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The Complete Asthma Disease State Management Resource



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Patient education is a large piece of asthma management puzzle

Yet integrated plan required to ensure success of program

- **Noncompliance:** Identifying root causes helps find solutions and improve outcomes 55
- **On paper:** Written asthma plans are a simple way to cut hospitalizations by as much as 50% 56
- **In the swim:** Volunteers get young asthmatics in the pool and out of the hospital 58
- **Clinical Management:** Acupuncture A valid treatment option or worthless hype? 59
- **Results of controlled studies of acupuncture for asthma.** 60
- **ED treatment:** Inhaled steroids in the emergency department 63
- **News brief.** 64

Patient buy-in is one of the most important components of any disease management program. “Unless the patients buy into the management process and accept their part of the responsibility, it won’t work,” says **Robert A. Browne**, MD, FACP, senior health outcomes research consultant at Eli Lilly in Indianapolis.

Therefore, the education must do more than provide information; it has to get the patient involved and change his or her behavior. Many programs are finding that the best way to accomplish this goal is to tailor the education to the specific needs of the patient and family. The Childhood Asthma Initiative, designed for children in the New York City homeless shelter system, begins the education process with the information most crucial to the family at that moment.

“It is an innovative approach to management in that it doesn’t start with a prescribed sequence of classes. We have a set of sessions, but we start where families are. We do this whether the sessions are with individuals or conducted in a group. Then we move through all the topics as the families need those topics,” says **Diane McLean**, PhD, MPH, director of the initiative, a partnership of the Children’s Health Fund, Montefiore Medical Center, and Scheiring-Plough Corp.

That means one family might begin with counseling on how to fit asthma into their lives while another family might start with education on asthma symptoms.

There is no blueprint for a perfect asthma management program because each health care system must assess its needs and design the program accordingly. Yet there are certain elements that trigger success. They include:

- a flexible education component;
- coordination between care delivery sites;
- guidelines to decrease diversity.

INSIDE

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KEY POINTS

The needs of the patient also drive the disease management program being piloted at the Center for Wellness and Prevention at The Ohio State University Medical Center in Columbus. Before education begins, patients are given a confidential personal health information assessment. Using this information, a health advisor, similar to a case manager, works with a patient to set specific goals and determine a plan of education, says **Sandra Cornett**, RN, PhD, program manager for consumer health education at the medical center.

Depending on their needs, patients can be enrolled in a seven-week course on disease management and attend core group classes that focus on nutrition, behavior, and exercise, as well as receive disease specific counseling for groups or individuals.

While much of the curriculum already existed, the services were not integrated within the center. In the past, a case manager educated patients on an individual basis. While patients in the new program will receive individual counseling, they often will be taught in groups, making the system more efficient. Also, more of the teaching will be done by experts such as the exercise physiologist or dietitian.

Education only one component

Although patient education is an important element in any disease management program, other components should complement it. A disease management program must be designed to provide patients with resources, tools, and access to health care and services so they can manage the disease. It must also coordinate care across the sites of care delivery, says Browne.

The Childhood Asthma Initiative is a multi-level, multidisciplinary approach to asthma management that integrates four types of services, says McLean. In addition to education it has a clinical component, a psychosocial services component, and an environmental component.

The clinical component provides assessment,

diagnosis, and treatment based on specific guidelines. Full primary care services are provided to the children in the shelters by a mobile medical unit and computerized medical records are used to keep track of the child, even when he or she moves to a different shelter. When the child leaves the shelter system he or she is given a pediatric referral to Montefiore Medical Center. Families can receive medical advice from a health care professional 24-hours a day by calling an 800 number.

The psychosocial service component includes referrals for counseling and social services as well as stress reduction and management. This component is integrated with education because families cannot learn about asthma when other issues take precedence, says McLean.

The environmental component involves smoking cessation and harm-reduction strategies as well as dust mite, roach, and rodent control.

Guidelines, pathways decrease diversity

Although the effectiveness of the program, launched in April 1998, is currently being studied, McLean says that good disease management cannot be accomplished with just one component. It must be approached in a multidisciplinary way.

The disease management program at the University of Texas MD Anderson Cancer Center in Houston was designed to organize and oversee the treatment of patients throughout the course of their illness. The components include clinical practice guidelines, a care pathway that has a large patient education section, and a patient pathway. Each component is designed for a particular cancer.

When a patient is enrolled on a pathway, a computer generates the entire package, which includes the pathway, the patient education materials, outcomes material, the multidisciplinary staff chart, and pre-printed physician orders, which the physician can modify if necessary.

COMING IN FUTURE MONTHS

■ Focus on comorbidities: Prioritizing and treating

■ Educational and motivational approaches for long-term patient compliance

■ Understanding and integrating new medications into your disease management program

■ New guidelines for asthma management in minority pediatric populations

■ Quantifying asthma management efforts: Translating outcomes into dollars

All these components increase quality by decreasing diversity in practice, says **Loretta Murphy**, RN, BSN, MBA, OCN, associate administrator for the practice outcomes program at MD Anderson. However, there must be a way to measure the effectiveness of each program to make sure the quality of care is improving, she says.

A database is kept on pathway data to compare patients on length of stay, clinical outcomes, and cost. Action plans are created when improvements are deemed necessary.

Currently at MD Anderson, patients are placed on a care path within the disease practice guideline in the ambulatory setting and it follows them into the inpatient setting. The next phase will focus on extending the continuum and determining how the plan of care, pathway, and protocol integrate with the agency receiving the patient at the next stage of care, such as a subacute agency or hospice, says Murphy.

Barriers often block progress

A good disease management program involves integration of care across the spectrum from prevention to taking care of the very sick, says Brown. It also involves all parts of the health system. While many institutions are working toward this goal, few have achieved it, he says.

One reason is that it is difficult to coordinate care across sites. "We have delivered care in boxes. We have a physician office box, a hospital box, and an emergency department box, and we haven't coordinated them very well," says Brown.

Physicians and other disciplines must buy into the program, says Murphy. At MD Anderson, physicians are not required to enroll patients in the disease management program. Yet as data on program effectiveness are collected, more physicians are coming on board. In August 1996, the cancer center was enrolling 80 patients a month on pathways, yet by August 1998, the number had increased to 500 patients each month.

Another barrier is reimbursement, especially for education. The program at The Ohio State Medical Center is designed to last 12 months, but not all insurance companies will cover the cost. For example, many companies will cover a 12-week diabetes program but not one that lasts a year. "It's difficult to do behavior change in such a short period of time," says Cornett.

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Finding solutions for noncompliance

Identifying root causes helps improve outcomes

Case managers often become frustrated by patients whose failure to comply with treatment plans lands them back in the hospital for potentially preventable complications. However, before judging patients too harshly, one nurse executive recommends looking for the root causes that lead to noncompliance.

"In 1994, the Medicaid program in Tennessee went to a managed care system called TennCare," says **Stephanie Winfrey**, MSN, RN, quality review manager for Regional Medical Center in Memphis. "Many of the problems experienced previously with Medicaid patients were exacerbated under TennCare. As external case managers began working with TennCare patients, the problems behind their noncompliance became more evident.

The lessons Winfrey learned as she and other staff searched for the reasons behind the high incidence of noncompliance in TennCare patients

hold valuable lessons for case managers in any practice setting. Those lessons include:

1. Illiteracy.

"We find many patients are too embarrassed to admit that they cannot read the care instructions and health education materials given to them at discharge," she says. "There are ways that staff can assess literacy without embarrassing patients. For example, hand them a form upside down and see if they turn it around to read it properly."

2. Lack of education.

"Many patients have no basic understanding of their disease process. They don't understand the impact of not taking their hypertension medication or managing their diabetes," Winfrey says. "They don't see the need to take their asthma medication when they are feeling fine. Now, we contact patients in our high-utilization groups with additional information after discharge. We give them an opportunity to ask questions of a nurse or health educator and to attend classes on how to manage chronic disease."

3. Economic hardship.

"Patients are sometimes given five or more medications at discharge. Without assistance, they simply cannot afford to have all their prescriptions filled. Our pharmacy has established a medical assistance program through a number of pharmaceutical companies to get TennCare patients prescriptions at reduced cost."

4. Lack of transportation.

"Many of our TennCare patients have transportation problems. They don't have access to a car, and the bus schedules aren't convenient for keeping scheduled appointments," Winfrey says. "We set up an arrangement with local cab companies. Patients who have a real need to come into the clinic for an appointment can call a cab, and we reimburse the cost. Helping patients keep follow-up appointments really helps prevent subsequent readmissions."

5. Failure to understand managed care system.

"In the past, Medicaid patients presented themselves in the emergency department or clinic and received care," she says. "Under managed care, they must receive approval prior to treatment in many cases. We're working to help patients understand that the system has changed, and there are levels of care that require authorization. We're at risk financially when we fail to comply with authorization policies and procedures. Patients have to understand that."

6. Misdirection from physicians.

It's not just patients but also physicians who

must be educated about the managed care system, notes Winfrey. "Providers still tell patients that they should report to the emergency department if they don't feel better. We've set up a telephone triage system for patients to call in for clinical direction from a registered nurse following established protocols and then receive help obtaining a clinic visit for the next day." In addition, providers have established after-hours urgent care clinics to help take some of the pressure off the hospital emergency department.

"The real solution to solving issues of non-compliance is to look at patterns of care and utilization," Winfrey explains. Most of the time, noncompliance has a psychosocial issue at the root, and finding the cause can lead to a solution, she notes. ■

Written asthma plans cut hospitalizations in half

Few programs take advantage of simple technique

If someone handed you a simple, low-cost way to help your pediatric asthma patients cut emergency department (ED) visits and hospital admissions in half, you would snap it up, right? One such idea — providing patients with written action plans to use at home — has even been touted in national guidelines, but too few people are taking advantage of it, experts say.

"Asthma, of course, is not a stable disease," says **Harold Nelson**, MD, senior staff physician in the department of medicine at National Jewish Medical and Research Center in Denver. "It's very important that parents be in a position to modify the level of treatment when exacerbations occur. The point of the action plan is that they intervene at the first signs of deterioration so they can prevent their children from getting worse."

Nelson, who served on the expert panel that formulated the new asthma guidelines released earlier this year by the National Heart, Lung and Blood Institute in Bethesda, MD, says the rise in the last decade of hospital admissions, ED visits, and even death from asthma is largely preventable. One answer: Teach parents how to recognize symptoms and how to respond quickly and appropriately. Parents need a written plan that explains peak flow readings and

KEY POINTS

- The instability of asthma makes it very important that parents be in a position to modify the level of treatment when exacerbations occur.
- A written action plan can equip parents to intervene at the first signs of deterioration so they can prevent their children from getting worse.
- A recent study from The Kaiser Permanente Medical Group in Oakland, CA, found that children whose parents had a written management plan were half as likely to have a hospitalization or an emergency department visit.

specific symptoms such as increased night awakenings. The plan should state exactly what to do in these situations, such as doubling inhaled steroids or starting prednisone. Parents also need to know when the situation is deteriorating enough that they need to see the physician immediately.

"I don't think parents are getting the information at all," he says. "Many people haven't been told to double their inhaled steroids. Of course, many of them aren't even on inhaled steroids even though they should be, and I doubt most of them have a packet of prednisone at home that they can start taking."

Low-tech approach

This isn't just an idea that sounds good. A recent study from The Kaiser Permanente Medical Group in Oakland, CA, found that children whose parents had a written management plan were half as likely to have a hospitalization or an ED visit. The study, published late last year in *Pediatrics*, looked at 508 asthmatic children who had a hospital or ED visit in a six-month period and 990 asthmatic children without such a visit.

"There's no rocket science here," says lead author **Tracy Lieu**, MD, MPH, a pediatrician and health services researcher at the Kaiser Permanente division of research. "What we're saying is that the physician or the nurse case manager or the respiratory therapist needs to sit down with the parent or the patient and explain what to do and go over the written plan line by line. It doesn't take that much time."

If it isn't rocket science, why aren't patients getting these plans? Nelson and Lieu both say it's

mainly a matter of getting the message to physicians. Most physicians don't have forms on hand, and there seems to be a lack of understanding of what information parents need. It's rare to find a physician or group that consistently uses these written plans for asthma patients, they say.

Debbie Togger, RN, BSN, assistant clinical manager at the St. John Medical Group in Detroit, says some physicians have a plan but often it isn't given out consistently. Togger, whose son has asthma, had to request one. She has found it helps.

"Before I had the plan, I had the information in my head, but having it written down makes me feel more secure," she says. "You may have bits and pieces of the information in your head, but when it's written down, you don't have to worry about whether what you remember is correct."

Help patients identify their status

Togger recently helped devise a written asthma plan for the St. John Medical Group and the St. John Hospital and Medical Center that is being implemented. She says there weren't many examples of other plans, so the team mainly relied on an example given in the national guidelines. It shows patients how to determine their conditions by breaking symptoms into these zones:

☐ **green zone** — no breathing problems, continue using medications as prescribed by physician;

☐ **yellow zone** — some reduction in peak flow, need to increase medications;

☐ **red zone** — respiratory distress, call the physician.

"If you follow the plan, it works for most people," Togger says. "It helps patients manage their own disease so they don't have to keep going to the emergency department."

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Volunteers get young asthmatics in the swim

Low-cost way to reduce attacks, cut utilization

A swimming program run by volunteers helps young asthma patients at Boston Medical Center improve their physical condition and learn how to stay active. The program for inner-city children with moderate to severe asthma is a combination of asthma education and highly supervised swimming. It is designed to help children learn to manage their disease and increase their pulmonary function through exercise.

With current asthma therapy, almost all asthmatics have the chance to lead a normal life with minimal symptoms, “but many asthmatics and their families remain fearful and restrict activities,” explains **Suzanne Steinbach**, MD, chair of the pediatric allergy/respiratory department at Boston Medical Center and co-founder of the asthma swimming program.

In setting up the program, Steinbach was looking for a way to help her young patients get involved in an exercise program and learn about their disease. Swimming is an ideal sport for children with asthma because it improves lung function and decreases the frequency of asthma attacks, Steinbach says. Exercising in a humid environment also is helpful. “We were looking for a way to get our patients into the water, not to just splash around but to build up their endurance and their skills,” she says.

The program started this summer and continued

in the fall after school. The children receive an hour of education and an hour of swimming twice a week.

Research shows swimming helps build cardiovascular fitness for patients with asthma, and that as they participate in a swimming program, their pulmonary function improves and the frequency of acute attacks declines, Steinbach says.

During the summer, none of the children in the program had an asthma attack. Those who have come back for fall checkups are showing better pulmonary function and fewer, less severe symptoms than when they were in the clinic last spring. “We are providing so much education that children are getting the message that taking their medication brings rewards — being able to swim and to be with their friends,” she says.

Program volunteers are from project H.E.A.L.T.H. (Helping Empower and Lead Through Health), a Harvard University undergraduate group. “Without an ample supply of skilled volunteers, the program wouldn’t be possible,” Steinbach says.

Community participation

A community recreation center allows the program exclusive use of its pool during peak hours, two days a week. “The community center has been extraordinary. We wanted the most desirable time of day because that’s when it’s easiest to get both volunteers and children, and the pool administration was willing to go along,” she says.

The first hour of the program is devoted to an asthma education program that teaches the children about their condition and the necessity for monitoring their peak air flow and keeping up with medication. At the beginning of the second hour, the children check their peak flow and can get in the pool if their readings are within a normal range. Otherwise, they use their bronchodilators, then enter the water.

Volunteers coach the children in perfecting their swimming strokes, building endurance, and working on speed in the water.

“Many people believe that any type of exertion will lead to an asthma attack. This program helps relieve that anxiety,” Steinbach explains.

The program is staffed entirely by volunteers, but it took a lot of coordination on the part of the hospital’s paid staff to set it up. “This is a low-cost program if you can find the necessary collaborators. But it does take a lot of coordination. The clinic director spent a lot of time on it doing

KEY POINTS

- Research shows swimming helps build cardiovascular fitness for patients with asthma, and that as they participate in a swimming program, their pulmonary function improves, and the frequency of acute attacks declines.
- None of the children had an asthma attack during the program, and those who came back for fall check-ups showed better pulmonary function and fewer, less severe symptoms.
- A healthy supply of volunteers and donations from charitable foundations and pharmaceutical companies provide the free program, bathing suits, transportation, and educational materials.



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outreach calls and reminder calls to make the program work," Steinbach says.

The hospital solicited donations from charitable foundations and pharmaceutical companies, so there is no cost to the families. The donated funds have been used to purchase a bathing suit for one child, to provide transportation to and from the community center, and to cover the cost of the educational materials.

Volunteers run the show

During the summer, about 20 children and 10 volunteers participated. Two of the volunteers developed an asthma education program with materials available through the hospital. They conduct the educational session, then get into the pool with the children. Usually, there are at least six volunteers in the pool. In addition, the community center's lifeguards are on duty during the swimming sessions.

When Steinbach first proposed the program, the hospital attorneys developed a liability release form for parents to sign. The community

center also has a release that parents must sign.

The hospital has an insurance policy that protects Steinbach from liability when she participates in activities that do not involve clinical care. "In any swimming program, there are risks, but with the high level of supervision and the low child-to-instructor ratio, we have limited the risks," she says.

The student volunteers have been educated about asthma in general, exercise and swimming for asthmatics, the role of a swim instructor in treating an acute asthma episode, and how to use inhalers and nebulizers.

The student volunteer who directs the program has been trained in assessment and administration of medications and is equipped with inhalers, a portable nebulizer, and asthma medication.

Some of the volunteer instructors have asthma themselves and understand what the children are going through, Steinbach says.

Editor's note: For more information on the asthma swim program, contact Suzanne Steinbach, MD, at (617) 534-7417. ■



Acupuncture for quick relief of asthma symptoms

By Dónal P. O'Mathúna

Editor's note: Alternative medicine is a booming field in health care today. With more and more asthma patients turning to alternative therapies to supplement, and in many instances, replace traditional pharmacological management, disease management specialists should be aware of the leading options and their effects. Acupuncture, is often touted as symptomatic treatment asthma. Following is a review of the latest clinical information on acupuncture and its effectiveness on asthma exacerbation.

Asthma affects more than 14 million Americans — between 3% and 6% of adults and between 8% and 12% of children¹ — and its incidence and

severity are increasing.² In a survey of patients with controlled asthma, 33% reported canceling or rearranging activities within the past month, and 47% missed one or more days of work or school that month because of their asthma; 14% had visited an emergency department within the year, and 5% were hospitalized.²

There has been much interest in the use of alternative and complementary therapies for asthma.³⁻⁵ A survey found that 22% of Dutch general practitioners viewed acupuncture as an effective asthma treatment.⁶ The National Institutes of Health Consensus Statement on Acupuncture stated that acupuncture may be beneficial for asthma but only as part of a comprehensive management program.⁷

History and methods

The history of acupuncture's use, and its popular use for smoking cessation, were reviewed recently in our sister publication, *Alternative Medicine Alert*.⁸ Acupuncture is administered while patients sit or recline comfortably. Acupuncturists use numerous needle sites for asthma, with the back, neck, and ears used most frequently. Laser acupuncture is becoming more common, since it is painless,

avoids needle infection problems, and has had comparable effectiveness to needle acupuncture with some disorders.^{9,10}

The mechanism of action of acupuncture in asthma is unknown. Acupuncture raises levels of endorphins and cortisol in animals.¹¹ One hypothesis suggests that acupuncture could ameliorate a chronic inflammatory disease through circulation of endorphins and corticotrophin, both of which are made from the same prohormone and are released simultaneously from the pituitary.¹¹

Clinical studies have not verified this hypothesis.

Acupuncture has two broad schools of practice: classical and formula. Traditional Chinese Medicine (TCM) acupuncturists use classical acupuncture, evaluating patients individually and varying acupuncture points for the same condition between patients. TCM acupuncturists view acupuncture as inseparable from other

aspects of TCM, such as pulse diagnosis, yoga, and herbal remedies.

Other acupuncturists, those of the formula school, use standard acupoints for specific disorders and isolate acupuncture from other TCM therapies. Classical acupuncturists criticize the latter approach as a “recipe book” form of acupuncture, unrelated to real practice.¹² (All studies cited other than reference 13 used formula acupuncture.)

Clinical studies — quick relief

Numerous case studies and several uncontrolled trials report dramatic relief of asthmatic symptoms using acupuncture. Zang reported that acupuncture immediately and completely relieved symptoms in 98.9% of 192 asthma patients and that 76.5% of patients had marked

Results of Controlled Research Studies* of Acupuncture for Asthma

Study	Study Type	Asthma Type	n	Therapy Frequency	FEV ₁ /PEFR Improvement	Other Lung Functions	Reduction in Medication Usage	Subjective Improvement
Ref 15	double-blind, randomized	chronic and histamine-induced	20	once	significant/NA	2 others had significant changes and 2 nonsignificant		nonsignificant
Ref 16	double-blind, randomized, crossover	methacholine-induced	12	once	significant at 120 min. (nonsignificant beforehand)/NA	significant for 3 other measures		
Ref 17	single-blind, randomized	chronic	12	once		significant 10 of 26 treatments		significant 20 of 26 times
Ref 22	double-blind, randomized	chronic	20	once	NA/reverse significant		larger reduction in control	better for control
Ref 18	single-blind, randomized	chronic	17	once	significant/NA	1 other nonsignificant		
Ref 21	single-blind, randomized	exercise-induced	19	once	significant/significant	significant		
Ref 20	double-blind, randomized, crossover	histamine-induced	16	once	nonsignificant/NA	nonsignificant		
Ref 9	double-blind randomized	exercise-induced	13	once	nonsignificant/NA			
Ref 23	double-blind, randomized	chronic	17	twice weekly for 5 weeks	NA/significant after 2 weeks		significant after 2 weeks	significant on weekly scale, but not daily
Ref 11	double-blind, randomized, crossover	chronic	25	twice weekly for 4 weeks	nonsignificant/NA	nonsignificant for 3 other measures	nonsignificant	nonsignificant
Ref 13	double-blind, randomized	COPD (asthma in 4 subjects)	24	13 times over 3 weeks	nonsignificant/nonsignificant	1 other significant and 1 nonsignificant		significant
Ref 10	double-blind, randomized, crossover	chronic	15	twice weekly for 5 weeks	nonsignificant/NA	3 others nonsignificant	nonsignificant	nonsignificant

long-term improvement.¹⁴

The results of controlled studies have been less remarkable. The earliest study found that acupuncture significantly improved three of five pulmonary functions compared to sham acupuncture's effect ($P < 0.05$).¹⁵

After either type of acupuncture, isoproterenol aerosol (a beta agonist) produced greater improvement in all measures. Tashkin, et al, induced bronchoconstriction using methacholine, followed by either acupuncture, isoproterenol, sham acupuncture, nebulized saline, or no treatment.¹⁶

Acupuncture significantly improved all pulmonary functions ($P < 0.05$), though administration of isoproterenol produced markedly greater improvements ($P < 0.05$).

Patients' perceptions vs. data

Takishima, et al. studied changes in respiratory resistance in 10 patients while they received true and sham acupuncture.¹⁷ Significant reductions were found with 38% of true acupuncture treatments, 6% of sham treatments, and 71% of metaproterenol treatments ($P < 0.01$). Takishima also noted large discrepancies between patients' subjective reports of changes and objective pulmonary measurements (subjective improvements were reported in 77% of acupuncture treatments).

Luu, et al. found acupuncture significantly ($P < 0.05$) improved FEV1, but not vital capacity, compared to sham acupuncture.¹⁸ However, changes after salbutamol aerosol were significantly better than acupuncture on both measures ($P < 0.01$). Other studies have found no significant improvements in acute symptoms after acupuncture compared to sham.^{11,19,20} Another found that true acupuncture protected against exercise-induced asthma ($P < 0.01$), but so did sham acupuncture, although to a lesser extent ($P < 0.02$).²¹

Acupuncture is more commonly used as an adjunct to long-term asthma control. Tashkin, et al. (1985) believed that they were the first to examine repeated acupuncture treatments.¹¹ They found no significant improvements, either short-term or long-term, in pulmonary function, drug use, or subjective reporting. Dias, et al. found that all patients in their control group had better objective results after sham treatments ($P < 0.01$), and eight of the 10 controls felt better, too.²²

Christensen, et al. reported limited positive

findings for acupuncture.²³ After two weeks, treated patients had significantly higher peak expiratory flow rates (PEFR) and lower medication use than the control group ($P < 0.05$).

However, initial improvements were gradually lost, despite continued therapy, with no significant differences between the groups for the rest of the study. Tandon, et al. found no significant differences in pulmonary function tests, medication usage, or patients' subjective reports when using laser acupuncture.¹⁰ Another study found that laser acupuncture was not effective in preventing exercise-induced asthma.⁹

Four systematic reviews concluded that this topic lacks high-quality studies.^{1,4,6,24} A 1991 review scored the 13 best controlled studies on the basis of 18 predetermined methodologic criteria. Only three of the eight positive studies scored above 50 (out of 100), while all five negative studies scored over 50.6 The highest score was 72 (for reference 11). The variety of pulmonary measures used made meta-analysis impossible, and all the studies used small subject groups.

Jobst's review identifies problems with the choice of sham acupoints, claiming that many investigators used sham acupoints which TCM uses for various respiratory conditions.⁴ Jobst then reevaluated the asthma research, finding that acupuncture was more effective than first appeared. However, Jobst included unblinded studies in this reevaluation. Linde, et al. used a panel of physician acupuncturists to evaluate the adequacy of acupuncture in the studies and found little correlation between members' evaluations.²⁴

There appears to be great diversity in what constitutes good acupuncture therapy. A 1997 review concluded that "no recommendations can be made one way or the other to either patients, their physicians, or acupuncturists on the basis of the available data."¹

Adverse effects

Classical acupuncturists forewarn patients that acupuncture will initially exacerbate disease symptoms but will improve them later. In 16 asthma studies, 23 of the 320 subjects (7%) reported side effects such as fainting, ear ache, mild nausea, and dizziness.⁴ More serious adverse effects from acupuncture, though rare, include pneumothorax and infection.⁸ Compared to pharmacological asthma treatments, however, acupuncture has fewer side effects of lesser severity.

Unfortunately, avoidable deaths from asthma have been reported when patients refused conventional care, preferring acupuncture.^{25,26} Increased use of acupuncture has been thought to contribute to increased asthma mortality in France.²⁶ Indeed, the most favorable review of this research still cautions that abandoning conventional treatment “may be dangerous since it controls asthma and chronic bronchitis very effectively.”⁴

Conclusion

Acupuncture for quick relief of asthma has had some positive results, but high-quality studies are lacking. When acupuncture demonstrated significant benefits, standard pharmaceutical approaches gave markedly better improvements. Studies of long-term effectiveness consistently do not find objective pulmonary benefit. However, subjective improvements are often reported but without correlation with objective parameters.

The National Asthma Management Guidelines using conventional therapy are poorly complied with, suggesting that significant benefits in asthma control could be attained through better adherence to well-supported strategies.² Clinical studies do not warrant adding acupuncture to maintenance therapy such as inhaled steroids. For those already using acupuncture, adverse effects appear infrequent.

However, caution should be exercised lest subjective improvements mask early signs of an exacerbation and delay pursuit of effective treatment”⁴

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Inhaled steroids in the ED treatment of asthma

Source: Sung L, et al. Randomized controlled trial of inhaled budesonide as an adjunct to oral prednisone in acute asthma. *Acad Emerg Med* 1998; 5:209-213.

The clinical benefit of systemic glucocorticoids for patients in the emergency department (ED) with acute asthma has been clearly demonstrated, but would the addition of an inhaled steroid in the acute setting provide any further benefit? This is the question that Sung and colleagues asked in their randomized, controlled, double-blind trial comparing inhaled budesonide to placebo, as an adjunct to oral prednisone in acute pediatric asthma.

A total of 44 patients age 6 months to 18 years with moderate-to-severe asthma were randomized to receive 2 mg of either nebulized budesonide or normal saline in a single dose. All patients received nebulized salbutamol in a standard dosing schedule, 1 mg/kg of oral prednisone, and supplemental oxygen.

There was no significant difference between the two groups in the primary outcome measure, the pulmonary index score (PIS). Although based on bedside clinical measures, the PIS has been found to significantly correlate with FEV1/FVC and hospitalization rates in a prior study. A power calculation showed that the study size was large enough to detect a previously determined minimally clinically important difference in the PIS.

There was no statistically significant difference in admission rates between the two groups. However, Sung, et al. point out that there was a "trend" toward improved PIS at one hour in the budesonide group (median=5) as compared with the placebo group (median=6; P=0.07). In addition, the children who received budesonide were released from the ED or discharged from the hospital significantly more rapidly than those who

had received placebo (P=0.02). No adverse effects were seen.

Comment by *Staphanie Abbuhl, MD*

Even a double-blind, randomized, placebo-controlled trial, including a power calculation to determine sample size, does not always give us a straight answer. It is probably reasonable to conclude that if there is a benefit to inhaled budesonide as an adjunct to oral prednisone, it is likely a small effect or an effect that will only be understood when a large enough study is done to allow subgroup analysis.

If there is a possible additional benefit of inhaled budesonide to systemic steroids, it begs the question "why?" Is this a systemic effect, a topical effect, or both? It is possible that giving inhaled steroids is just another way of delivering systemic doses of steroids. However, it seems unlikely that a single dose of inhaled budesonide would significantly change the serum level of glucocorticoids, and, furthermore, there is no

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Editorial Questions

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evidence that differences in dosages in the moderate to high range make a difference. In a recent study in the critical care literature, inhaled flunisolide in multiple doses was compared to placebo in severe adult asthmatics in the ED who did not receive systemic steroids initially.¹

The authors found beneficial effects in the inhaled flunisolide group at 90 to 180 minutes and a lower admission rate for those patients who had symptoms greater than 24 hours. Our understanding of the glucocorticoid effect in asthma is based on anti-inflammatory action that requires six to 12 hours to occur.

As noted by the authors, the explanation for this early effect of inhaled steroids may be due to a potent topical vasoconstrictive action that could potentially reduce airway edema. In the meantime, I would favor the standard practice of PO or IV glucocorticoids while hoping for a large study that directly compares inhaled and systemic steroids.

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NEWS BRIEF

Preservatives in nebulizer inhalers criticized

Based on studies by University of Florida (UF) pharmacists, the Florida Board of Pharmacy is alerting pharmacists statewide to examine the inclusion of preservatives in bronchodilator nebulizer solutions before prescribing them to asthma patients.

The UF study is critical of the preservative benzalkonium chloride (BAC) and the stabilizer edetate disodium (EDTA) found in many air-compression spray inhalers used for asthma, emphysema, and chronic bronchitis. The study charges that in standard prescription vials, BAC and EDTA can constrict a patient's airways,

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counteracting or even worsening the effects of the medication.

The state's pharmacy board noted that preservative-free, sterile, single-dose vials of nebulizer products are available, and it warns pharmacists that not all of the products are therapeutically equivalent, based on the existence or exclusion of preservatives. The board also notes that the warning does not include standard "press and breathe" metered dose inhalers, which do not contain preservatives.

*For more details, contact **Leslie Hendeles, PharmD**, at the University of Florida Health Science Center. Telephone: (352) 466-0456. ■*

CE objectives

After reading this month's issue of *Asthma Management*, continuing education participants should be able to:

1. List the four components of a multidisciplinary asthma approach.
2. Explain how to help patients identify their conditions.
3. Cite the impact of swimming on pulmonary function.
4. List the risks in using acupuncture to treat asthma. ■

