SPECIAL ARTICLE

Improving Childhood Asthma Outcomes in the United States: A Blueprint for Policy Action

Marielena Lara, MD, MPH*‡; Sara Rosenbaum, JD§; Gary Rachelefsky, MD‡‖; Will Nicholas, MPH, PhD¶; Sally C. Morton, PhD*; Seth Emont, PhD#; Marian Branch, MA*; Barbara Genovese, MA*; Mary E. Vaiana, PhD*; Vernon Smith, PhD**; Lani Wheeler, MD‡‡; Thomas Platts-Mills, MD§§; Noreen Clark, PhD‖‖; Nicole Lurie, MSPH, MD*; and Kevin B. Weiss, MD¶¶

ABSTRACT. *Background/Objective.* **Asthma is increasingly being recognized as an important public health concern for children in the United States. Effective management of childhood asthma may require not only improving guideline-based therapeutic interventions, but also addressing social and physical environmental risk factors. The objective of this project was to create a blueprint for improvement of national policy in this area.**

Design/Methods. **A nominal group process with nationally recognized experts and leaders (referred to as "the committee") in childhood asthma.**

Results. **The committee identified 11 policy recommendations (numbered in order below) in 2 broad categories: Improving Health Care Delivery and Financing, and Strengthening the Public Health Infrastructure. Recommendations regarding Improving Health Care Delivery and Financing include the development and implementation of quality-of-care standards in 1) primary care, 2) self-management education, and 3) case-management interventions, and the expansion of insurance coverage and benefit design by 4) extending continuous health insurance coverage for all children, 5) developing model insurance benefits packages for essential childhood asthma services, and 6) educating health care purchasers in how to use them. Recommendations for Strengthening the Public Health Infrastructure include public funding of asthma services that fall outside the insurance system through establishing 7) public health grants to foster asthma-friendly communities and 8) school-based asthma initiatives. 9) Launching a national asthma public education campaign, 10) developing a national asthma surveillance system, and 11) establishing a national agenda for asthma prevention research, with an emphasis on epidemiologic and behavioral sciences, are also recommended.**

Conclusions. **Implementing these recommendations will require coordination of activities at the national, state, and local community level, and within and outside the health care delivery system. With a further commitment of national and local resources, implementation of these recommendations will likely lead to improved child and family asthma outcomes in the United States.** *Pediatrics* **2002;109:919–930;** ***childhood asthma, health care policy, health care services.***

From the University of California-Los Angeles/RAND Program on Latino Children with Asthma: *RAND Health, Santa Monica, California; and ‡Division of General Pediatrics, University of California-Los Angeles Department of Pediatrics, Los Angeles, California; §Center for Health Services Research and Policy, George Washington University School of Public Health and Health Services, Washington, DC; ‖Allergy Research Foundation, Los Angeles, California; ¶Los Angeles County Children and Families First Commission, Los Angeles, California; #White Mountain Research Associates, LLC, Plainsboro, New Jersey; **Health Management Associates, Lansing, Michigan; ‡‡Anne Arundel County Department of Health, Annapolis, Maryland; §§Asthma and Allergic Diseases Center, University of Virginia; ‖‖University of Michigan School of Public Health, Ann Arbor, Michigan; and ¶¶The Center for Healthcare Studies, and the Division of General Medicine, Department of Medicine, Northwestern University Medical School, Chicago, Illinois, and the Midwest Center for Health Services and Policy Research, Hines VA Medical Center, Hines, Illinois.

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Reprint requests to (M.L.) RAND Health, 1700 Main St, Box 2138, Santa Monica, CA 90407-2138. E-mail: lara@rand.org

ABBREVIATIONS. NAEPP, National Asthma Education and Prevention Program; SCHIP, State Children's Health Insurance Program.

CURRENT STATUS OF CHILDHOOD ASTHMA IN THE UNITED STATES

Childhood asthma is an epidemic with major public health and financial consequences. The number of asthma cases in children under 5 years old in the United States increased >160% between 1980 and 1994, and 74% among children ages 5 through 14 years.[1] Asthma is the most common chronic childhood illness and, in 1994, affected an estimated 5 million American children.[2] It accounts for an estimated 11.8 million school days missed per year nationwide, as well as loss of parental workdays.[3] In 1994, the United States spent an estimated $10.7 billion on asthma.[3,4]

Paradoxically, the asthma epidemic coincides with significant improvements in the medical treatments to manage the disease: The appropriate use of new preventive medications allows almost all children with asthma to lead normal lives without experiencing significant symptoms. There are several reasons for this paradox.

First, although primary care delivered by a properly trained asthma care professional can control the exacerbations of childhood asthma and prevent hospitalizations,[5] not enough is known about how to prevent or alter the course of the disease in the first place. Scientific evidence points toward a variety of risk factors, including a genetic predisposition, environmental exposures, poverty, and inadequate health care services.[5–10] However, neither the precise effect of each of these factors nor their interaction is known.

Second, because asthma is a public health problem spurred on by multiple causes, effective interventions seem to necessitate an investment in social and community resources that extends well beyond medical care and into the realm of behavioral and lifestyle modification, educational services, housing, environmental reforms, and other community services. For example, interventions to improve quality of health care services[11–24] (eg, patient education and access to a knowledgeable provider and the necessary medications and equipment) need to be coupled with environmental control of the indoor exposures that have been shown to worsen asthma[10] (eg, tobacco smoke, furry pets, dust mites, and cockroaches). Thus, controlling asthma implicates local school systems, state and local housing authorities, environmental agencies, and other parts of the government and social services structure that surrounds children and their families. Alone, none of these entities has the authority or the sufficient resources to institute safeguards, health education, and environmental improvements needed to reduce the risk of asthma.

The 106th Congress recognized childhood asthma as a national health problem requiring multidimensional policy actions within and among the social welfare and health systems that influence children's lives. The asthma-related provisions of the Children's Health Act of 2000 amended the Public Health Services Act to expand and strengthen national asthma services, prevention activities, and compilation of data, and called for the National Heart Lung and Blood Institute through the National Asthma Education Prevention Program to submit recommendations to Congress for coordination of Federal asthma activities.[25]

Although the Children's Health Act of 2000 is an important first step toward national asthma policy, appropriate funding and implementation of this Act are critical for its impact. The imperative to develop national asthma policy responses, such as the Act, is strong: Reducing asthma would not only improve the quality of life for children and their families, it would also be likely to produce cost savings among health insurers and patients with severe disease.[26]

OBJECTIVES OF THIS NATIONAL STUDY

Recognizing the unique multidimensionality of both the causes and remedies of asthma, the Robert Wood Johnson Foundation's Pediatric Asthma Initiative aims to address current national gaps in childhood asthma care through programs that: 1) use evidence-based clinical care models for Medicaid managed care populations; 2) implement surveillance and medical follow-up in emergency departments; 3) educate providers; 4) explore barriers to financing and treatment; 5) implement community-based programs to improve access to and quality of medical services, education, and family and community support; and 6) create a blueprint of policies in both the public and private sectors that could improve childhood asthma outcomes nationwide.

It is this last policy component, aimed at developing a specific set of policy recommendations, with implementation and funding options for each, that is summarized in this article. Two separate RAND reports describe in more detail the policy results and implications[27] and the methods used.[28]

METHODS

To develop specific recommendations, we relied on an interdisciplinary expert committee composed of national leaders in childhood asthma and used a nominal group method.[29,30] The use of both a structured review process, culminating in a face-to-face committee meeting and policy formulation methods, has been described in detail elsewhere.[27,28] Figure 1 provides a schematic of the committee process.

Each committee member was asked to rate a list of 63 draft policy recommendations according to 5 criteria:

1. Feasibility of implementation—Would the necessary resources be available? Would it be politically viable? Could this policy action be conducted in the real world?
2. Support by evidence—To what degree would this action be supported by research or historical evidence? Have well-controlled trials been conducted in representative populations? If not, would emerging research or expert judgment support effectiveness?
3. Reduction of inequalities—Would this action reduce inequalities in asthma outcomes among underserved children? If implemented, would this action reduce health care delivery barriers and other risk factors that disproportionately affect vulnerable populations?
4. Reduction of net costs—Would this action be cost-effective? After including cost for implementation, would this action reduce overall societal costs for asthma?
5. Improvement of overall outcomes—Would this action improve childhood asthma health-related outcomes? Would it reduce symptom burden and improve child and family quality of life? Would it reduce preventable asthma hospitalizations and deaths?

Using a predefined algorithm, RAND staff identified those 17 recommendations with mean scores in the top 20, and which also were in the top two-thirds on all 5 criteria. These results were distributed to the participants before the face-to-face expert committee meeting. The objective of the face-to-face meeting was to determine the "top 10" policy recommendations. Using the scores for each recommendation as a guide, the committee arrived, by consensus, at 21 recommendations. To further reduce this list, each committee member voted for 10 recommendations. Eliminating recommendations with fewer than 3 votes and combining related recommendations yielded a final list of 11 policy recommendations. To develop a policy framework, committee members discussed implementation and funding options for each recommendation.

After the meeting, RAND staff drafted a final set of policy recommendations, which were reviewed and approved by committee members and sent for comment to 28 external organizations. Based on this feedback, suggestions that involved substantive changes from the agreement reached at the meeting were reviewed in detail, with committee members agreeing unanimously with 10 of the 15 proposed changes. Of the remaining 5 proposed changes, 4 were supported by 75% of the committee, and a unanimous compromise was reached on the last one.

RESULTS I: CONCEPTUAL FRAMEWORK FOR ASTHMA POLICIES

The committee process led to a conceptual framework that encompasses the 11 specific policy recommendations into 1 overarching policy objective and 6 interrelated policy goals to meet this policy objective.

Overarching Policy Objective: Promote Asthma-Friendly Communities Nationwide

The overarching policy objective is to promote the development and maintenance of asthma-friendly communities. In an asthma-friendly community, children with asthma are quickly diagnosed and re-

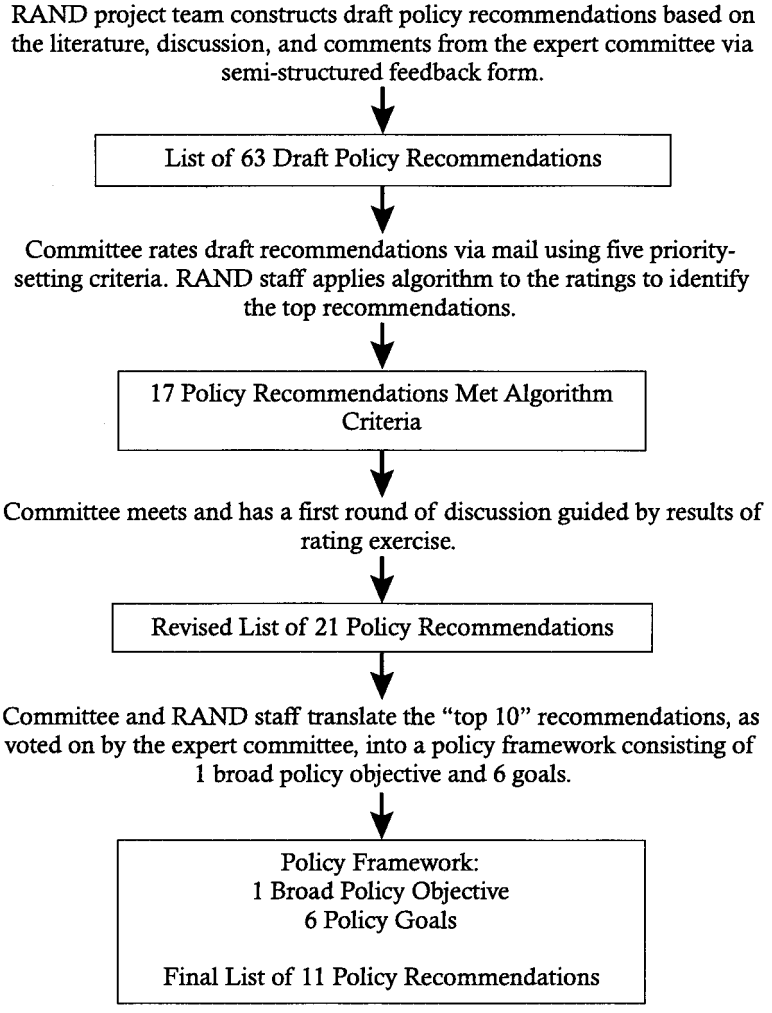

Fig 1. Schematic of expert committee process.

ceive appropriate and ongoing treatment; health care, school, and social agencies are prepared to meet the needs of children with asthma and their families; and children are safe from physical and social environmental risks that exacerbate asthma.

Policy Goal 1: Improve Access to and Quality of Asthma Health Care Services

Because appropriate medical care can control asthma symptoms,[5,31] a child's capacity to lead a normal life is highly related to the accessibility of high-quality health services. Having access to health services does not necessarily ensure that care is of optimal quality. Thus, improving both access to and quality of services should be the goal of a comprehensive effort.

Policy Goal 2: Improve Knowledge About Asthma Among Affected Individuals and the General Public

Scientific evidence and clinical experience document both the effectiveness and the necessity of patient self-management strategies to control asthma.[5,31–33] Increasing public awareness of asthma would 1) help reinforce an understanding on the part of the health professional community of the importance of patient-focused educational efforts, 2) assist families and children with asthma who are not currently receiving appropriate medical attention, and 3) support advocacy efforts aimed at broader policy reforms. Improving the general public's understanding of asthma could also increase chances of early referral and minimize the risks posed by potentially life-threatening situations when they occur.[33]

Policy Goal 3: Ensure Asthma-Friendly Schools

A school's asthma-friendliness refers to its capacity to promote quality of life for children with asthma, through policies and facilities that support and encourage adequate knowledge, time, and commitment of school staff to meet the needs of children with asthma during school hours and in after-school facilities.[34] Schools are a natural community hub for children and families, and thus a good base for asthma education and referral to health care and social services.

Policy Goal 4: Promote Asthma-Safe Home Environments

Both scientific evidence and expert consensus suggest that exposure to indoor allergens and irritants can exacerbate asthma symptoms among sensitive individuals and may play a role in the development of asthma.[10,35] Policies that promote asthma-safe home environments would involve eliminating or controlling asthma-provoking allergens and irritants

through collaboration among families, housing authorities, and payers.

Policy Goal 5: Encourage Innovation in Asthma Prevention and Management

The capacity to improve the treatment, management, and control of asthma will require advancing medical knowledge about asthma treatment and evaluating new strategies—such as environmental modification, immunologic intervention, and lifestyle changes—for preventing and managing symptoms. More research on quality improvement and other strategies to improve health care delivery systems is also necessary.

Policy Goal 6: Reduce Socioeconomic Disparities in Childhood Asthma Outcomes

The greater burden of the asthma epidemic among low-income, minority, and other underserved populations is extensively documented and is a widely recognized national public health problem.[6–8,36–38] Low-income and minority children are less likely to have the resources to adequately address the impact of illness, and are more likely to reside in communities with environmental risk factors that may exacerbate asthma.[39] In addition, some 10 million children remain uninsured and may not receive needed health care services. Despite improvements in insurance coverage in recent years,[40] there are disparities across different types of insurance coverage for insured children as well. Public policies need to pay attention to the special needs of these populations; otherwise, the gap in asthma care outcomes associated with socioeconomic disparities will not be addressed and may even widen.

RESULTS II: SPECIFIC POLICY RECOMMENDATIONS

The 11 policy recommendations are grouped into the 2 major thematic categories and several related subcategories listed below.

Improving Health Care Delivery and Financing

These recommendations are designed to improve the quality of asthma-related health care services and to increase access to these services through expansions in insurance coverage and improvements in the benefit structures of public and private insurance.

Promoting Quality of Care for Key Childhood Asthma Care Services

In light of the highly decentralized nature of the American health care system and the challenges thus inherent in any effort to improve the quality of health care, the 3 recommendations in this subcategory focus on 3 key areas of asthma care: primary care, self-management education, and targeted case-management. Table 1 summarizes the recommendations in this subcategory and their target audiences, and it provides examples of implementation and financing options for each.

Recommendation #1: Develop and Implement Primary Care Performance Measures for Childhood Asthma Care

Although evidence-based guidelines are available for childhood asthma, there is a substantial gap between accepted best practices for asthma care and the care delivered in the primary care setting. This recommendation entails using specific primary care performance criteria to monitor and reward adherence to the National Asthma Education and Prevention Program's (NAEPP) asthma guidelines.

Recommendation #2: Teach All Children With Persistent Asthma a Specific Set of Self-Management Skills

Educating patients about their disease can improve their ability to manage the disease and prevent complications that lead to hospitalizations and emergency department visits. This recommendation includes a series of activities to develop and implement a specific set of patient-education performance measures based on the NAEPP's guidelines for self-management education.

Recommendation #3: Provide Case-Management to High-Risk Children

Asthma case-management is a comprehensive set of services, provided by teams of medical professionals and social work staff that includes intensive tracking, coordinated care, and follow-up. Because case-management services are expensive, this recommendation focuses their use on high-risk children.

Expanding Coverage and Improving Benefits Design

The implementation and financing options for each of the 3 recommendations in this subcategory are presented in Table 2:

Recommendation #4: Extend Continuous Health Insurance Coverage to All Uninsured Children

Many studies have documented a strong link between health care insurance and children's access to primary and preventive health care.[41,42] This policy recommendation involves maximizing the potential of Medicaid and State Children's Health Insurance Program (SCHIP) programs for ensuring that virtually all children have access to health insurance coverage regardless of family income. Specifically, it highlights the need to expand insurance programs to 2 groups of children: children of working parents who do not qualify for public insurance but do not have insurance from their employers, and children who are not citizens.

Recommendation #5: Develop Model Benefit Packages for Essential Childhood Asthma Services

Having insurance is not, by itself, sufficient. Coverage should be for the range of services included in accepted quality guidelines for asthma care, and cost-sharing through premiums, deductibles, and coinsurance must be modest enough to avoid deterring access to care.[43] However, certain childhood asthma care services essential for proper treatment may not be routinely covered by private health insurance plans and may not be covered under state SCHIP plans maintained separately from Medicaid.

TABLE 1. Policy Recommendations for Promoting Quality of Care for Key Childhood Asthma Services

TARGET AUDIENCE(S)	IMPLEMENTATION OPTIONS	FUNDING OPTIONS
1. Develop and implement primary care performance measures for childhood asthma care		
• National Asthma Education and Prevention Program (NAEPP) • National health care quality monitoring organizations • Professional organizations* • National Association of State Medicaid Directors • Health care insurers, purchasers, and regulators • Health care delivery organizations • Health care researchers • Pharmaceutical industry • Health Care Financing Administration (HCFA)	• NAEPP collaborates with National Committee for Quality Assurance (NCQA) and professional organizations to develop and disseminate evidence-based performance measures for diagnosis and management, prescribing, and doctor-patient communication in the primary care setting. • NAEPP, NCQA, and professional organizations coordinate dissemination of primary care performance measures, based on the NAEPP clinical guidelines, to insurers, managed care organizations, and state Medicaid and State Children's Health Insurance Program (SCHIP). • NCQA works with NAEPP and professional organizations to incorporate asthma-care performance measures into the Health Plan Employer Data and Information System (HEDIS). • National Association of State Medicaid Directors implements guidelines and performance measures among Medicaid providers. • Health care purchasers encourage adherence through incentives tied to specific measures. • Health care delivery organizations use effective strategies to support providers in their efforts to optimize guideline-based performance. • Health care researchers develop and evaluate systems to improve coordination between primary care and emergency care management of asthma.	• Pharmaceutical industry, Health Care Financing Administration (HCFA), and NCQA fund development of performance measures. • Health care and health insurance organizations fund implementation of quality performance measures. • Funding from the Federal government and from the pharmaceutical industry (unrestricted) supports NAEPP's expanded role in maintaining and disseminating up-to-date childhood asthma primary care guidelines and performance measures.
2. Teach all children with persistent asthma and their families a specific set of self-management skills		
• National Asthma Education and Prevention Program (NAEPP) • National Asthma Education Certification Board • Professional organizations* • Patient/lay organizations • National health care quality monitoring organizations • Hospital and emergency department providers • Health care insurers, purchasers, and regulators • Health care delivery organizations • Pharmaceutical industry • Philanthropic organizations	• NAEPP collaborates with National Asthma Educator Certification Board, and provider and patient/lay organizations to establish and disseminate performance measures for content of asthma patient education and self-management programs. • National Committee for Quality Assurance (NCQA) and other quality monitoring organizations work with NAEPP to incorporate these measures into Health Plan Employer Data and Information System (HEDIS). • NAEPP, professional, patient/lay, and other organizations promote and endorse asthma self-management materials are evidence-based and meet patients' language and literacy requirements. • Provider and patient/lay organizations develop education materials for patients and their families and work closely with their local affiliates to implement asthma patient education at the local facility level. • Education modules are developed for primary care and for targeted interventions at hospital/emergency departments. • Health care purchasers make patient self-management education a covered benefit. • Health care purchasers and delivery organizations create patient and provider incentives to encourage mastery of asthma self-management.	• Federal government agencies and philanthropic organizations fund efforts to establish performance measures. • Pharmaceutical industry provides collaborative unrestricted funding. • Public and private insurers fund provision of asthma self-management education to patients. • Public health infrastructure (see Recommendation #7) and philanthropic organizations cover provision of asthma self-management education for children without health insurance.
3. Provide case-management to high-risk children		
• National Asthma Education and Prevention Program (NAEPP) • Agency for Healthcare Research and Quality (AHRQ) • Health care insurers, purchasers, and regulators • Health care organizations • Professional organizations* • American Association of Health Plans (AAHP) • Medicaid and State Children's Health Insurance Program (SCHIP) • Health Resources and Services Administration (HRSA) • Pharmaceutical industry • Philanthropic organizations	• NAEPP and AHRQ Asthma Evidence-based Practice Center synthesize existing research on asthma case-management. • NAEPP develops and disseminates performance measures, and health care purchasers and providers promote their use among all high-risk children. • Asthma case-management is provided by multidisciplinary teams and includes education, home environmental assessment and control, and coordination with school-based services. • For children with multiple hospital/emergency department visits, case-management is initiated upon discharge. • Professional organizations disseminate guidelines to providers, targeting those in high-risk areas. • Health care organizations target case-management in quality improvement efforts, and health care purchasers adequately reimburse case-management services. • AAHP and managed care organizations encourage their health plans to provide asthma case-management services. • State Medicaid and SCHIP programs ensure that all contracting plans have capacity to provide case-management services to high-risk areas. • HRSA ensures that all federally funded community health centers have capacity to provide case-management services to high-risk areas.	• Organizations that now update and disseminate quality performance measures for case-management continue to fund these tasks. • Pharmaceutical industry provides unrestricted collaborative funding. • Public and private health insurers fund provision of case-management services. • Public health infrastructure (see Recommendation #7) and philanthropic organizations cover provision of case-management services for children without insurance.

*Professional organizations include the following: American Academy of Allergy, Asthma and Immunology (AAAAI); American Academy of Family Physicians (AAFP); American Academy of Pediatrics (AAP); American Academy of Physician Assistants (AAPA); American College of Allergy, Asthma, and Immunology (ACAAI); American College of Emergency Physicians (ACEP); American Thoracic Society (ATS); and Society of Academic Emergency Medicine (SAEM).

TABLE 2. Policy Recommendations for Expanding Insurance Coverage and Benefits Design

TARGET AUDIENCE(S)	IMPLEMENTATION OPTIONS	FUNDING OPTIONS
4. Extend continuous health insurance coverage to all uninsured children		
• State Medicaid and State Children's Health Insurance Program (SCHIP) • Congress • Health care insurers and purchasers • Patient/lay organizations • Advocacy groups • Health Insurance Associations of America (HIAA) • American Association of Health Plans (AAHP)	• Asthma-related professional and lay organizations develop collaborations to educate state governments about importance of improving Medicaid and SCHIP coverage and of subsidizing employers to furnish affordable coverage. • States make maximum use of existing Medicaid and SCHIP program options to extend coverage. • States increase outreach activities to enroll patients eligible for Medicaid/SCHIP. • Federal and state governments provide subsidies generous enough to encourage large and small employers to offer affordable coverage. • Public health advocates educate Congress and state governments on public health/economic benefits of extending public health insurance coverage to all children. • Federal and state policies extend coverage to all children, regardless of legal residency status. • HIAA and AAHP educate group purchasers on the importance of accessible and affordable dependent coverage.	• Federal and state governments appropriate additional funds or offer tax incentives to expand eligibility and coverage for public insurance. • Congress, through direct appropriation or tax incentives, encourages employers to offer family coverage at subsidized rates. • Congress passes legislation to make non-citizen children who meet program requirements eligible for full coverage under Medicaid and SCHIP.
5. Develop model benefit packages for essential childhood asthma services		
• National Asthma Education and Prevention Program (NAEPP) • Centers for Disease Control and Prevention (CDC) • Health Care Financing Administration (HCFA) • Health Resources and Services Administration (HRSA) • Health care insurers and purchasers • National Association of State Medicaid Directors • U.S. Department of Health and Human Services (DHHS)	• NAEPP works with CDC, HCFA, and HRSA to design model asthma-benefit package for all children with asthma, based on NAEPP guidelines. • Covered benefits include referrals to asthma specialists under conditions of American Academy of Allergy, Asthma and Immunology (AAAAI) taskforce guidelines, and case-management services and medically necessary durable medical equipment and supplies for moderate and severe persistent asthma. • Organizations with appropriate expertise translate model asthma-benefit packages into contractual language that health insurers can use to negotiate improved asthma benefits with health plans. • HCFA makes explicit those model asthma benefits that are currently covered by Medicaid. • National Association of State Medicaid Directors ensures that all contracting Medicaid providers cover evidence-based benefits. • DHHS targets public health grant programs toward those benefits not adopted by private insurance market.	• Public and private sources, including CDC, HRSA, Medicaid, and health care insurance associations, fund development of asthma-specific contractual language for health care purchasers. • Premium payments and Medicaid fund asthma-related health insurance benefits. • Public health infrastructure (see Recommendation #7) and philanthropic organizations fund asthma-related health insurance benefits for uninsured children.
6. Educate health care purchasers about asthma benefits		
• Health care purchasers • Professional organizations* • Health care purchasing coalitions • National Association of State Medicaid Directors	• Professional and private philanthropic organizations (e.g., RWJF's Health Care Purchasing Institute) facilitate trainings to provide health care purchasers with asthma-specific benefits language for inclusion in contractual agreements with health plans. • Health-care-purchasing coalitions (e.g., Pacific Business Group on Health) with experience incorporating quality guidelines into contractual agreements also play a role in educating/training other purchasers. • National Association of State Medicaid Directors educates and trains state Medicaid program officers. • Purchasers are trained to use performance measures to hold plans financially accountable.	• Philanthropic organizations fund purchaser education process. • Health insurance organizations and employers pay for training and technical assistance they receive.

*Professional organizations include the following: American Academy of Allergy, Asthma and Immunology (AAAAI); American Academy of Family Physicians (AAFP); American Academy of Pediatrics (AAP); American Academy of Physician Assistants (AAPA); American College of Allergy, Asthma, and Immunology (ACAAI); American College of Emergency Physicians (ACEP); American Thoracic Society (ATS); and Society of Academic Emergency Medicine (SAEM).

Recommendation #6: Educate Health Care Purchasers About Asthma Benefits

Health care purchasers can use their purchasing power to affect health care delivery patterns. The rationale for this recommendation is to influence purchasers' use of the contracting process to improve benefit coverage and/or require compliance with quality of care performance measures.

Strengthening the Public Health Infrastructure

These recommendations are directed at the government agencies responsible for administering and funding public health functions that both support and supplement the health care delivery system. As a set, they represent the kind of reforms that are necessary to fight the asthma epidemic outside the clinical setting.

Public Funding of Asthma-Related Community and Health Services Not Currently Funded by Insurance System

The recommendations in this subcategory pertain to those personal and environmental health services that are essential to improving asthma outcomes but that are not feasibly financed through third-party

insurance, either because they are not considered insurable services or because they are for individuals with no insurance coverage. These services include, for example, environmental health interventions that control exposure to asthma-provoking agents and asthma management programs in schools. Table 3 presents the target audiences and implementation and funding options for the 2 recommendations in this subcategory:

Recommendation #7: Establish Public Health Grants to Foster Asthma-Friendly Communities and Home Environments

A public health approach aimed at making communities asthma-friendly is needed to improve the health care of children with asthma and provide them with asthma-safe home environments. This recommendation is designed to address policy interventions that go beyond the basic goal of insuring children against the cost of necessary medical and health services and that are aimed at ensuring proper infrastructure-related resources to high-risk communities to improve services and coordinate activities.

Recommendation #8: Promote Asthma-Friendly Schools and School-Based Asthma Programs

Although children spend a significant amount of time in school, many barriers exist in this setting for the recognition and treatment of asthma. This recommendation aims to improve this situation by estab-

TABLE 3. Policy Recommendations for Public Funding of Asthma-Related Community and Health Services Not Currently Funded by Insurance System

TARGET AUDIENCE(S)	IMPLEMENTATION OPTIONS	FUNDING OPTIONS
7. Establish public health grants to foster asthma-friendly communities and home environments		
• Congress • U.S. Department of Health and Human Services (DHHS) • Medicaid • State and local housing authorities • State and local school boards • U.S. Department of Housing and Urban Development (HUD) • Environmental Protection Agency (EPA) • Patient/lay organizations • Advocacy groups • Philanthropic organizations	• Congress and DHHS work together to ensure that the funding and implementation of asthma-related services under the Children's Health Act of 2000 are adequate, and include provision of essential asthma services, e.g., medically necessary durable medical equipment, medical care, self-management education, and targeted case-management to uninsured children with asthma. • DHHS considers, in implementation of the Act, providing funding incentives to states that adopt policies that promote *asthma-friendly* communities by addressing key environmental risk factors, such as (a) designating smoke-free areas in congregate housing, (b) ensuring that high-heat (130° F) washers are designated in all Laundromats, and (c) ensuring that all schools in high-risk communities have a nurse or designate trained in asthma management and education. • Congress supplements funds under the Act to expand Medicaid disproportionate-share program to include ambulatory care in underserved communities. • Representatives from state and local housing authorities, state and local school boards, small-business regulatory agencies, patient advocacy groups, HUD, and EPA, are consulted in establishing strategies for implementing the Children's Health Act of 2000.	• Congress appropriates funds for the Children's Health Act of 2000. • Expanded Medicaid funds come from disproportionate-share payments for ambulatory care organizations in underserved communities. • Appropriations for targeted programs (e.g., HUD's Healthy Homes Initiative, EPA) and tobacco tax revenues also sought. • Philanthropic organizations provide funding.
• 8. Promote asthma-friendly schools and school-based asthma programs		
• U.S. Department of Health and Human Services (DHHS) • U.S. Department of Education • National Asthma Education and Prevention Program (NAEPP) • State and local health and education agencies • Local school boards • National school groups • Professional organizations* • School nurses and other personnel • School administrators • Health Resources and Services Administration (HRSA) • Patient/lay organizations • Advocacy groups • Philanthropic organizations • Parents of children with asthma	• DHHS, Department of Education, and NAEPP develop performance measures for comprehensive and coordinated asthma school services. • School-based asthma services are physician- or nurse-directed, and every school has a nurse or trained designate to deliver asthma services. • State agencies and local school boards establish standards for comprehensive asthma school services, including training of teachers and policies for management of acute asthma symptoms and access to medications at school. • National school and professional groups disseminate performance measures and standards to schools, school boards, and health care organizations nationwide. • HRSA develops school nurse asthma education program. • National school professional and patient/lay organizations and advocacy groups educate parents about their children's rights and educate school administrators and boards about school nurse laws, the Individuals with Disabilities Education Act, and successful models for school asthma policies and practices.	• Congress, through Children's Health Act of 2000 or other legislation, makes funds available to DHHS and Department of Education for asthma-related school services. • Medicaid covers some health services provided in schools that comply with Medicaid participation requirements. • Communities, through local or other taxes, would ideally cover school-based services as a benefit available to all children who attend school. • These funds could be supplemented by Title V, Prevention Block Grant, and Federal School Health funds. • Philanthropic organizations provide funding.

*Professional organizations include the following: American Academy of Allergy, Asthma and Immunology (AAAAI); American Academy of Family Physicians (AAFP); American Academy of Pediatrics (AAP); American Academy of Physician Assistants (AAPA); American College of Allergy, Asthma, and Immunology (ACAAI); American College of Emergency Physicians (ACEP); American Thoracic Society (ATS); and Society of Academic Emergency Medicine (SAEM).

lishing performance measures for comprehensive and coordinated school health programs that are based on the recommendations of the NAEPP.

Increasing Public Awareness and Knowledge of Asthma

The recommendation in this subcategory, summarized in Table 4, addresses the need for broad public education aimed at improving public awareness and support of asthma treatment and prevention efforts.

Recommendation #9: Launch a National Asthma Public Education Campaign

Despite recent and significant increases in the prevalence and incidence of asthma, evidence indicates that lack of information about asthma risk factors, symptoms, and management is widespread. A special emphasis of this recommendation is the adaptation of national educational messages to communities with special cultural and linguistic needs.

Improving Surveillance and Prevention Research Efforts

Table 5 presents the implementation and funding options for the 2 recommendations in this subcategory:

Recommendation #10: Develop a National Asthma Surveillance System

This recommendation is intended to improve national data about asthma. Currently, the sources for these data are fragmented and inadequate for developing prevention, treatment, and management strategies.

Recommendation #11: Develop and Implement a National Agenda for Asthma Prevention Research

This recommendation addresses the need to improve the research evidence on which primary and secondary preventive interventions are based. It stresses, specifically, the resources necessary for research to identify the possible environmental, genetic, lifestyle (including diet and physical activity), and health care system factors associated with increases in asthma prevalence and morbidity.

COMMENT

The sheer breadth of these recommendations—reaching as they do housing and overall community environmental conditions, school systems, general public education, surveillance efforts, public and private health insurance coverage, and health care delivery systems—underscores the obstacles to devising and administering policy solutions to broad problems in public health. For asthma to be addressed comprehensively and effectively, it is necessary to carry out a reform plan that pushes the limits and traditional jurisdiction of the health care system. Policy changes cannot stop at medical care; they must also address the social and physical environmental factors that are associated with the asthma epidemic. Furthermore, the plan for change needs to integrate policy reforms at the national, state, and local community level, and include approaches that involve efforts within and outside the government.

This comprehensive approach to asthma policy reform faces many hurdles. The magnitude of the problem represents a challenge to the whole pediatric health care delivery and financing system. The complexity of the problem requires a level of focus and effort that has not occurred to date. Achieving coordination among various systems—the medical care system, public housing agencies, school systems, departments of recreation, and state environmental agencies—is tough when collaboration among even 2 agencies is difficult. Securing the involvement of multiple agencies in communities takes concerted leadership and political will.

Political barriers can include limited interest in the problem, with competing spending and policymaking priorities in difficult fiscal times, and the inherent difficulty of implementing policies that, for instance, attempt to balance the need for economic development and environmental justice in communities. Thus, efforts to devise integrated, cross-system solutions to fundamental health threats such as asthma

TABLE 4. Policy Recommendations for Increasing Public Awareness and Knowledge of Asthma

TARGET AUDIENCE(S)	IMPLEMENTATION OPTIONS	FUNDING OPTIONS
9. Launch a national asthma public education campaign		
• U.S. Department of Health and Human Services (DHHS) • National Asthma Education and Prevention Program (NAEPP) • Professional organizations* • Health care delivery organizations • Patient/lay organizations • National and local media • Sports organizations • Environmental Protection Agency (EPA) • Philanthropic organizations • Pharmaceutical industry	• DHHS, in collaboration with the NAEPP, professional organizations, and state and private agencies, develops and implements a national asthma public education campaign that expands on current efforts. • The campaign is designed to increase community awareness of prevalence and severity, and increase symptom recognition among affected children and families. • NAEPP, expanding on current public education efforts, brings together public and private asthma organizations, the media, and sports organizations to develop targeted messages to specific populations. • Surgeon General is principal spokesperson. • NAEPP-member asthma organizations provide technical assistance to community-based efforts. • Local community media adapt national messages through above NAEPP efforts, as well as those of EPA and Ad Council.	• Media campaign funded in part through congressional appropriations to DHHS. • Philanthropic organizations and pharmaceutical industry provide additional unrestricted funding to support formation of coalition to design message and identify target groups. • Network broadcasting companies donate airtime.

*Professional organizations include the following: American Academy of Allergy, Asthma and Immunology (AAAAI); American Academy of Family Physicians (AAFP); American Academy of Pediatrics (AAP); American Academy of Physician Assistants (AAPA); American College of Allergy, Asthma, and Immunology (ACAAI); American College of Emergency Physicians (ACEP); American Thoracic Society (ATS); and Society of Academic Emergency Medicine (SAEM).

TABLE 5. Policy Recommendations for Improving Surveillance and Prevention Research Efforts

TARGET AUDIENCE(S)	IMPLEMENTATION OPTIONS	FUNDING OPTIONS
10. Develop a national asthma surveillance system		
• Centers for Disease Control and Prevention (CDC) • State and local health departments • National Center for Health Statistics (NCHS) • Health Care Financing Administration (HCFA) • American Association of Health Plans (AAHP) • Council of State and Territorial Epidemiologists • State and local health departments • Health care providers • Congress	• CDC, coordinating with other Federal agencies and state health departments, takes lead in establishing and refining surveillance standards to allow for charting of progress to asthma-related Healthy People 2010 objectives. • NCHS works with experts to use asthma-related data from current national surveys—e.g., National Health Interview Survey. • CDC uses HCFA Medicaid data to compare asthma-related costs of continuous vs. intermittent enrollees. • AAHP links plan-level data systems to national surveillance system. • CDC and Council of State and Territorial Epidemiologists, in consultation with provider organizations, agree on appropriate notifiable asthma-related sentinel events (e.g., ICU admission, intubation, death). • State and local health departments establish asthma surveillance units, at the state and local level, to implement national standards and assess risk in high-severity areas. • Health care providers, and state and local health departments collaborate to implement a reporting mechanism for these notifiable sentinel events, including a system for appropriate medical follow-up.	• Congress (through provisions in Subtitle D of Children's Health Act of 2000) allocates funding for national asthma surveillance system. • State and local communities provide resources, with matching funds from Federal and state government.
• 11. Develop and implement a national agenda for asthma prevention research		
• U.S. Department of Health and Human Services (DHHS) • National Asthma Education and Prevention Program (NAEPP) • National Heart Lung and Blood Institute (NHLBI) • National Institute of Allergy and Infectious Diseases (NIAID) • Agency for Health Research and Quality (AHRQ) • Centers for Disease Control and Prevention (CDC) • Environmental Protection Agency (EPA) • Health Care Financing Administration (HCFA) • National Institute of Child Health and Human Development (NICHD) • National Institute of Nursing Research (NINR) • National Institute of Environmental Health Sciences (NIEHS) • Health care researchers • Congress • Philanthropic organizations • Pharmaceutical industry	• DHHS collaborates with NAEPP, and other Federal agencies, to develop research agenda, in consultation with active and prominent interdisciplinary asthma researchers. • Agenda provides guidance to individual federal agencies (NHLBI, NIAID, AHRQ, CDC, EPA, HCFA, NICHD, NINR, and NIEHS) as they determine their own research plans to fulfill their respective missions. • Basic science and primary prevention research focuses on causes, natural history, and variations in disease spectrum. • Secondary prevention research focuses on preventing exacerbations, barriers to good disease management, and evaluation of interventions to improve management and control of indoor environmental triggers. • Prevention research works to understand and eliminate disparities in asthma outcomes. • Prevention researchers work to develop improved measurement tools for surveillance and quality monitoring.	• Research agenda funded by congressional appropriations to DHHS, and Federal research agencies. • Relevant philanthropic private organizations and pharmaceutical industry are solicited for additional unrestricted funds.

can quickly become overwhelmed by the political complexities that arise whenever an attempt is made to move a set of multidimensional public policy reforms through a tangle of legislative committees. For example, the Children's Health Act of 2000, which addressed the nation's asthma crisis by promoting additional research and collaboration among health agencies, was somewhat limited in its conception and funding.

These challenges are not unique to asthma. As with other multidimensional public health problems (in both its causes and remedies), effective solutions depend on the extent to which policymakers can design and implement multiphased policy reforms that go beyond medical care and reach the broader physical and social environment in which children live. Repeated efforts for more than a century to address not only the quality and accessibility of medical care but, more fundamentally, the social determinants of health have faced political indifference or resistance, regardless of whether the underlying challenge was infant mortality, childhood injuries, or

other child health problems associated with factors in the home, community, and/or the environment in which children live.[44,45]

The emerging grassroots support and community organization around asthma nationwide—such as Zap Asthma in Atlanta, the Robert Wood Johnson Foundation's Allies Against Asthma demonstration projects, and the community-based asthma coalitions supported by the National Heart Lung and Blood Institute and the Centers for Disease Control and Prevention—demonstrate an increasing sense of urgency around the issues of childhood asthma. Public insistence on a solution may act as a powerful political lever in the case of asthma, because the condition cuts across society and affects children in all social situations. Furthermore, childhood asthma is a desirable issue for policymakers because good public policy can increase school attendance, educational attainment, and promote the cost-effective use of societal resources.

At face value, the Blueprint presents a utopian picture of the public and private policies that are necessary to improve asthma outcomes for all children in the United States. Recognizing this, the intent of the Blueprint is to provide a framework that can help integrate and monitor an incremental process toward long-term, large policy reforms. In framing the policy questions and developing a policy framework, the Blueprint attempts to "put flesh on the bone" of the vague concepts of collaboration and cooperation through broad, yet reasonably clear and targeted, recommendations that grow out of a unique and methodologically rigorous consensus-development effort. The Blueprint can be used to identify current gaps and/or areas of possible collaboration and synergy among existing institutions, organizations, programs, and financing vehicles.

National dissemination and discussion of the recommendations put forth here are a key first step in meeting this goal. Recognizing that nonclinical determinants are important contributors to asthma, the National Asthma Education and Prevention Program had previously formed a task force that provided recommendations on issues related to the financing of asthma care.[46] Following its tradition of collaborative public and private asthma leadership, the NAEPP recently created a Policy Workgroup to disseminate the Blueprint and to facilitate a coordinated response to its recommendations among the national asthma organizations that are part of its membership. The intent of the new Policy Workgroup is to generate and maintain momentum toward the collaborative and multifaceted policy approaches presented here. The NAEPP, with 40 member organizations that span the range of public and private interest in asthma, is well positioned to be successful in this task. However, to achieve this goal, it would need to secure resources for this additional role. In addition, the NAEPP would need to solicit input from organizations that are important target audiences for the Blueprint—such as national quality monitoring and insurance organizations—that are not currently included in its membership.

The Blueprint also will be disseminated to other forums and audiences. Although the NAEPP is currently the national organization most suitable for immediate dissemination and discussion of the Blueprint, no single organization or group alone can provide the kind of leadership necessary to promote and implement the policy reforms described here. Moreover, the kind of policy reforms outlined require more than organizational responses. They are a call for leadership and coordination not only at the highest legislative and executive levels of government and policy, but also at the local community level, where grassroots efforts are essential for both advocacy for and implementation of the necessary reforms.

Moving toward an environment in which asthma is both detected and managed efficiently in appropriate settings and with an appropriate level of quality has important implications for families, child health care providers, and insurers. For families and children, increased efforts to control asthma can yield not only healthier children but improved family functioning, workplace productivity, and overall family well-being. As with any serious health condition, asthma can rapidly deplete a family's financial and emotional resources. Reducing and controlling asthma thus can be conceived as an intervention to strengthen families.

Active involvement by child health care providers is also key. Efforts on the part of child health care professionals to reduce or ameliorate the factors that contribute to asthma ensures a greater level of focus and attention by policymakers and the potential for greater investment of resources in broadly conceived asthma-reduction initiatives. Furthermore, to the extent that controlling asthma requires strengthening child health care practice standards in asthma detection, treatment, and management, highly visible involvement by the leading professional organizations, as well as by individual provider community leaders, is essential to the creation of the type of environment in which improvement in the standard of care occurs. The committee hopes that professional organizations will actively review these recommendations and consider how they can be incorporated into child health care practice and broader policy endeavors. Of particular importance will be professional organization activities aimed at increasing the ties between individual medical care and broader community interventions through schools, public health agencies, and other community endeavors.

Finally, improving asthma care has implications for insurers. A number of the committee's recommendations underscore the gaps that can exist between the limits of health insurance and the nature, extent, and level of health care that are necessary to treat and manage a serious medical condition. A substantial proportion of private insurance is built on a model of time-limited, narrowly defined medical treatments for specific illnesses and injuries from which a full recovery can occur.[47] But for asthma, effective medical treatment may necessitate a wide array of interventions that encompass medical care as strictly defined, as well as patient education, certain types of supplies and equipment, and the pro-

vision of services financed in unconventional settings, such as schools and community settings. The Medicaid program historically has been quite flexible in its definition of what constitutes medical assistance, what medical assistance is necessary, and the settings in which necessary care may be furnished and paid for. The same cannot be said for most private insurance. As a result, significant aspects of proper childhood asthma care may go seriously underfinanced or completely unfinanced without supplemental resources.

No health condition more than asthma illustrates the extent to which the successful control and prevention of illness depends on the existence of a joint enterprise between public health and individual medical care. Nor is there a condition that better underscores the degree to which the quality and accessibility of the intervention depends on a multifaceted approach that requires active involvement on the part of the many agencies, institutions, community organizations, and others that affect the lives of children, in both the public and private sector.

In the end, change will come incrementally, through sustained effort. This in no way diminishes the importance of a policy blueprint, because to make sense, incremental changes must be part of a larger policy reform design. Thus, even where progress seems to be slow, an ongoing commitment to continuous policy formulation (and reformulation as conditions change) remains essential to success.

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THE WEIRD SCIENCE OF THE EDUCATION LAW

"The new law is filled with seemingly harmless phrases that have great symbolic meaning to proponents . . . There is [a] legislative demand that almost all policies rely on 'scientifically-based research.' The phrase originally referred to studies by the National Institute of Child Health and Human Development, finding that children with reading difficulties needed to learn phonics. The Institute's studies do not say that all children benefit from such lessons, or that phonics should be the most important part of instruction. Many careful studies of reading proficiency find that exposure to literature (sometimes called whole language instruction) also has value. But, educational conservatives have nonetheless decided that 'scientifically-based research' supports teaching only the mechanics of reading . . . Infatuated with the promise of scientific research in education, the drafters went further, sprinkling the bill with scores of other gratuitous references to science. Teachers must be recruited using scientifically-based research. Library media programs must be scientifically-based. Even school security officers in a drug prevention program must be hired using scientific methods . . . Such excess cheapens the concept of solid educational research, ensuring only that proponents of any policy will now claim a scientific basis for their proposals."

Rothstein R. *Wall Street Journal*. January 16, 2002

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