An established system (ie, committee or advisory group) consisting, minimally, of a nurse, clinician (experienced in asthma care), health educator, respiratory therapist, pharmacist, an individual with behavioral science expertise, an individual with asthma or a caretaker (representation should include an adult with asthma or a caregiver of a child with asthma or both when appropriate to the setting), and a community representative will participate annually in a planning and review process that includes data analysis and outcome measurements and addresses community concerns.[25,26]

Effective management is essential to implement and maintain a successful program and to ensure that resources are adequate for the defined tasks. To ensure that management policies and program design reflect broad perspectives relevant to asthma as a public health problem, the organization shall designate a standing advisory committee that includes health care professionals and others to assist staff with program planning and review. At times, resources (other social services, government agencies, and community-based organizations) outside the AS-ME entity might be required to enable individuals affected by asthma to maximize their health outcomes.[26]

The asthma health care providers shall participate in the annual planning process, including:

- determination of target population
- program objectives
- mechanisms by which participants access the program identification of, and linkage to, the participant's health care provider identification of barriers to quality care
- instructional methods and materials
- review of asthma educator resources, performance, and continuing education
- resource requirements (including space, personnel, and budget)
- participant follow-up mechanisms
- program evaluation process and results, including patient satisfaction

The asthma health care providers document the approval each year of a written program plan that includes the items specified above.[6,27–35]

Standard 5. A coordinator shall be designated who is a certified asthma educator (AE-C) as certified by the NAECB. The coordinator is responsible for program planning, implementation, and evaluation.

The job description for program coordinator includes responsibility for:

- acting as a liaison among the program staff, the advisory committee, and the administration of the location where the instruction will be given
- supervising program staff and volunteers—providing and/or coordinating the orientation and continuing education of the professional program staff
- participating in the planning and review of the program each year
- participating in the preparation of the program budget and considering sustainability of the program
- evaluating program effectiveness
- serving as the chair or a member of the advisory committee
- serving as a community resource for asthma education and management

Although not a requirement, a review of effective interventions for providing asthma education in community (nonresearch) settings found that one of the common "good practices" that emerged was having a full-time asthma education coordinator. The coordinator's role included different tasks, such as overall program coordination, course logistics, securing faculty, enrolling and maintaining participant lists, selecting and securing course materials, and serving as a resource to participants during the course and for referrals that might be needed afterward.[36]

The NAECB currently provides the only US national certification for asthma educators. Individuals who have attained asthma educator certification through the NAECB have shown through an evaluative process that rigorous education and experience requirements have been met. The evaluative process includes testing in the following areas: teaching, education, and counseling of individuals with asthma and their families; comprehensive, current knowledge of asthma pathophysiology and management, including developmental theories, cultural dimensions, the impact of chronic illness, and principles of teaching and learning; ability to conduct thorough assessments of individuals and families; monitoring asthma education program outcomes; and ability to serve as a resource to the community.[37] Program coordinators are expected to demonstrate these critical attributes.

Standard 6. The AS-ME instructors for the entity will obtain regular continuing education in the areas of asthma management, behavioral intervention, teaching and learning skills, evaluation and follow-up, and counseling skills.

Qualified personnel are essential to the success of an AS-ME program. The AS-ME entity should identify the program personnel. These must include a program coordinator with overall responsibility for the program. Because asthma is a chronic disease often requiring lifestyle changes, instructors need to be skilled and experienced individuals with recent education in asthma, educational principles, and behavior change strategies. Asthma education programs should be organized and conducted to encourage involvement of a multidisciplinary team in health behavior, education, and health care[6] (eg, physician, physician assistant, advanced practice nurse, nurse, pharmacist, health educator, respiratory therapist, social worker, and other trained personnel). The best programs will build on the strength of each team member's knowledge and skills and specify the unique contributions of each team member in the program.

Individuals with recent didactic, problem-based learning, and experiential preparation in asthma clinical and educational issues shall serve as the program instructors. Program instructors are individuals who routinely teach in the AS-ME programs and should be a certified asthma educator (AE-C) or led and supervised by an AE-C. The certified asthma educator must remain current with certification as set by the NAECB. The NAECB is the only organization in the United States offering a national certification process involving a standardized process to certify asthma educators for their effectiveness in disease management.[37] This certification serves patients with asthma, their families, the community, and insurers by identifying competent providers of advanced asthma assessment, education, and coordination of asthma services.[38]

To deliver quality asthma education, program instructors must remain current in therapeutic modalities, including a combination of education about asthma, educational principles, and behavior change strategies.

Clark and Partridge[2] cited 5 actions that can make asthma education more effective:

- ensure education is consistent with national guidelines
- focus education on developing self-regulation skills
- create an office- or institution-wide comprehensive plan for asthma treatment and education
- encourage clinician use of proven communication and educational techniques[39–41]
- work with nonclinician patient education providers to coordinate community-wide efforts

Standard 7. A written curriculum, with criteria for successful learning outcomes, shall be available.

A quality AS-ME program is designed to enable patients to obtain and maintain the skills and knowledge necessary to successfully manage their asthma in partnership with their health care provider on a day-to-day basis. The curriculum, instructional methods, and materials should be appropriate for the specified target population and based on needs assessment[6,23,24] (see Standard 3). The instructional materials should be high quality and selected for the intended audience, taking into consideration variables such as cultural appropriateness, visual correctness, and reading level.[36]

Based on the needs of the target population, the comprehensive program shall be capable of enabling participants to:

- accomplish the goals of successful asthma management
  - accept that asthma is a chronic disease and is treatable
  - describe asthma and its treatment
  - recognize signs and symptoms of asthma
  - identify factors that make asthma worse
  - describe strategies for avoidance or decrease of exposure to environmental exposures that worsen asthma
  - actively participate in control and management
  - adhere to the treatment plan and written asthma action plan developed jointly by the health care provider and patient
  - use correct technique for administering medications, including inhaled medications and medications through metered dose inhalers, dry powdered inhalers, spacers, valved-holding chambers, or nebulizers
  - solve problems collaboratively—take appropriate actions in different situations and seek help appropriately
  - ensure that points of contact of the care continuum are educated about asthma
  - monitor symptoms and objective measurements of asthma control
  - identify barriers of adherence to treatment plan
  - address specific problems that have an impact on asthma for the individual, especially in relation demographic and social characteristics, including psychosocial issues that might impede asthma management[6,7,17]
- establish and attain individual treatment goals
  - achieve and maintain control of symptoms, including nocturnal symptoms
  - prevent asthma exacerbations
  - maintain normal activity levels, including exercise
  - maintain near normal pulmonary function
  - prevent absence from school or work
  - attain optimal pharmacologic management with minimal adverse effects
  - prevent development of irreversible airflow limitation
  - prevent asthma mortality
  - meet patient and family expectations of and satisfaction with asthma care

Quality programs must be readily accessible to those in need of education. The AS-ME entity should facilitate access to self-management education for the target population identified in the needs assessment. Access is promoted by a commitment to routinely inform referral sources and the target population of the availability and benefits of the program. Proactive efforts will be used to engage unique groups and/or those not easily reached by traditional methods.

The curriculum should include 4 components to effective asthma management[42]:

- educational component to improve patient knowledge and understanding of asthma
- self-monitoring: regular measurement and recording of symptoms or peak expiratory flow
- regular clinic review to perform spirometry and/or other objective assessments and monitor asthma control and medications

- written asthma action plan that is individualized to the patients' underlying severity and treatment[32,43–53]

The EPR-3[6] recommends that the following key educational messages be taught and reinforced at every point along the continuum of care:

- basic facts about asthma
  - contrast between airways of a person who has and a person who does not have asthma
  - what is airflow obstruction and how it happens
  - role of inflammation in asthma
  - what happens to the airways in an asthma attack
  - understanding that the absence of symptoms does not mean the absence of disease
- roles of medications—understanding the difference among
  - long-term control medications
  - quick-relief medications
  - intended role of all other medications
- patient skills
  - medication skills—correct performance of various inhaler techniques (demonstration and return demonstration)
  - device usage—such as review of prescribed valved-holding chamber, spacer, nebulizer, and peak flow meter
  - environmental control measures—identifying and avoiding environmental exposures that worsen the patient's asthma (eg, allergens, irritants, and tobacco smoke)
    - teach patients how environmental allergens and irritants can make the patient's asthma worse at home, school, or work and how to recognize immediate and delayed reactions
    - teach patients strategies for removing or decreasing exposure to allergens and irritants to which they are sensitive from their living spaces
    - when possible, refer for evaluation and direct toward effective, home-based education programs for allergen and irritant control[54]
    - advise all patients not to smoke tobacco and to avoid secondhand tobacco smoke and emphasize the importance of not smoking for women who are pregnant and for parents around their small children
    - provide resources for smoking cessation and avoidance strategies to adults who smoke around children
  - self-monitoring to
    - assess level of asthma control and goals for improvement
    - monitor symptoms and, if prescribed, peak flow
    - recognize early signs and symptoms of worsening asthma
  - using the written asthma action plan to know when and how to
    - take daily actions to control asthma
    - adjust medication in response to signs of worsening asthma
    - seek medical care as appropriate

Education should be delivered at initial patient visits and expanded or reinforced at all follow-up visits. The patient and/or family should not be overwhelmed with too much information all at once. Important messages should be repeated at each visit.[6] As stated in "Investing in Best Practices for Asthma," "an increasingly robust evidence base shows widespread improvements in asthma patients' health when primary and specialist care are supplemented by in-depth asthma education, home assessment and mitigation of home-based triggers provided by a team of providers."[54,55]

Standard 8. The program shall provide appropriate mechanisms to link patients to ongoing medical care, including medical management.

The written curriculum should include instruction on access and communication with health care providers, with emphasis on the need for continuity of care and ongoing asthma education and prevention. The program shall have written materials that are culturally and developmentally appropriate for the participants that reinforce teaching points, provide information about other available resources (eg, Web-based resources), aid in self-management (eg, written "action plans" and an asthma symptom diary), and materials that facilitate communication with their provider.[6,24,42,56]

Standard 9. Comprehensive asthma education recognizes the need for continuing self-management education. The program shall reassess patient self-management behavior and provide continuing education based on that reassessment.

Process

The process of providing asthma self-management education involves the integration of recurrent and frequent individual assessment, setting goals, educational plan development, implementation, evaluation, and follow-up. It should reflect the partnership among the participant, family, clinician, and educator. Coordination of asthma education with medical care is essential and the process and outcomes should be documented. There is evidence that education about self-management is effective and cost-effective.[25,42,57–65]

The primary components of asthma education outlined in the EPR-3[6] include:

- develop an active partnership of the health care provider with the patient and family
- provide all patients a written asthma action plan that includes instructions for daily management and actions to manage worsening asthma
- integrate asthma management into all aspects of care
- encourage patient adherence to the written asthma action plan
- encourage health care provider and health care system support of the therapeutic partnership[66]

Standard 10. Every patient requires a comprehensive assessment that includes a baseline assessment of the need for education, a readiness to engage in self-management, and an educational assessment of the level of asthma knowledge and skills. This assessment shall include relevant health and environmental history, current health status, health service or resource usage, risk factors, asthma knowledge and skills, cultural influences, health beliefs and attitudes, health behaviors and goals, support systems, barriers, and socioeconomic factors. From this assessment, an evaluation of the readiness to learn is made.

The Joint Commission on Accreditation of Healthcare Organizations requires that the patient receive education and training that is specific to the patient's needs.[25] This includes assessing the patient's learning needs, abilities, preferences, and readiness to learn and considers cultural and religious practices, emotional barriers, desire and motivation to learn, physical and cognitive limitations, language barriers, and the financial implication of care choices.[25,67] Patients and families need to be prepared to assume responsibility for self-management. One of the basic elements of patient education is assessment. Part of the planning and implementation process requires assessment of the learning needs, readiness to learn, and learning style of the patient and family.[24,68,69]

Standard 11. An individualized education plan, based on the assessment, shall be developed in collaboration with each participant.

Individuals have different learning abilities and preferences. To optimize the educational experience and meet the participant's needs, an individual assessment should be performed to guide educational plan development.[70–76] Goals for education should be

set with the participant to ensure that the education plan is based on the patient's own values and perceived needs.[77] The educational experience should be documented in the individual's permanent medical record. Effective communication and coordination among care and education providers is essential.

The individualized plan of education should emphasize the partnership in management and include information about the following:

- need for regular follow-up
- identification and avoidance of triggers
- optimal use of medications
- instructions for managing exacerbations based on a written asthma action plan

Standard 12. The participant's educational experience, including assessment, intervention, and follow-up, shall be documented in the permanent medical record. There shall be documentation of collaboration and coordination among all providers.

The participant's progress through the educational program should be documented in the medical record[25] and include:

- initial assessment and education plan as specified above
- indication of the content taught, dates of instruction, and the instructors
- participant's response to education and any ongoing needs at the end of each session
- ongoing periodic assessment
- goals for changes in behavior and the environment
- plan for follow-up of asthma education needs
- patient's quality-of-life goals
- communication of participant's progress and any follow-up recommendation to the referring health care provider
- follow-up assessment and any resulting interventions

Because there are multiple providers involved in the care of a patient, coordination of care is imperative. This coordination of care requires documentation in the medical record and should be communicated to all providers. Patient safety can be compromised by lack of communication and documentation. The problem of lack of documentation and clear communication among health care professionals has been cited in several studies involving patients with asthma and their families. Problems include lack of clear communication of the asthma diagnosis, classification of severity, level of control and/or treatment plan, and problems that occur when treatment takes place at multiple sites of care.[78–81] It is the hope that the increased use and widespread availability of electronic health records will facilitate communication and lead to improvement in outcomes.

Documentation influences the quality and quantity of patient education. It should be concise but include detailed information about the education provided, indication of the degree of understanding or response to education by the patient and/or caregiver, and follow-up recommendations. Furthermore, documentation facilitates communication among health care providers that is needed to ensure complete, ongoing care.[56]

Standard 13. An educational strategy appropriate to the individual and the setting (individual or group or combined approach) is documented in the medical record. Minimally, follow-up arrangements for medical care and asthma education will be documented in the medical record.

The educational tools used for individual patients and the method of education agreed to should meet the assessed needs of the learner.[56] Documentation facilitates revisions to programs and increases multidisciplinary communication and a more consistent teaching plan.[25] Continuity and consistency of care, improved efficiency, and decreased professional liability are benefits of documenting patient education.[82]

Documenting the method and topics addressed during patient education encounters is the best way for health care providers in different settings to share the status of patient education and work toward the same goal. This includes documentation of the educational assessment, education provided, and evaluation of the patient's understanding of the education provided. Documentation, as a means of communicating the patient's education, can help improve health outcomes by allowing collaborating health care providers to promote self-care skills more efficiently and effectively.[83]

Standard 14. All asthma education will use active learning methods within a partnership based on modern concepts of teaching.

When participants are empowered by having some control and input in their care and education, they are more likely to perform the desired behaviors. Patient empowerment is an important component of learning theory and emphasizes the importance of the participant's active involvement and self-direction in the learning process.[77] Partnership is a prerequisite for effective and efficient health care.[66] Patient education that is interactive and involves the patient and family in the learning process promotes self-care and increases the comprehension, recall, and application of the information received.[24] Return demonstration is effective for assessing skills, and the teach-back method is one technique that can be used to confirm understanding of the concepts taught to patients and/or caregivers.[84]

Standard 15. Periodic reassessments of health status, knowledge, skills, attitudes, goals, and self-care behaviors must be completed by the clinician or the educator. Frequency of follow-up will be based on asthma severity and level of asthma control. Appropriate and timely educational intervention will be provided based on this reassessment.

Because asthma is a chronic disease requiring a lifetime of self-management, follow-up services will be needed. Lifestyles, knowledge, skills, attitudes, and disease characteristics change over time, so ongoing education is necessary and appropriate. Providers should be able to offer periodic reassessment and education as part of comprehensive services. Most patients with asthma will benefit from periodic assessment and gain greater confidence and skills in self-management.[85] Reassessment and review of asthma self-management education and asthma control are supported by evidence as provided in the EPR-3 guidelines and any updates.[6] The guidelines recommend that AS-ME should be integrated into all aspects of asthma care, and AS-ME requires repetition and reinforcement. It should:

- begin at the time of diagnosis and continue through follow-up care
- involve all members of the health care team
- introduce the key educational messages by the principal clinician and negotiate agreements about the goals of treatment, specific medications, and the actions patients will take to reach the agreed-to goals to control asthma
- reinforce and expand key messages (eg, the patient's level of asthma control, inhaler techniques, self-monitoring, and use of a written asthma action plan) by all members of the health care team
- occur at all points of care where health professionals interact with patients who have asthma, including clinics, medical offices, emergency departments and hospitals, pharmacies, homes, and community sites (eg, schools and community centers)[6(p93)]

Standard 16. The AS-ME entity shall review program performance annually, including all components of the annual program

plan and curriculum, and use the information in subsequent planning and program modification.

Mastery and use of key self-management skills can be measured by observing patients demonstrate skills and by using structured interviews and reliable and valid questionnaires with patients to obtain reports of self-management and satisfaction in different situations.[26] In managed care organizations, it might be possible to obtain records of prescriptions filled by patients, a useful marker for adherence that has limits, and records of all asthma-related health care usages.

Program Outcomes

Outcomes (such as knowledge, attitudes, quality of life, and health care usage) for program participants should include:

- the recognition that asthma is a chronic disease
- a practical understanding of the concepts of inflammation, hyperreactivity, and bronchoconstriction and airway remodeling
- an acceptance of the need to prevent these by controlling various factors that contribute to asthma severity through medical therapy and environmental control
- medication delivery skills
- skills assessing airflow obstruction and symptoms (including peak flow measurement when appropriate)
- the ability to follow a written management plan and make adjustments in treatment in response to changing circumstances
- the ability to recognize early warning signs and signs that emergency medical care is needed
- decrease in frequency and severity of symptoms
- improved quality of life owing to asthma control
- decrease in emergency department visits and/or hospital admissions
- decrease in days missed from school and/or work

The degree to which participants achieve effective partnerships with asthma caregivers, family, school, and work is measured and evaluated. Effective partnerships with health care providers, family, school and daycare personnel, and co-workers include valuing the need for continuing preventive care, making preventive visits at appropriate intervals, communicating openly with providers and others about the patient's and the family's concerns, questions, the need for cooperation in managing asthma, and the development of practical negotiating skills to achieve patient goals. "Partnership" with health care providers is difficult to quantify without direct observation or recording of encounters, but markers of this goal that can be used include the number of nonurgent scheduled visits for asthma care, rate of kept appointments for scheduled visits, and patient reports of the content, process, and satisfaction with interactions with their providers.[66,68]

The degree to which participants attain the best achievable asthma control and quality of life is measured and evaluated.[86] Best achievable asthma control and quality of life includes being free of symptoms, which is defined as sleeping through the night, exercise without symptoms of asthma, performing activities of daily living without limitation, exhibiting good school and work attendance, optimal use of medications, and minimal use of emergency care services. For measurement of health status and quality of life, brief, reliable, and valid tools for assessing functional status, quality of life, asthma control, and symptoms are available and should be used. School, daycare, or work attendance can be assessed by records or self-report.

Outcome evaluation is not limited to number of participants and/or global participant satisfaction, but rather involves pre- and post-program assessment of pre-established outcome goals to enable demonstration of change and allow further planning for additional education and reinforcement. Effectiveness should be documented using existing tools whenever possible.[68,86–88]

The AS-ME entity evaluates the program's effectiveness at improving outcomes in participants, and the results of this evaluation are reflected in the next annual program plan.[90] A process to collect and review programs that provide ongoing evaluation and feedback allows providers to determine whether program objectives are being met and will indicate the need for any improvements or modifications to the program.[56,68,86–89] eTable 1 is a worksheet that can be used by SAS-ME entities to document the inclusion of all standards in their education program and curriculum.

Recommendations for Oversight and Future Reviews

Education for a partnership in asthma care is 1 of the 4 components of asthma care addressed in the EPR-3. AS-ME continues to evolve as new scientific research and best-practice strategies are identified. As new research is identified, the SAS-ME will need to be updated to reflect the new evidence-based practice of SAS-ME. The Task Force recommends:

- the national SAS-ME should be reviewed and revised at least every 3 years to reflect evidence-based practice
- all participating organizations from the Task Force will share responsibility for the review process on a rotational and mutually agreed-to schedule
- all participating organizations shall participate in collecting data on structure, process, and outcome of SAS-ME during the 3-year period

Acknowledgments

Drafting of the national SAS-ME benefited immensely from the prior efforts of the Diabetes Self-Management Education (DSME) Task Force that produced its *National Standards for Diabetes Self-Management Education.* These standards have withstood scrutiny and practical application over time and were judged to provide an appropriate model for the present effort. The SAS-ME Task Force gratefully acknowledges the substantial contribution of the DSME Task Force and of all those who participated in its pioneering work, including its gracious consent to have its model adapted to this purpose. The DSME Task Force, of course, bears no responsibility for the content of this document.[8,9]

The authors acknowledge Shiela Heitzig from the American Academy of Allergy, Asthma and Immunology and Gary Ewert from the American Thoracic Society for their contributions to this report. The authors also thank the American Academy of Pediatrics; American College of Physicians; American Academy of Nurse Practitioners; National Association of Pediatric Nurse Practitioners; and American Academy of Physician Assistants—Allergy, Asthma and Immunology Section for their official recognition of the SAS-ME as a guideline for the reimbursement of Current Procedural Terminology codes 98960 through 98962 as they pertain to AS-ME. Although these organizations were not involved in the development of the standards, they provided critical reviews of the document to the Task Force. Also, the authors appreciate the review and feedback from the American Association of Respiratory Care.

Supplementary Data

Supplementary data related to this article can be found at http://dx.doi.org/10.1016/j.anai.2014.12.014.

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eTable 1
National standards for asthma self-management education (SAS-ME) worksheet

Standard	Standard met	If no, plan
Standard 1. The asthma self-management education (AS-ME) entity, whether a health care provider or other agency, shall have a written policy that 1. emphasizes education as an integral component of asthma care, and 2. accepts responsibility for ensuring integration of clinical care and education	☐ yes ☐ no	
Standard 2. The AS-ME entity should have written policies, approved by an advisory committee, concerning the operation of the program The program shall be conveniently and regularly available and shall be responsive to requests for information and referrals from consumers, health care professionals, health care agencies, and other potential referral sources.	☐ yes ☐ no	
Standard 3. The service area shall be assessed to define the target population(s) (including its access to medical care providers) and determine appropriate allocation of personnel and resources to serve the educational needs of the target population(s)	☐ yes ☐ no	
Standard 4. An established system (ie, committee or advisory group) consisting, minimally, of a nurse, clinician (experienced in asthma care), health educator, respiratory therapist, pharmacist, an individual with behavioral science expertise, an individual with asthma or a caretaker (representation needs to include an adult with asthma and a caregiver of a child with asthma), and a community representative will participate annually in a planning and review process that includes data analysis and outcome measurements and addresses community concerns	☐ yes ☐ no	
Standard 5. A coordinator shall be designated who is a certified asthma educator as certified by the National Asthma Educator Certification Board. The coordinator is responsible for program planning, implementation, and evaluation	☐ yes ☐ no	
Standard 6. The AS-ME instructors for the entity will obtain regular continuing education in asthma management, behavioral intervention, teaching and learning skills, evaluation and follow-up, and counseling skills	☐ yes ☐ no	
Standard 7. A written curriculum, with criteria for successful learning outcomes, shall be available	☐ yes ☐ no	
Standard 8. The program shall provide appropriate mechanisms to link patients to ongoing medical care, including medical management	☐ yes ☐ no	
Standard 9. Comprehensive asthma education recognizes the need for continuing self-management education. The program shall reassess patient self-management behavior and provide continuing education based on that reassessment	☐ yes ☐ no	
Standard 10. Every patient requires a comprehensive assessment that includes a baseline assessment of the need for education, readiness to engage in self-management, and an educational assessment of the level of asthma knowledge and skills. This assessment shall include relevant health and environmental history, current health status, health service or resource usage, risk factors, asthma knowledge and skills, cultural influences, health beliefs and attitudes, health behaviors and goals, support systems, barriers, and socioeconomic factors. From this assessment, an evaluation of the readiness to learn is made	☐ yes ☐ no	
Standard 11. An individualized education plan, based on the assessment, shall be developed in collaboration with each participant	☐ yes ☐ no	
Standard 12. The participant's educational experience, including assessment, intervention, and follow-up, shall be documented in the permanent medical record. There shall be documentation of collaboration and coordination among all providers	☐ yes ☐ no	
Standard 13. An educational strategy appropriate to the individual and the setting (individual or group or combined approach) is documented in the medical record. Minimally, follow-up arrangements for medical care and asthma education will be documented in the medical record	☐ yes ☐ no	
Standard 14. All asthma education will use active learning methods within a partnership based on modern concepts of teaching	☐ yes ☐ no	
Standard 15. Periodic reassessments of health status, knowledge, skills, attitudes, goals, and self-care behaviors must be completed by the clinician or the educator. Frequency of follow-up will be based on asthma severity and level of asthma control. Appropriate and timely educational intervention will be provided based on this reassessment	☐ yes ☐ no	
Standard 16. The AS-ME entity shall review program performance annually, including all components of the annual program plan and curriculum, and use the information in subsequent planning and program modification	☐ yes ☐ no	