Essential Ingredients for an Ideal Education Program for Children With Asthma and Their Families*

Allan Becker, MD; Shawna McGhan, BN; Jerry Dolovich, MD; Melva Proudlock, RRT; and Ian Mitchell, MD

Health education is a critical “therapeutic strategy” in asthma management. Various teaching tools and educational programs play distinct roles in education. Table 1 outlines some educational tools on asthma. A program is a package of services or information intended to produce particular results (Table 2). Specific and clear goals, combined with appropriate methods for reaching the goals, are essential components of a program. An instructional guide or curriculum that describes the educational process and includes educational tools must be available to the educators.

Selection of educational resources should be based on their quality. A high-quality educational resource meets the following criteria: (1) contains accurate, current, and appropriate information; (2) adopts an appropriate learning philosophical point of view; (3) is interesting and attractive to children; (4) is free of cultural, ethnic, age, race, disability, and sexual biases; (5) is realistic in cost; (6) is easy to obtain; and (7) demonstrates instructional merit.

A program must also meet the educational goals or the expected achievements of the program. Research evaluations of the resource should be conducted to demonstrate that the desired goals can be achieved by using the program. Some, but not all, programs have been evaluated. For example, use of “Airpower” allowed for improvement in self-management skills of parents and children. The American Lung Association’s “Superstuff” increased confidence about asthma, reduced asthma problems, and reduced missed school days.

A positive feature of a program includes identifying attainable goals such as playing soccer or not missing school. A program should provide for the child to rehearse skills required for asthma self-management. The child should be able to demonstrate techniques such as the use of medication devices, peak flowmeters, and crisis management. The program should also repeat important concepts.

Table 1—Educational Resource Tools on Asthma*

<table>
<thead>
<tr>
<th>Videos</th>
<th>Books</th>
<th>Printed Booklets</th>
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<tbody>
<tr>
<td><em>Breathless: Adventures of Andy and Rufus</em></td>
<td><em>Luke Has Asthma, Too</em></td>
<td><em>Asthma and the Schoolchild</em></td>
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<tr>
<td><em>Controlling Childhood Asthma</em></td>
<td><em>Spiderman Battles the Myth Monster</em></td>
<td><em>Management of Asthma at School</em></td>
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<tr>
<td><em>You’ve Got Asthma? That’s No Reason to Stop Breathing</em></td>
<td><em>Asthma, Who Cares in the Home</em></td>
<td><em>You Can Control Cough, Wheeze, and Breathlessness</em></td>
</tr>
<tr>
<td><em>Asthma and Allergies in the Schools: Importance of Cooperative Care</em></td>
<td><em>So You Have Asthma, Too</em></td>
<td><strong>Willy’s Asthma</strong></td>
</tr>
<tr>
<td><em>Inhalation Technique and Inhaler Maintenance</em></td>
<td><em>The Lion Who Had Asthma</em></td>
<td><em>A Guide to Asthma for Parents</em></td>
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*From the University of Manitoba, Winnipeg, Manitoba (Dr. Becker); Alberta Asthma Centre, Edmonton, Alberta (Ms. McGhan); McMaster University, Hamilton, Ontario (Dr. Dolovich); Peel Memorial Hospital, Brampton, Ontario (Ms. Proudlock); and Alberta Children’s Hospital, Calgary, Alberta, Canada (Dr. Mitchell).

*Compiled in part from the National Asthma Educational Program, Asthma Education Materials and Resources, National Heart, Lung, and Blood Institute, July 1993. Additional details on resources can be obtained from: Shawna McGhan, Alberta Asthma Centre, Box 4033, Edmonton, Alberta T6E 6K2.
about asthma in a variety of ways by many members of the health-care team. Programs should provide positive reinforcement and praise.

An example of a program that has such features is “Open Airways for Schools,” specifically designed for children with asthma in grades 3 to 5. The program’s objectives include (1) empowering children with asthma by teaching them how to prevent asthma episodes and emergencies, and (2) helping schools control asthma by creating partnership with school personnel, nurses, physicians, and families. The teaching methods include “role-play to rehearse new skills” and “strong verbal reinforcement of children’s attempts to use new skills” that also meet National Asthma Education Program recommendations. “Open Airways for Schools” uses a number of age-appropriate tools such as puppets, stories, and large cartoon-type pictures. Evaluation of the program shows that children improve their self-management skills, school performance, and have fewer and shorter episodes of asthma.²

**Deficiencies in Available Resources and Recommendations**

**Preschoolers and Teens**

Few educational materials are targeted toward children under 7 years and over 12 years. Age- and cognitive-appropriate strategies for these two groups must be developed and evaluated.

**Children in Minority Groups and Rural Communities**

Members of minority populations and children in rural communities need access to appropriate asthma education.

**Computer and Video-based Programs**

Research on education in schools has shown positive results with interactive computer-based programs.⁶ Programs for asthma that involve computer- and video-based mediums should be developed and evaluated for children.

**School Personnel**

School and daycare officials lack the necessary information to manage asthma in a school setting.⁷

**Current and Updated Programs**

Many of the available programs were evaluated in the mid-1980s. Approaches to the management of asthma are always changing and new developments must be included in educational programs.

We recommend that a Canadian Asthma Resource Directory be developed to help professionals share ideas and resources and work together to promote utilization of current resources and the development of new ones.

**Outcome Assessment for Asthma Education**

The primary outcome measures for asthma education must encompass specific performance and outcome objectives. These can be defined in a straightforward fashion. First, the children and their families must know and thoroughly understand the outcome objectives. Ideally, a successful program will perform so as to (1) establish the outcome objectives as soon as possible, (2) maintain outcome objectives with minimal required treatment, and (3) obtain and follow an action plan for acute exacerbations.

Outcome objectives should focus on the clinical outcome. Although change in knowledge base is desirable, the critical feature remains the individual’s clinical status. Desirable outcome objectives are as follows: no symptoms most of the time; normal (or as normal as possible) activity of daily living; no excessive use of inhaled β₂-agonist (generally not more than once a day); no severe attacks; normal (or as normal as possible) pulmonary function; no side effects from medications; minimal disruption of normal lifestyle; and minimal emotional distress of patient and his or her family.

**Developmentally Appropriate Health Education**

Appropriate health education must use a broad range of educational strategies to adjust for the diversity of learners and, particularly for children, must involve the family. The educator must assist the family in identifying their goals, potential barriers to achieving these goals, and specifics to develop a plan to overcome potential barriers. Educational theory and research suggest that development occurs as a result of the interaction between the child and his or her environment. A child should experience hands-on interaction and educational programs for children should use concrete objects as teaching aids.

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**Table 2—Educational Resources on Asthma**

<table>
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<tr>
<th>Programs</th>
<th>Resources</th>
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<tr>
<td>Open Airways for Schools</td>
<td>CALM: Preschooler</td>
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<tr>
<td>Open Airways</td>
<td>CALM: Preteen</td>
</tr>
<tr>
<td>Living With Asthma</td>
<td>CALM: Teens</td>
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<tr>
<td>Air Power</td>
<td>ACT (Asthma Care Training) for Kids</td>
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<tr>
<td>Air Wise</td>
<td>You and Your Asthma</td>
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<tr>
<td>Air Force</td>
<td>Schools Asthma Teaching Pack</td>
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<tr>
<td>Huff and Puff</td>
<td>Childhood Asthma: A Matter of Control</td>
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toddler, focus should be on external body concept, whereas the older child has better understanding of internal organ function and may be interested in disease cause and prevention. The teenager approaches adult formal thought where abstract concepts can be understood. Given strong peer relationships, inclusion of friends in programs may be desirable. Modification of the resources and tools used will range from simple and quick to complex and time-consuming.

Content

- Teach the need to know vs the nice to know.
- Adapt the curriculum for the academically advanced/disabled student.
- Adapt the pace or complexity of the task but do not change the objective.
- Make the tasks meaningful and relevant to ensure retention.

Materials

- Use as many concrete examples as possible.
- Adapt the tools as needed.
- Adapt for language/cultural differences.
- Use a multisensory approach.

Activities

- Engage children in active participation.
- Promote interaction with people and material.

All too often a program may fail, not because of lack of planning, but because of problems of implementation. Logistic questions must be considered in the curriculum package. This includes the best time of day/week for a program, ideal class size and student-teacher ratio, and issues of fees for the program. Education cannot exist in a vacuum and should address contributing factors such as social/psychological issues that are age appropriate.

The educator's role as facilitator, collaborator, and resource is complex and requires training. The educator must possess up-to-date knowledge of asthma, be sensitive to the individual needs of the participants, and relate to the community in which they function.8-10

Evaluation of Asthma Education Programs

There is a wide variety of asthma education programs but it is difficult to evaluate whether the programs themselves really make a difference to asthma health care.11-13 Some have attempted to evaluate an education program without changing associated medical care. This is clearly not a practical approach. Medical care and education cannot be separated from patient education. In addition, physicians may not be fully compliant with guidelines for asthma care. An education program for families, no matter how excellent, can never compensate for inadequate medical care. In evaluating programs, we must evaluate knowledge, change in decision-making skills, and change in the impact of the asthma on quality of life. Measurement of knowledge change is the easiest approach, whereas decision making is more important but also more difficult to measure. The intent in decision making is that patients will manage chronic and acute asthma better, will take action to avoid triggers, and will comply with recommendations for the use of prophylactic drugs and monitoring techniques.

Improvement in asthma is the ultimate goal. Techniques are available to measure change in quality of life and should be considered for teens, although these have not been specifically validated for younger children.14 In addition, general changes in school attendance, participation in physical education, involvement in sports, and the child's growth and psychosocial abilities should be measured. Physiologic parameters such as pulmonary function, formal measurement of exercise, and physical changes such as onset of puberty are important.

Usual accepted scientific techniques may not be the best approach for assessing asthma programs. The technique of continuous quality improvement15 has advantages as it lends itself to program development as well as evaluation. This could be applied to a specific program using a variety of parameters (Figure 1). In developing a new program, it will be important to identify stakeholders, including professionals, volunteer organizations, and patients and their families. We must identify the site of care delivery, including physician's offices, walk-in clinics, and hospitals.

FIGURE 1. The technique of continuous quality improvement (CQI) has advantages in the development of programs and in their evaluation. This is applied as above to assessment of an asthma program using the variables and outcome parameters noted.
Funding resources must be in place and monitoring patterns defined. The use of continuous quality improvement will allow for modification of the program as it develops.

Critical issues as yet unresolved in asthma education include the following: (1) Standards of education: who should teach, what should they teach, and how should they be certified? (2) The central and essential nature of the primary care physician and the need for cooperative development of planned continuing medical education. (3) The school is an essential part of the child's life and must be involved with the process. (4) There must be well-assessed and defined local resources. A consistent message must be provided in the community. (5) While there is a strong desire to target patients in crisis, this may not be the most receptive time. (6) Targeting of high-risk patients is critical.

Ideally there should be agreement and consistency on a national level that remains consistent with requirements at the local level. Development of a strong national asthma education base will be important for outpatients and should improve utilization of health-care facilities.

REFERENCES
1 Bone RC. The bottom line in asthma management is patient education. Am J Med 1993; 94:561-63