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Our Children at Risk: Asthma in America

An Action Plan for Reducing Environmental Factors Affecting Childhood Asthma

NOTE:

This document is a preliminary draft which has not been reviewed by the full Asthma Priority Area Workgroup. Significant changes are likely. In addition, this draft does not contain budget numbers pending decisions by participating departments and agencies.

President's Task Force on Environmental

Health Risks and Safety Risks to Children



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Overview of the Children's Asthma Initiative

ABOUT THE PRESIDENT'S TASK FORCE ON ENVIRONMENTAL HEALTH RISKS AND SAFETY RISKS TO CHILDREN

In recognition of the growing body of scientific information demonstrating that America's children suffer disproportionately from environmental health risks and safety risks, President Clinton issued an Executive Order on April 21, 1997, directing each Federal Agency to make it a

high priority to identify, assess, and address those risks. In issuing this order, the President also created the Task Force on Environmental Health Risks and Safety Risks to Children, co-chaired by Donna Shalala, Secretary of the Department of Health and Human Services, and Carol M. Browner, Administrator of the Environmental Protection Agency. The Task Force was charged with recommending strategies for children's environmental health and safety.

In April 1998, the Task Force identified four priority areas for immediate attention and first among them was the increasing problem of childhood asthma. Other high priority areas for investigation are unintentional injuries, developmental disorders, and childhood cancer. The Task Force created and charged the Asthma Priority Area Workgroup with investigating the current state of knowledge about the relationship between a child's environment and the onset or worsening of asthma, current Federal efforts to address the many facets of the issue and, most importantly, to make appropriate recommendations for action by the Federal government.

This report is the result of that effort.

SCOPE OF THE ASTHMA INITIATIVE: WHY CHILDREN AND THE ENVIRONMENT?

Asthma in children is of particular concern because of their developing neurological, immunological, digestive and other bodily systems and the fact that they breathe more air, eat more food and drink more liquid in proportion to their body weight than do adults. In addition, environmental factors such as airborne allergens and pollutants are thought to play a major contributing or causal role in the onset of asthma by sensitizing the airways and in triggering asthma attacks.

In a typical day, children may be exposed to a wide array of environmental agents at home, in day care centers, schools and while playing outdoors. While the role that genetics, environment, stress, and a myriad of other factors play in the development of asthma remains largely unknown, more is known about the association between many of the environmental agents children are exposed to on a daily basis and the triggering of asthma episodes.

However, the problem of asthma in America reaches far beyond children and encompasses factors far more numerous and complex than those that might be traditionally considered "environmental". For example, of the approximately 5,000 deaths from asthma that occur in the United States each year, most of those deaths occur in older Americans. Risk factors thought to lead to the development of asthma include genetic predisposition and such factors as diet and birth size, in addition to environmental pollutants. Asthma triggers include factors like weather, stress, and exercise in addition to a number of environmental agents that include indoor and outdoor pollutants, allergens, and occupational sensitizers.

This year 2000 initiative is about protecting children from asthma. To accomplish this goal, no aspect of prevention or management that affects childhood asthma can be ignored or dismissed. Critical issues such as early access to quality medical care and the importance of asthma management programs must be elements of any effective asthma control strategy and are therefore touched on in this initiative.

MEMBERS OF THE PRESIDENT'S TASK FORCE ON ENVIRONMENTAL HEALTH RISKS AND SAFETY RISKS TO CHILDREN

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Department of Labor

Honorable Janet Reno
Attorney General
Department of Justice

Honorable Andrew Cuomo
Secretary
Department of Housing and Urban
Development

Honorable Federico Pena
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Department of Energy

Honorable Richard Riley
Secretary
Department of Education

Honorable Dan Glickman
Secretary
Department of Agriculture

Secretary
Department of Transportation

Honorable Franklin Raines, Director
Office of Management and Budget

Honorable Kathleen McGinty, Chair
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Honorable Ann Brown
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Consumer Product Safety Commission

Honorable Janet Yellen
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Assistant to the President for Domestic
Policy

Honorable Rodney Slater

INTRODUCTION

The Growing Problem of Asthma in Children

Asthma is a chronic lung disease characterized by recurrent episodes of breathlessness, wheezing, coughing, and chest tightness; these episodes are also known as exacerbations. Without appropriate management, asthma symptoms may occur continuously, but more typically recur at irregular intervals. The severity of exacerbations can range from mild to life threatening. Both the frequency and severity of asthma symptoms can be reduced by the use of medications and by reducing exposure to the environmental triggers of asthma attacks.

For the past 20 years, an epidemic of asthma has occurred in the United States. By all indications, this epidemic is continuing. Although asthma has become a major public health problem affecting Americans of all ages, races and ethnic groups, children have been particularly severely affected.

National survey data, the responses of randomly selected US residents being asked whether they had symptoms of physician diagnosed asthma in the previous 12 months, indicate that the number of children with asthma in the United States has more than doubled in the past 15 years. In 1980, 2.3 million American children had asthma. By 1995, the most recent year for which data are available, the number of affected children had risen to 5.5 million. Based on these trends, it is estimated that in 1998 more than 6 million children in the United States have asthma. Rates of asthma are highest in boys and are increasing in both boys and girls, and in all race and ethnicity groups. The age group with highest asthma prevalence is school aged children aged 5 to 14, with a prevalence of 6.8%. The most rapid increase has occurred in children under 5 years old, with rates increasing over 160% over the past 15 years.

The number of deaths attributed to asthma in children has also increased. From a low of 84 deaths in children 18 and younger in 1977, the number of deaths has risen to 280 in 1995, a more than 3-fold increase. Although the increase in the rates of death have increased in all racial and ethnic groups, minority populations experience a disproportionately high rate of death from asthma. In 1995, the rate of death from asthma in African-American children, 11.5 / million, was over four times the rate in white Americans, 2.6 / million. Hispanic children had a mortality risk of 2.7 / million similar to that of white non-Hispanic children. This vastly elevated risk for death

among African-American children contrasts to the slightly elevated risk for actually having asthma. In 1995, African-American children 18 and younger had a rate of asthma of 8.8% population, a higher rate than found among white non-Hispanic children, 6.8% population.

The number of hospitalizations and emergency room visits for asthma have increased in all population groups, but more remarkably demonstrate the variation in the impact of asthma across racial and ethnic groups. African American children have a annual rate of hospitalization of 74 / 10,000, over 3 times that for whites, 21 / 10,000. In addition, African Americans are approximately 4 times more likely than white Americans to seek care at an emergency room than are whites.

At the present time, surveillance for asthma in children is limited to analyses of ongoing surveys and data systems on health events such as mortality, hospitalization, and outpatient visits. There is no national system to collect data from states specifically on asthma, although several states are developing systems to collect such data. Although national data do not provide the resolution necessary to identify particular geographic areas hardest hit by the asthma epidemic, surveys undertaken in a number of large cities in the United States indicate that the prevalence and severity of asthma are greatest in the medically underserved, inner city.

These measures, particularly for death, hospitalization, and emergency room visits, give an incomplete picture of the true burden of asthma in the United States. For example, one follow-up study of children with asthma in inner city areas found a nearly 10 times higher likelihood of a child suffering symptoms of asthma on a given day than visiting an emergency room. Asthma is one of the leading causes of school absenteeism, accounting for over 10 million missed school days per year. Asthma also accounts for many lost nights of sleep, limitation of activity, and disrupts family and care-giver routines. Asthma symptoms that are not severe enough to require a visit to an emergency room or to a physician can still be severe enough to prevent a person with asthma from living a normal life.

Estimating the costs of asthma is an indirect way to measure its health burden. In 1990, the cost of asthma to the U.S. economy was estimated to be \$6.2 billion, with the majority of the expense attributed to direct medical expenses. In 1996, a different analysis found the cost of asthma to be \$14 billion indicating a rapidly increasing financial burden. These estimates, which are not limited to the costs of childhood asthma, indicate that the direct medical costs of asthma account for between 1% and 3% of all health care expenditures in the United States.

What We Know About Childhood Asthma

Over the past 15 years, science has produced major advances in the understanding of asthma. Asthma is now known to be a disease of airway inflammation resulting from a complex interplay between environmental exposures and genetic and other host factors. This has implications for the medical treatment and for the environmental management of asthma.

For children who have developed asthma, the environmental triggers of asthma attacks have become increasingly well characterized. Exposure to house dust mites, cockroaches, and animal dander have been identified as the principal allergens that trigger asthma symptoms. Reducing exposure to these allergens has been shown not only to reduce asthma symptoms and the need for medication, but also to improve lung function. Environmental tobacco smoke is an important irritant that can trigger an asthma flare up and possibly potentiate the effects of allergens. Upper respiratory viral infections are also recognized as important triggers for asthma exacerbations.

Children with asthma have long been recognized as particularly sensitive to outdoor air pollution. Many common air pollutants, such as ozone, sulfur dioxide, and particulate matter, are known to be respiratory irritants and can contribute to an exacerbation of asthma symptoms. Air pollution also might act synergistically with other environmental factors to worsen asthma. For example, some evidence suggests that exposure to ozone can enhance a person's responsiveness to inhaled allergens. Whether long term exposure to these pollutants can actually contribute to the development of asthma is not known. To date, little research has examined the role of toxic air pollution in the development or exacerbation of asthma, although this is an issue of increasing public concern.

In addition to improved understanding of environmental management of asthma, the medical management of asthma has changed significantly. Inhaled anti-inflammatory medications have become the mainstay of medical management to prevent exacerbations and attenuate chronic symptoms of asthma. These medications are recommended by asthma experts for all persons with persistent asthma. In addition, improvements in monitoring techniques now permit objective measures of lung function that are easy for patients and physicians to use in assessing asthma severity and monitoring changes in the disease. In a disease like asthma that varies considerably over time and where changes in lung function can occur before symptoms develop,

these objective measures are essential tools for making decisions about adjusting medications. In addition, new medications to treat and prevent the symptoms of asthma are being developed and marketed. These medications, based on new insights into the cellular mechanisms of inflammation, offer the promise of being able to tailor asthma therapy more specifically to the needs of the individual child.

As a result of these advances in the management of asthma, both the medical and environmental aspects, asthma is better understood and the knowledge exists to manage asthma better than ever before. One especially important finding is that patient education has been documented to be cost effective. Teaching patients and their families specific asthma management skills improves asthma management, reduces the use of emergency services, and improves quality of life. This is a particularly important finding for the environmental management of asthma, since the environmental management of asthma requires specific knowledge about the triggers of asthma and specific actions that can be undertaken to reduce exposure to these triggers. The treatment goal for almost every individual with asthma should be for that person to lead a life unrestricted because of asthma.

Despite this knowledge, children are exposed to many environmental exposures that could trigger asthma attacks. For example, 25% of children in America live in areas that regularly exceed EPA limits for ozone. Approximately 38% of children are exposed to environmental tobacco smoke in the home on a regular basis and ETS exposure is so widespread that approximately 88% of all children have documented exposures to ETS.

Why Has Asthma Reached Epidemic Proportions in Children?

The causes of the increasing rate of asthma over the past 20 years and the particular role that environmental exposures play are not known, but there are some clues. Atopy, the genetically inherited susceptibility to become allergic, is the most important predictor of a child developing asthma. A substantial research effort is underway to identify the genes that are responsible for susceptibility to asthma. Because the genetic make-up of the population changes slowly, genetic susceptibility alone cannot be responsible for the epidemic of asthma that has occurred in the United States over the past 20 years. Further work is essential to clarify how genetic susceptibility and environmental exposures interact to cause asthma. Factors such as the intensity of environmental exposure and the age of the person being exposed are likely to be important.

Because children spend most of their time indoors (in some studies exceeding 90% of the time), the indoor environment is likely to have more to do with the development of asthma than the outdoor environment.

Factors that have been clearly associated with exacerbations of asthma, such as exposure to house dust mites and environmental tobacco smoke, have been implicated in some studies with the development of asthma. But other changes in lifestyle or exposures that stimulate the immune system may also be significant; the diet during the prenatal period and early infancy, the pattern of respiratory infections early in life, and decreasing rates of exercise have all been suggested as risk factors for the development of asthma. In the broadest sense, some change in environmental exposures or experiences is very likely to be the cause of the epidemic of asthma affecting children.

What Needs to Be Done?

The contrast between the epidemic of asthma and the improvements in understanding and managing asthma is striking. Additional work is needed to reverse the current trends of asthma among the children of America.

Determine the causes of asthma to prevent its initial onset and reverse the increasing prevalence of this disease.

There is inadequate knowledge on which to base a strategy to prevent asthma from occurring in children. The United States is not alone in experiencing this epidemic, which is affecting most industrialized countries. Further research is needed to clarify the genetic basis of susceptibility to asthma and the biologic mechanisms that explain the interaction of susceptibility and environmental exposure that lead to asthma. Understanding why asthma is on the rise will help identify ways asthma can be prevented.

Implement public health programs that foster access to medical care and accelerate the widespread use of current scientific knowledge to prevent and reduce the severity of attacks for those with asthma. Discover and develop easier, safer, more effective means of managing asthma to improve the quality of life for those who already have asthma.

For children who have asthma, more needs to be done to implement the things that we know can reduce the severity and recurrences of asthma. Further research is needed to understand the

barriers to implementing what we know, as well as research to identify environmental exposures that can trigger asthma and methods to reduce exposure to newly identified and known triggers.

Better understand and eliminate the disproportionate impact of asthma in minority populations and those living in poverty. The reasons for the disparity of the health burden of asthma in different population groups needs to be better understood and as this knowledge is obtained, steps to reduce disparities need to be undertaken. While barriers to adequate care are likely to be significant, increased exposure to indoor and ambient asthma allergens and irritants also must be examined.

Better surveillance for asthma in children is crucial to improving our understanding of the causes of asthma as well as for planning, evaluating, and improving asthma control activities. Understanding geographic variation in the prevalence of asthma and in the health burden of asthma underlie most attempts to prevent asthma and its consequences.

Implement solutions through public-private partnerships. To implement asthma control activities, partnerships at numerous levels will be needed. In government, close linkage between environmental and health agencies is needed because environmental exposures and their health consequences cross these boundaries. Similarly, inclusion of education agencies is vital, since children spend so much of their time in school facilities. In addition, asthma control activities supported by government must tap into and sustain private non-government efforts. This kind of partnership is true at the national level, with groups such as the American Lung Association, professional organizations, environmental consortia, and health maintenance organization trade groups. At the local level, a close working relationship with community groups and health care providers will be essential for success.

Evaluate which programs are most effective in reducing the burden of asthma so that they may be replicated. Measuring success and identifying the barriers to success will facilitate improving the health of children with asthma and finding how to prevent asthma. Health goals to measure progress toward improved asthma control are planned for Healthy People 2010, a comprehensive set of goals for the nations health. Besides these goals, analyses of the cost effectiveness and assessments of sustainability of ongoing and future asthma control projects are needed to better understand what works and why.

VISION FOR THE 21ST CENTURY

Every child in America will live, learn, work,
and play in environments that do not cause
or worsen asthma.

Asthma will no longer inhibit children from
leading full and active lives.

More cost-effective medical and
environmental asthma prevention and
management tools will enhance the lives of
children and their families.

GOALS/OBJECTIVES OF THE CHILDREN'S ENVIRONMENTAL HEALTH ASTHMA INITIATIVE

By the year 2005, guidelines for primary prevention of asthma will be developed.

By the year 2010, the increasing rate of asthma prevalence in children will be halted.

By the year 2010, every child in America will have prompt, affordable, and

convenient access to the most effective asthma management techniques available.

By the year 2010, asthma hospitalization rates in children will have fallen to no more than 15 hospitalizations per 10,000 people. (HP 2010 draft)

By the year 2010, the asthma death rate in children will have fallen to no more than 2 per million people. (HP 2010 draft)

By the year 2010, no more than 10% of people with asthma will experience activity limitations. (HP 2010 draft)

STRATEGY AND RECOMMENDATIONS

1. Accelerate research into the causes of asthma and those environmental factors that contribute to the onset of asthma in children.

Though progress is being made in understanding what causes asthma, there is currently insufficient scientific information to establish guidelines and recommendations for public health practices designed to prevent asthma from developing in children in the first place (i.e. primary prevention).

In order to establish primary prevention guidelines to reduce the number of children who develop asthma, a top priority for research is to determine the causes of asthma in children. To understand what causes asthma, research must identify the basic cellular and molecular

mechanisms that cause airway inflammation and sensitization and, in particular, the interaction of environmental exposures and genetic susceptibility.

Dust mite avoidance during the first nine months of life has been shown to reduce the frequency of asthma, allergic rhinitis and eczema. However, the beneficial effects of these temporary allergen avoidance measures do not persist beyond the first year of life and no studies have assessed the efficacy of persistent allergen avoidance in the prevention of allergen sensitization or in the primary prevention of asthma in children.

The prevalence of asthma in children is not related to either time trends or geographic variations in any of the combustion-related air pollutants, that is, ozone, particulate matter, sulfur dioxide, or nitrogen dioxide. Epidemiologic studies have suggested that exposures to volatile organic compounds, including toxic air pollutants, may be related to the prevalence of asthma in children. Adult-onset asthma is known to be associated with occupational exposures to volatile organic compounds including formaldehyde, ethylene oxide, and isocyanates.

Key Action: NIEHS will conduct the Environmental Intervention in the Primary Prevention of Asthma in Children Study (EIPPAC) to investigate the effectiveness of persistent allergen avoidance in preventing allergen sensitization, reducing asthma prevalence, and improving lung function in high risk, lower socioeconomic status children. The study will also collect cell samples to test for candidate asthma susceptibility genes. This intervention study will provide important information concerning the role of environmental intervention in the primary prevention of asthma in children and will provide insight into basic immunologic mechanisms operative during allergen sensitization and the expression of allergic diseases.

Key Action: EPA and NIEHS will fund X Centers for Children's Environmental Health and Disease Prevention Research to support a multi-center coordinated program of high-quality research in environmental aspects of environmental disease, with the ultimate goal of facilitating and accelerating translation of basic science knowledge into clinical applications or intervention strategies that can be used to reduce the incidence of environmentally related childhood disease.

Key Action: Complete National Academy of Sciences assessment of the risks associated with indoor pollutants and integrate findings into research planning and guidance development.

Key Action: EPA will implement those portions of its asthma research strategy addressing environmental factors which contribute to the onset of asthma in children.

2. Accelerate research on effective environmental interventions for reducing asthma attacks in children who already have the disease.

Though substantial progress is being made in this area, we need to accelerate research to develop and evaluate additional and improved environmental strategies for reducing the frequency and severity of asthma attacks among children who already have the disease.

Among children with asthma, inhaled antigens including pollen, fungal spores, animal dander, dust mites, and cockroaches may trigger asthma attacks. Air pollutants including ozone and nitrogen dioxide irritate airways, increase children's sensitivity to inhaled antigens, and may enhance the induction of asthma by allergens. Air pollutants may be indirectly related to the prevalence of childhood allergies (atopy) and to the severity of allergic reactions to indoor and seasonal allergens.

Combustion-related air pollutants, including ozone and particulate matter, are associated over time with reduced lung function and increased unscheduled hospital admissions for asthma among children. However, most epidemiologic and clinical studies have focused on specific air pollutants rather than on real-world combinations of air pollutants. We need further research to investigate the effect of real-world mixtures of air pollutants on children's lung function and respiratory symptoms.

Critical research needs in this area include:

- Identify and expand the understanding of the biologic mechanisms that cause asthma symptoms in children who have asthma.
- Develop, test, and evaluate environmental intervention strategies to find those that are most effective.
- Understand the role that the child's environment plays in the exacerbation of asthma.

Key Action: NIEHS and HUD will complete the first National Allergen Survey to provide estimates of allergen exposure in the U.S. population.

Key Action: Phase II of the cooperative Inner City Asthma Study (ICAS), will be completed. ICAS seeks to design and evaluate an asthma intervention, based in health care delivery settings, aimed at reducing asthma morbidity in a cost-effective manner. It includes medical management in a health care facility, self management by asthmatics and their families and indoor environmental interventions including studies to measure, monitor and reduce exposure to indoor allergens and environmental tobacco smoke.

Key Action: EPA will implement those portions of its asthma research strategy addressing environmental factors which contribute to the exacerbation and prevention of asthma episodes in children.

3. Establish a coordinated, integrated, and systematic nationwide surveillance system for collecting and analyzing health outcome and risk factor data at the state, regional and local levels.

The current surveillance system permits tracking of asthma prevalence, asthma physician office visits, asthma emergency room visits, asthma hospitalizations and asthma mortality at a national level and in four geographic regions (i.e., Northeast, Midwest, South, and West) through surveys conducted by NCHS. Surveillance information on asthma, with the exception of mortality data, are not available at the state or local level. Such information is needed to identify high risk populations and to design and implement interventions aimed at preventing the development or exacerbation of asthma in children. This information could also be used by state and local health agencies to evaluate the impact of local sources of air pollution on childhood asthma in specific communities.

Key Action: The Federal government will build the capability and infrastructure within state and local health departments to develop a surveillance system consisting of the following components:

- Annual surveys of state and major metropolitan areas using standard instruments and methods to define the prevalence of asthma, to characterize the severity of asthma and the quality of life for persons with asthma, and to assess the quality of asthma management.
- Systematic, periodic examinations of existing mortality and morbidity data at state / city or county level to determine: deaths, hospitalizations, and emergency room visits for asthma.
- Modify existing data collection systems as needed, to ensure the ability to measure progress toward the Healthy People 2010 goals, now under development.

4. Set measurable and consistent goals for childhood asthma under the Healthy People 2010 program.

In 1990, the Federal government established a comprehensive agenda for improving the health of Americans. *Healthy People*, the prevention agenda for the Nation, targets increasing the years of healthy life for Americans and reducing the health disparities. It is a statement of national

opportunities--a tool that identifies the most significant and controllable health issues for Americans and focuses public and private sector efforts to address them through a series of objectives emphasizing prevention. Known as Healthy People 2000, this agenda included three asthma-specific objectives. They included targets for reducing activity limitation, for patient education and for reducing asthma morbidity to no more than 225 hospitalizations among children per 100,000 people. While some progress is being made in the area of patient education, available data indicate that the rate of hospitalizations and activity limitation remain unacceptably high.

A revised set of health objectives are now being developed for the year 2010. The draft objectives currently encompass a significantly expanded set of asthma-related objectives as well as a series of environmental objectives addressing many known asthma triggers such as indoor allergens, secondhand smoke and outdoor air pollution. The Healthy People 2010 objectives will not be published until January of the year 2000, but it is the intent of this initiative that its goals be modified as needed to ensure full consistency with the asthma related objectives of the final Healthy People 2010 project.

Key Action: The Asthma Priority Area Workgroup of the Task Force on Environmental Health Risks and Safety Risks to Children will participate in and support development of the Healthy People 2010 program objectives.

5. Invest in evaluation of programs to identify those strategies that are most effective in reducing the burden of asthma so that they may be replicated.

Asthma intervention programs and related activities need to be fully evaluated to determine those techniques which are successful and should be replicated. Types of evaluation that need to be incorporated in the planning phase of such activities include:

- health outcomes of the activity
- whether the activities themselves worked as planned
- whether the processes used to implement the activity were effective and
- the cost-effectiveness of the intervention or activity

- long term sustainability

Key Actions:

- Develop and utilize appropriate tools to evaluate cost-effectiveness of various intervention and asthma management strategies.
- Evaluate local and regional asthma coalition efforts.
- Incorporate into, and adequately fund, appropriate evaluation mechanisms for all asthma intervention programs.
- Broadcast the success of those programs that have already been rigorously evaluated, specifying factors required for their success.

6. Better understand and eliminate the disproportionate impact of asthma in minority populations and those living in poverty.

Poor and minority children are disproportionately affected by asthma, which has reached epidemic proportions in many American inner cities. Understanding the factors that contribute to the disproportionate impact of asthma on lower socio-economic populations will be critical to efforts to understand the causes of asthma so that the disparities between rich and poor, minority and non-minority, can be reduced and eventually eliminated. Such factors may include differing intensities of environmental exposures, access to and quality of care, and stress, among others.

Carry Out Research on Asthma Prevalence in Special Population Groups

- Separate roles of geography and environmental factors from ethnicity and socio-cultural variables in assessing their contribution to asthma prevalence.
- Examine the differences in asthma prevalence in Hispanics of different origins in order to provide some clues on risk factors contributing to higher prevalence rates.
- Examine the influence of poverty versus racial and ethnic group on use of emergency room services and hospitalization rates.

Implement Public Health Interventions for Vulnerable Populations

- Ensure a substantial and appropriate focus of public health initiatives on vulnerable populations.
- Make culturally and linguistically appropriate information on asthma widely available.
- Expand the availability of services to the under-served in lower socioeconomic communities.

Key Action: Support a collaborative national asthma surveillance program in which advanced computer systems generate data that can be used to study issues related to race and gender difference in asthma morbidity and mortality among children, identify gaps in providing comprehensive care and monitor trends in asthma morbidity and mortality at the community level.

7. Implement public health programs that foster access to medical care and accelerate the widespread use of current scientific knowledge to prevent and reduce the severity of attacks for those with asthma.

Despite uncertainty about the causes of the increase in asthma, broad consensus exists within the medical and scientific communities that severe illness and death from asthma can be prevented and quality of life can be improved. Experts convened by the National Asthma Education and Prevention Program (NAEPP) coordinated by the National Heart, Lung and Blood Institute (NHLBI) of the National Institutes of Health (NIH) recently assessed the pertinent scientific literature and offered recommendations for managing asthma.

While there is consensus behind the NAEPP guidelines on how best to diagnose and treat asthma, recent evidence suggests that medical practice lags behind the NAEPP recommendations and that access to care as well as the quality of care may play a significant role in worsening asthma.

Some model programs for educating health care providers and patients have demonstrated substantial benefits of implementing the guidelines and providing quality care. These programs promote self management of asthma and have achieved dramatic improvements in functional status, quality of life, and improved school performance for children. They have achieved cost

reductions of up to 50 percent by cutting hospitalizations and acute care visits. The shift in medical care toward the managed care model offers opportunities to standardize management and achieve cost savings while also improving the health of enrollees.

The best management of asthma is achieved with a multi-faceted approach, including: effective patient education, enhanced utilization of health care services, properly trained physicians, innovations in disease management programs, and support systems to facilitate self-management and good quality, preventive care. As model programs are developed and promoted, decreases in hospitalizations for asthma represent a strong indicator of their effectiveness.

For children without access to care or with barriers to receiving adequate care, quality health care is impossible. Emergency rooms or urgent care facilities may serve as the only source of primary care for such children. These settings are ill-equipped to provide the kind of education and chronic disease management services that are essential to reducing the severity and frequency of asthma attacks.

Change Physician and Patient Behavior

- Use appropriate partnerships and existing and innovative mechanisms to ensure that health practitioners have access to, and utilize, the most up-to-date Guidelines for the Diagnosis and Management of Asthma published and periodically updated by the NAEPP/NHLBI/NIH.
- Develop information on how to build public health programs that translate the science base into changes in physician and patient behavior.
- Encourage and assist health care practitioners, including doctors, nurses, and personnel in emergency rooms and urgent care facilities, to provide high quality patient education on reducing pollutants that may cause or trigger asthma.
- Establish partnerships with managed care organizations to integrate asthma prevention programs into existing health education programs.

Key Action: Increase efforts to implement recommendations of NAEPP.

Key Action: Establish minimum standards, using the NAEPP guidelines, for health maintenance organizations and Medicaid contractors to assure the appropriate medical and environmental management of asthma.

Expand Support for State and Local Public Health Action.

Recent advances in the treatment of asthma and in identifying the environmental triggers of asthma attacks have not resulted in measurable health benefits to the U.S. population. Public health agencies are in a unique position to translate the growing science base into a national strategy to reduce the human and financial toll of asthma. These programs should include the following components:

- (1) Education and training
- (2) Asthma surveillance
- (3) Coalitions for prevention

Key Action: In FY 2000, provide grants to X state health departments to ensure that effective asthma education, prevention, and public health outreach activities in local communities are developed, expanded and sustained.

Key Action: Conduct an assessment of the economic and institutional barriers to providing access to quality health care – including access to primary care providers – for all children and identify strategies for overcoming those barriers.

Foster public/private partnerships.

A successful effort to reduce childhood asthma will depend in part on the level of success achieved in enlisting all sectors of society in a team effort to implement effective programs to prevent and manage the disease. Many health and professional organizations, corporations, and foundations have already forged effective partnerships with government to conduct training, educate health care providers and the public, and to implement a wide range of prevention

activities at the national, state and local levels.

We need to expand partnerships both within government and between government and the private sector. As knowledge about the primary causes of asthma and the triggers of asthma attacks expands, the challenge for the 21st century will be to learn how to successfully integrate these findings into an institutionalized and integrated societal assault on all of the factors that contribute to and worsen asthma, including but not limited to environmental factors and accessible, affordable, and quality health care. Partnerships will be critical to implementing this broad vision of asthma control.

We need a better understanding of the scope of current public/private partnership efforts and the factors that are likely to motivate increased investment by the private sector in asthma research, education, and prevention.

Key Action: Issue an Executive challenge to the private sector to invest in community-based partnerships to reduce asthma morbidity and mortality in children.

Conduct a national asthma awareness campaign.

We need to educate parents about the importance of early diagnosis and treatment of childhood asthma, and basic secondary prevention actions.

Key Action: EPA and DHHS, under the coordination of the National Asthma Education and Prevention Program of the National Heart, Lung, and Blood Institute, and in close cooperation with the private sector, will undertake a national asthma awareness campaign, targeted at parents and emphasizing avoidable asthma triggers such as environmental tobacco smoke, indoor allergens, and outdoor air pollution episodes as well as early diagnosis and effective management.

Reduce children's exposure to indoor triggers in their homes.

ETS and indoor allergens are major contributors to the incidence of asthma in young children and play a significant role in the number and severity of asthma attacks. Asthma prevalence has

risen 75% between 1980 and 1994 affecting as many as 5 million American children. Asthma causes around 600 deaths of children each year. Reducing smoking in homes with young children will improve the health status of the 200,000 to 1,000,000 asthmatic children whose condition is made worse by ETS exposure.

Key Action: EPA will leverage existing home intervention networks and programs to dramatically expand the mechanisms through which parents and children receive key messages about asthma prevention and management. For example, EPA will establish partnerships with the extensive lead paint home intervention network and with such potential home health educators as AmeriCorps volunteers, VISTA volunteers, "Welfare to work" trainees, Head Start graduates, community leaders, etc. to bring asthma prevention messages (e.g., smoking and controlling allergens through techniques such as Integrated Pest Management) directly into millions of homes in a cost-effective manner.

Key Action: EPA, in collaboration with CDC and several NIH agencies, will conduct a national public information campaign to reduce children's exposure to environmental tobacco smoke in the home.

Key Action: Work with the Department of Housing and Urban Development (HUD), health departments with authority over low-income housing, home health educators, and building operators to implement appropriate guidance on building operation and maintenance practices, including ventilation, moisture control and integrated pest management techniques.

Key Action: Conduct research in collaboration with the private sector to identify home construction, maintenance and occupancy practices that will reduce children's exposure to environmental agents that trigger asthma episodes.

Expand asthma control activities beyond the home.

Integrate asthma control activities into existing systems such as schools, child care, youth programs, workplaces, primary health, correctional facilities and job training programs.

Establish school based asthma programs in every community.

Asthma is the most common chronic illnesses among school-aged children in the United States, affecting an estimated three million children. In 1993, the prevalence of asthma for the

population as a whole was 5.1 percent and 7.2 percent among persons under 18 years of age. It is the leading cause of school absences; children with asthma miss an average of twice as many school days as other children. In a classroom of 30 children, two children are likely to have asthma.

The educational system is a critical component of effective efforts to reduce asthma in children. Programs need to be developed involving asthma education, management, and awareness at the local school level to help monitor and control the physical environment, promote self-management, help identify students with asthma, train school staff, and establish action plans for handling asthma episodes.

Critical components of a school-based strategy include:

- Develop and strengthen partnerships between DHHS, EPA, Department of Education and non-governmental public and private sector organizations to implement such programs.
- Implement effective programs (e.g. IAQ Tools for Schools) to reduce potential asthma triggers in schools and address other factors (e.g. inadequate ventilation) that may contribute to exacerbation of asthma.
- Establish and disseminate guidelines for the storage and administration of asthma medications.

Key Action: EPA will expand implementation of its Indoor Air Quality Tools for Schools Program to X schools in FY2000.

Key Action: EPA will collaborate with the American Lung Association in expanding its successful Open Airways asthma management program to all elementary schools nationwide.

Ensure compliance with all Federal and State environmental laws governing air pollution.

Federal and state agencies should establish targeted compliance monitoring and enforcement efforts in communities with higher than average childhood asthma morbidity and mortality rates.

Develop health impact estimates resulting from elevated ambient ozone levels.

Withdrawal/Redaction Marker

Clinton Library

DOCUMENT NO. AND TYPE	SUBJECT/TITLE	DATE	RESTRICTION
001. chart	re: phone number (partial) (1 page)	01/07/1999	P6/b(6)

COLLECTION:

Clinton Presidential Records
Domestic Policy Council
Devorah Adler
OA/Box Number: 20145

FOLDER TITLE:

Asthma [Folder 4]

2012-0463-S

rc722

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

- P1 National Security Classified Information [(a)(1) of the PRA]
- P2 Relating to the appointment to Federal office [(a)(2) of the PRA]
- P3 Release would violate a Federal statute [(a)(3) of the PRA]
- P4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
- P5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
- P6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

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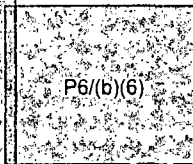
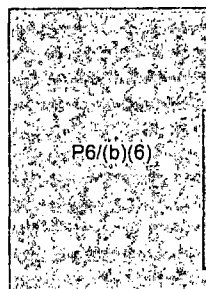
Freedom of Information Act - [5 U.S.C. 552(b)]

- b(1) National security classified information [(b)(1) of the FOIA]
- b(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
- b(3) Release would violate a Federal statute [(b)(3) of the FOIA]
- b(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
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- b(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
- b(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
- b(9) Release would disclose geological or geophysical information concerning wells [(b)(9) of the FOIA]

EPA Asthma Initiative President's Task Force on Environmental Health Risks and Safety Risks to Children					
FY99 Presidents Budget		FY2000 OMB Submission \$6,800 K "Level 1"		"Over target" Request to OMB + \$17,000 K "Level 2"	
Activity/Output	\$	Activity/Output	\$	Activity/Output	\$
Ambient Air Pollution (OAQPS/OAR)					\$3.5 M
				Expand ambient monitoring network for ozone and particulates to areas downwind of 3-5 urban areas to increase exposure information that can be correlated with asthma surveillance data. ²	
		Buy Clean	\$5M		

1 \$1.5 M included for Regional implementation plus \$5 M for G 8 Implementation requested by the Office of International Activities.

2 Traditional ozone monitoring network is found within urban areas. With increasing urban sprawl, exposure of populations downwind of high ozone areas is believed to be significant. Enhanced monitoring capability for ozone and PM outside the immediate urban area would add improved understanding of human exposure on a regional scale for ozone and PM problem.



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[0017]
Bob Alverad
cell phone

EPA Asthma Initiative President's Task Force on Environmental Health Risks and Safety Risks to Children					
FY99 Presidents Budget		FY2000 OMB Submission \$6,800 K "Level 1"		"Over target" Request to OMB + \$17,000 K "Level 2"	
Activity/Output	\$\$	Activity/Output	\$\$	Activity/Output	\$\$
Indoor Air (IED/OAR)		\$1.5 M		\$5.0 M¹	
<u>Open Airways</u> Support to American Lung Association to implement asthma management program in elementary schools.	\$.1 M	<u>Open Airways</u> Expand implementation of the ALA Open Airways asthma management program to 1250 elementary schools.	\$ 1.5M	<u>Open Airways</u> program in 1700 additional elementary schools	\$2 M
		<u>Managed Care/Health Care</u> Economic analysis to develop incentives for managed care	\$.2M	<u>A is for Asthma</u> program for pre-school children to 89 ALA affiliates.	\$.5 M
				<u>Managed Care/Health Care</u> --Cabinet level summit with managed care CEOs --State-wide urban environmental asthma summits in 5 states --National Environmental Asthma Caucus for practitioners, researchers, industry and government	\$1 M
<u>National Asthma Media Campaign</u> National asthma prevention campaign targeted to urban residents	\$.6 M	<u>Expand National Asthma Media Campaign</u> National asthma prevention campaign targeted to urban residents	\$.5 M	<u>Expand National Asthma Media Campaign</u> One additional wave of multimedia national asthma prevention campaign.	\$.4 M
<u>IAQ Tools for Schools</u>	\$.3	<u>IAQ Tools for Schools</u> Expand implementation of Tools for Schools program to 1250 schools	\$1.5M	<u>IAQ Tools for Schools</u> --Develop and implement partnership/recognition program for schools. --Expand implementation of Tools for Schools program to 3250 schools	\$2.5 M
<u>ETS Media Campaign</u> One wave of ETS media campaign to get "smoke outside" message to smoking parents.	\$.5 M	<u>ETS Media Campaign</u> Two additional waves of national ETS media campaign to get multiple messages to smoking parents.	\$.8 M	<u>ETS Fund local communities</u> through established tobacco control programs to work through doctors, health clinics, civic groups to discourage children's exposure to ETS.	\$ 1.1 M
		<u>G8 ETS Implementation Strategy</u>	\$.5 M		

FAX TRANSMITTAL

of pages 1

November 23, 1998 (8:44AM)

To	DAVORA ADAMS	From	BOS ALEXAND
Dept./Agency		Phone #	260-1145
Fax #	456-5557	Fax #	

FY2000 Children's Asthma Initiative

- E.O. 13045 requires each Federal agency to make it a high priority to identify and assess environmental health risks and safety risks that disproportionately affect children and ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.
- Asthma in children is on the rise and has reached epidemic proportions. We do not understand the reasons for this increase or why lower socio-economic groups are more severely impacted.
 - The number of children with asthma has doubled in the past 15 years;
 - 5.5 million children are affected;
 - 150,000 hospitalizations due to asthma each year;
 - A 3-fold increase in the number of deaths from asthma from 84 in 1977 to 280 in 1995;
 - Over 10 million missed school days each year;
 - Cost of asthma to the U.S. economy estimated to be \$6.2 billion in 1990 and \$14 billion in 1996.
- The President's Task Force On Environmental Health Risks and Safety Risks to Children has identified childhood asthma as a high priority issue and an interagency Task Force asthma working group has drafted a comprehensive and coordinated cross-government action plan for the year 2000 to address environmental factors that play a crucial role in causing and worsening childhood asthma.
- Reducing the burden of asthma on children and society is a priority of Administrator Browner and Secretary Shalala. EPA, DHHS and HUD are proposing to invest a total of \$55.3 M in FY2000 to reverse the worsening asthma trends.
- EPA is investing an additional \$6.8 M in the FY 2000 budget to address children's asthma. This is an increase from EPA's FY99 new investment for children's asthma of app. \$5.5 M.
- EPA has requested an additional \$17 M to address high priority asthma issues for which further re-directions are not feasible within the Agency's reduced FY2000 target.
- The action plan calls for substantially increased funding for asthma research, asthma surveillance activities, and increased implementation of public health programs to reduce childhood asthma by reducing environmental asthma triggers. The action plan places significant emphasis on reducing the disproportionate burden of asthma on the poor and minorities, on community-based programs, effective partnerships, and evaluation of programs.
- EPA's proposed activities complement those proposed by DHHS and HUD and will be conducted in close collaboration with those Departments.
- High priority needs include:
 - Significant expansion of research into the role which environmental pollutants (indoor, outdoor, pesticides, allergens) play in the onset of asthma in children.
 - Substantial increase in efforts to reduce children's exposure in the home and schools to known asthma triggers such secondhand smoke and indoor allergens (e.g. dust mites, animal dander, insects, and mold). More is known about the role of these contaminants in triggering asthma attacks than about the role that environmental pollutants play in the onset of asthma.
 - Expanded ambient ozone and particulate monitoring and correlation with asthma surveillance data.

EPA Asthma Initiative President's Task Force on Environmental Health Risks and Safety Risks to Children					
FY99 Presidents Budget		FY2000 OMB Submission \$6,800 K "Level 1"		"Over target" Request to OMB + \$17,000 K "Level 2"	
Activity/Output	\$\$	Activity/Output	\$\$	Activity/Output	\$\$
ORD (Goal 8)	\$ 3.3 M		\$1.3 M		\$6 M
<u>Centers for Children's Environmental Health and Prevention Research Program</u>	\$3.3 M	<u>Role of Environmental Pollutants in the Induction of Asthma</u> - A multi-disciplinary approach incorporating human exposure, toxicologic, clinical and epidemiologic studies would be employed to evaluate the role of exposure to air pollutants, pesticides, and other volatile organic compounds in the induction of asthma.	\$9M	<u>Role of Environmental Pollutants in the Exacerbation of Asthma</u> - A multi-disciplinary approach incorporating human exposure, toxicologic, clinical and epidemiologic studies would be employed to evaluate the role of exposure to air pollutants on the frequency and severity of asthma attacks in children. <u>Role of Environmental Pollutants in Allergic Sensitization</u> - A multi-disciplinary approach incorporating human exposure, toxicologic, clinical and epidemiologic studies would be employed to evaluate the role of exposure to air pollutants and pesticides in the development of allergic sensitization and asthma in children.	\$2 M \$ 2 M
				<u>Multimedia pollutants and childhood experience of asthma</u> - A longitudinal study (prenatal through adolescence) of the role of exposure to air pollutants and pesticides on allergic sensitization, incidence of asthma, asthma severity, and the timing of asthma attacks in one or more well-characterized birth cohorts of children at high risk for the development of asthma.	\$ 2 M
		<u>Buy Clean</u> (joint w/ OPPTS)	\$.4 M		

OPTIONAL FORM 99 (7-80)

FAX TRANSMITTAL

of pages > 3

To <u>DAVID A. ADAMS</u>	From <u>BOB AXELRAD</u>
Dept./Agency	Phone # <u>260-1145</u>
Fax # <u>456-5557</u>	Fax #
NSN 7540-01-317-7968 5099-101 GENERAL SERVICES ADMINISTRATION	

EPA Asthma Initiative President's Task Force on Environmental Health Risks and Safety Risks to Children					
FY99 Presidents Budget		FY2000 OMB Submission		Additional Resources Requested For FY 2000	
Activity/Output	\$	Activity/Output	\$	Activity/Output	\$
ORD (Goal 8)	\$4M		\$1.3M		\$6 M
<u>Centers for Children's Environmental Health and Prevention Research Program</u>	\$ 4 M	<u>Role of Environmental Pollutants in the Induction of Asthma</u> A multi-disciplinary approach incorporating human exposure, toxicologic, clinical and epidemiologic studies would be employed to evaluate the role of exposure to ambient air pollutants, indoor air contaminants, pesticides, and other volatile organic compounds in the induction of asthma.	\$.9M	<u>Role of Environmental Pollutants in the Exacerbation of Asthma</u> A multi-disciplinary approach incorporating human exposure, toxicologic, clinical and epidemiologic studies would be employed to evaluate the role of exposure to ambient air pollutants and indoor air contaminants on the frequency and severity of asthma attacks in children.	\$1.5 M
		<u>Buy Clean</u> (joint w/ OPPTS)	\$.4 M	<u>Role of Environmental Pollutants in Allergic Sensitization</u> A multi-disciplinary approach incorporating human exposure, toxicologic, clinical and epidemiologic studies would be employed to evaluate the role of exposure to ambient air pollutants indoor air contaminants, and pesticides in the development of allergic sensitization and asthma in children.	\$ 1.5 M
				<u>Multimedia pollutants and childhood experience of asthma</u> A longitudinal study (prenatal through adolescence) of the role of exposure to ambient air pollutant, indoor air contaminants, and pesticides on allergic sensitization, incidence of asthma, asthma severity, and the timing of asthma attacks in one or more well-characterized birth cohorts of children at high risk for the development of asthma.	\$ 3 M

EPA Asthma Initiative President's Task Force on Environmental Health Risks and Safety Risks to Children					
FY99 Presidents Budget		FY2000 OMB Submission		Additional Resources Requested For FY 2000	
Activity/Output	\$	Activity/Output	\$	Activity/Output	\$
Indoor Air (IED/OAR)	\$1.5M		\$5M		\$7.5M
Open Airways Support to American Lung Association to implement asthma management program in elementary schools.	\$.1 M	Open Airways Expand implementation of the ALA Open Airways asthma management program to 1250 elementary schools.	\$1.5M	Open Airways program in 1700 additional elementary schools	\$2 M
		Managed Care/Health Care Economic analysis to develop incentives for managed care	\$.2M	A is for Asthma program for pre-school children to 89 ALA affiliates.	\$.5 M
				Managed Care/Health Care —Cabinet level summit with managed care CEOs —State-wide urban environmental asthma summits in 5 states —National Environmental Asthma Caucus for practitioners, researchers, industry and government	\$1 M
National Asthma Media Campaign National asthma prevention campaign targeted to urban residents	\$.6 M	Expand National Asthma Media Campaign National asthma prevention campaign targeted to urban residents	\$.5 M	Expand National Asthma Media Campaign One additional wave of multimedia national asthma prevention campaign.	\$.4 M
IAQ Tools for Schools	\$.3	IAQ Tools for Schools Expand implementation of Tools for Schools program to 1250 schools	\$1.5M	IAQ Tools for Schools —Develop and implement partnership/recognition program for schools. —Expand implementation of Tools for Schools program to 3250 schools	\$2.5 M
ETS Media Campaign One wave of ETS media campaign to get "smoke outside" message to smoking parents.	\$.5 M	ETS Media Campaign Two additional waves of national ETS media campaign to get multiple messages to smoking parents.	\$.8 M	ETS Fund local communities through established tobacco control programs to work through doctors, health clinics, civic groups to discourage children's exposure to ETS.	\$ 1.1 M
		G8 ETS Implementation Strategy	\$.5 M		

EPA Asthma Initiative President's Task Force on Environmental Health Risks and Safety Risks to Children					
FY99 Presidents Budget		FY2000 OMB Submission		Additional Resources Requested For FY 2000	
Activity/Output	\$\$	Activity/Output	\$\$	Activity/Output	\$\$
Ambient Air Pollution (OAQPS/OAR)					\$3.5M
				Expand ambient monitoring network for ozone and particulates to areas downwind of 3-5 urban areas to increase exposure information that can be correlated with asthma surveillance data. ²	\$3.5M

1 \$1.5 M included for Regional implementation plus \$.5 M for G 8 Implementation requested by the Office of International Activities.

2 Traditional ozone monitoring network is found within urban areas. With increasing urban sprawl, exposure of populations downwind of high ozone areas is believed to be significant. Enhanced monitoring capability for ozone and PM outside the immediate urban area would add improved understanding of human exposure on a regional scale for ozone and PM problem.

EPA 23.8 M 2000
5.9 M 1999

DRAFT
9/25/98

Asthma in America: Our Children at Risk

17 M in
new \$

A Plan for Environmental Action to Protect Children from Asthma



President's Task Force on Environmental Health
Risks and Safety Risks to Children

ABOUT THE PRESIDENT'S TASK FORCE ON ENVIRONMENTAL HEALTH RISKS AND SAFETY RISKS TO CHILDREN

In recognition of the growing body of scientific information demonstrating that America's children suffer disproportionately from environmental health risks and safety risks, President Clinton issued Executive Order 13045 on April 21, 1997, directing each Federal Agency to make it a high priority to identify, assess, and address those risks. In issuing this order, the President also created the Task Force on Environmental Health Risks and Safety Risks to Children, co-chaired by Donna Shalala, Secretary of the Department of Health and Human Services, and Carol M. Browner, Administrator of the Environmental Protection Agency. The



Task Force was charged with recommending strategies for protecting children's environmental health and safety. Two subcommittees were established in the Executive Order to carry out this directive: a subcommittee directed to review and foster public access to federal government sponsored research on environmental health and safety risks to children, and a subcommittee directed to identify priority public outreach activities related to protecting children's environmental health and safety.

In April 1998, the Task Force identified four priority areas for immediate attention: childhood asthma, unintentional injuries, developmental disorders, and childhood cancer. The Task Force created and charged the Asthma Priority Area Workgroup with reviewing current Federal efforts to address the many facets of the issue and, most importantly, to make appropriate recommendations for action by the Federal government. This report is the result of that effort.

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MEMBERS OF THE PRESIDENT'S TASK FORCE ON ENVIRONMENTAL HEALTH RISKS AND SAFETY RISKS TO CHILDREN

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Secretary
Department of Health and Human Services

Honorable Carol M. Browner
Co-chair
Administrator
Environmental Protection Agency

Honorable Alexis Herman
Secretary
Department of Labor

Honorable Janet Reno
Attorney General
Department of Justice

Honorable Andrew Cuomo
Secretary
Department of Housing and Urban
Development

Honorable Elizabeth A. Moler
Acting Secretary
Department of Energy

Honorable Richard Riley
Secretary
Department of Education

Honorable Dan Glickman
Secretary
Department of Agriculture

Honorable Rodney Slater
Secretary
Department of Transportation

Honorable Franklin Raines, Director
Office of Management and Budget

Honorable Kathleen McGinty, Chair
Council on Environmental Quality

Honorable Ann Brown
Chairman
Consumer Product Safety Commission

Honorable Janet Yellen
Chair
Council of Economic Advisors

Honorable Neal Lane Director
Office of Science and Technology Policy

Honorable Gene Sperling
Assistant to the President for Economic Policy

Honorable Bruce Reed
Assistant to the President for Domestic Policy

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National Center for Environmental Health
Centers for Disease Control and Prevention

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Office of Children's Health Protection
Environmental Protection Agency

Adele C. Morris
Senior Economist
Council of Economic Advisers

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Agency for Toxic Substances and Disease Registry

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Department of Energy

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Edward Chu
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Office of Science Policy
Department of Health and Human Services

Polly Hoppin, Sc.D
Office of Science Policy
Department of Health and Human Services

EXECUTIVE SUMMARY

An epidemic of asthma is occurring in the United States. While the epidemic affects people of all ages, children are particularly affected. Nearly 1 in 13 school-aged children has asthma, and the percentage of children with asthma (i.e., prevalence rate) is rising more rapidly in preschool-aged children than in any other age group.

There is no national system to collect data from states specifically on asthma, although several states are developing systems to collect such data. Although national data do not provide the resolution necessary to identify particular geographic areas hardest hit by the asthma epidemic, surveys undertaken in a number of large cities in the United States indicate that the prevalence and severity of asthma are greatest in the large, urban inner cities.

An epidemic
of asthma is
occurring in
the United
States.

Asthma is one of the leading causes of school absenteeism, accounting for over 10 million missed school days per year. Asthma also accounts for many nights of interrupted sleep, limitation of activity, and disruptions of family and care-giver routines. Asthma symptoms that are not severe enough to require a visit to an emergency room or to a physician can still be severe enough to prevent a child with asthma from living a fully active life.

In 1990, the cost of asthma to the U.S. economy was estimated to be \$6.2 billion, with the majority of the expense attributed to direct medical expenses. A 1996 analysis found the cost of asthma to be \$14 billion, indicating a rapidly increasing financial burden. These estimates, which are not limited to the costs of childhood asthma, indicate that the direct medical costs of asthma account for between 1% and 3% of all health care expenditures in the United States.

Asthma is a particularly important disease to consider in the context of environmental hazards to which children are exposed. Children breathe more air, eat more food, and drink more liquid in proportion to their body weight than do adults, and their developing respiratory, immunological, and digestive systems may be more susceptible to environmental exposures than those of adults. In a typical day, children may be exposed to a wide array of environmental agents at home, in day care centers, schools and while playing outdoors. There is substantial evidence that environmental exposures, including viruses and allergens, play a major role in triggering asthma symptoms. Airborne allergens include those from house dust mites, cockroaches, mold and animal dander. In addition, exposure to environmental tobacco smoke has been shown to be a major determinant of asthma symptoms. Elevated levels of outdoor air pollutants, particularly ozone, are associated with increased symptoms and an increased risk of emergency department visits for asthma, as well.

In addition, environmental factors such as airborne allergens and environmental tobacco smoke (i.e., secondhand smoke) may play a major role in the onset of asthma. Other pollutants may also play a role, although the scientific data are inadequate to offer firm conclusions. Genetic

predisposition is the strongest known risk factor for developing asthma, but the rapidly rising number of cases of childhood asthma cannot be solely genetic because the genetic composition of the population changes slowly. Rather, some interaction between genetic predisposition and environmental exposures, and possibly other factors such as diet or lack of exercise are likely to be responsible for the increase. Further work is essential to clarify how genetic susceptibility and environmental exposures interact to cause asthma.

Reducing exposures of children with asthma to airborne allergens and pollutants will reduce the health burden of asthma and significantly improve their quality of life. It is not yet certain, but it is possible that reducing the exposure of infants and young children at risk of developing asthma may prevent its onset. Environmental control methods and asthma treatments are available now that can help children and their families control asthma and lead healthy, active lives. Yet not all children have access to these measures. Too many children miss school, limit their physical activity, and are seriously ill because of asthma.

The environmental action plan for asthma outlined in this report is designed to promote concerted Federal action to protect all children with asthma from environmental risks that worsen their disease and to expand federal research to reveal how reducing environmental risks might prevent children from getting asthma.



GUIDING PRINCIPLES

Federal agency actions can provide leadership and direction in reducing environmental risks to protect children from asthma. Recommendations for action put forward in this initiative are predicated on the principles that federal action must have:

- A focus on efforts to *eliminate the disproportionate impact of asthma in minority populations and those living in poverty.*
- An emphasis on *partnerships and community based programs.*
- A commitment to setting *measurable and consistent goals* for childhood asthma under the Healthy People 2010 program.
- *An investment in evaluation* to identify those strategies that are most effective in reducing the burden of asthma so that they may be replicated.

RECOMMENDATIONS FOR ACTION

RESEARCH

Strengthen and accelerate focused research into the environmental factors that cause or worsen childhood asthma.

- ☞ Strengthen and accelerate research into the environmental factors that may contribute to the onset of asthma in children.
- ☞ Expand and accelerate research to develop and evaluate environmental strategies that will improve the quality of life of people with asthma.

This year 2000
initiative is
about
protecting
children from
asthma...

PUBLIC HEALTH PROGRAMS

Implement public health programs that foster improved use of current scientific knowledge to reduce environmental exposures to prevent and reduce the severity of symptoms for those with asthma.

- ☞ Promote clinician and patient implementation of national guidelines for reducing environmental risks that worsen asthma.
- ☞ Expand support for state and local public health action.
- ☞ Reduce children's exposure to environmental tobacco smoke and other indoor triggers in their homes.
- ☞ Establish school based asthma programs in every community that help reduce or eliminate allergens and irritants and that promote student's self management of asthma and full participation in school activities.
- ☞ Continue to reduce outdoor air pollution.

SURVEILLANCE

Establish a coordinated, integrated, and systematic nationwide asthma surveillance system for collecting and analyzing health outcome and risk factor data at the state, regional and local levels.

DISPROPORTIONATE IMPACT ON THE POOR AND MINORITIES

Eliminate the disproportionate burden of asthma among different racial and ethnic groups and those living in poverty.

- ☞ Conduct research and surveillance activities to improve understanding of the problem.
- ☞ Implement activities to eliminate the disproportionate impact of asthma in minority populations and those living in poverty.



INTRODUCTION

The Growing Problem of Asthma in Children

Asthma is a chronic lung disease characterized by recurrent episodes of breathlessness, wheezing, coughing, and chest tightness; these episodes are also known as exacerbations or attacks. The severity of exacerbations can range from mild to life threatening. Both the frequency and severity of asthma symptoms can be reduced by the use of medications and by reducing exposure to the environmental triggers of asthma attacks.

For the past 15 years, an epidemic of asthma has occurred in the United States. By all indications, this epidemic is continuing. Although asthma has become a major public health problem affecting Americans of all ages, races and ethnic groups, children have been particularly severely affected.



National survey data -- the responses of randomly selected U.S. residents being asked whether they had symptoms of physician diagnosed asthma in the previous 12 months -- indicate that the number of children with asthma in the United States has more than doubled in the past 15 years. In 1980, 2.3 million American children had asthma. In 1995, the most recent year for which data are available, the number of affected children had risen to 5.5 million. Based on these trends, it is estimated that in 1998 more than 6 million children in the United States have asthma. Prevalence rates of asthma are highest in boys and are increasing in both boys and girls, and in all race and ethnic groups. The prevalence of asthma in children under age 18 is 7.3%. The most rapid increase has occurred in children under 5 years old, with rates increasing over 160% over the past 15 years.

The number of deaths attributed to asthma in children has also increased. In 1977, 84 deaths in children 18 and younger were recorded; the number of deaths has risen to 280 in 1995, a more than 3-fold increase. Although the death rate due to asthma has increased in all racial and ethnic groups, minority populations experience a disproportionately higher death rate from asthma. In 1995, the death rate from asthma in African-American children, 11.5 per million, was over four times the rate in white Americans, 2.6 per million. The higher death rates among African-American children are especially troubling.

The number of hospitalizations and emergency room visits for asthma have increased in all population groups. Asthma accounts for one-third of all pediatric emergency room visits and is the fourth most common cause for physician office visits. The variation in the impact of asthma across racial and ethnic groups is significant. African American children have an annual rate of hospitalization of 74 per 10,000, over 3 times that for whites, 21 per 10,000. In addition, African American children are approximately 4 times more likely than white children to seek care at an emergency room. In short, African-American children have a slightly higher risk of getting asthma, but have a much higher risk of hospitalization or death due to the disease.

At the present time, surveillance for asthma in children is limited to analyses of ongoing surveys and data systems on health events such as mortality, hospitalization, and outpatient visits. Other than for African Americans, such information is extremely limited for most ethnic groups.

There is no national system to collect data from states specifically on asthma, although several states are developing systems to collect such data. Although national data do not provide the resolution necessary to identify particular geographic areas hardest hit by the asthma epidemic,

surveys undertaken in a number of large cities in the United States indicate that the prevalence and severity of asthma are greatest in the large, urban inner cities.

There is no national system to collect data from states specifically on asthma, although several states are developing systems to collect such data.

These measures, particularly for death, hospitalization, and emergency room visits, give an incomplete picture of the true burden of asthma in the United States. For example, one follow-up study of children with asthma in inner city areas found a nearly 10 times higher likelihood of a child suffering symptoms of asthma on a given day than visiting an emergency room.

Asthma is one of the leading causes of school absenteeism, accounting for over 10 million missed school days per year. Asthma also accounts for many nights of interrupted sleep, limitation of activity, and disruptions of family and care-giver routines. Asthma symptoms that are not severe enough to require a visit to an emergency room or to a physician can still be severe enough to prevent a child with asthma from living a fully active life.

Estimating the costs of asthma is an indirect way to measure its health burden. In 1990, the cost of asthma to the U.S. economy was estimated to be \$6.2 billion, with the majority of the expense attributed to direct medical expenses. A 1996 analysis found the cost of asthma to be \$14 billion, indicating a rapidly increasing financial burden. These estimates indicate that the direct medical costs of asthma for all ages account for between 1% and 3% of all health care expenditures in the United States.

What We Know About Childhood Asthma

Over the past 15 years, there have been major advances in the scientific understanding of asthma. Asthma is now known to be a disease of airway inflammation resulting from a complex interplay between environmental exposures and genetic and other factors. This has implications for the medical treatment and for the environmental management of asthma.

In contrast to the limited understanding of the relationship of environmental exposures to the onset of asthma, the environmental triggers of asthma attacks for children with asthma have become increasingly well characterized. House dust mites, cockroaches, mold and animal dander have been identified as the principal allergens that trigger asthma symptoms. Reducing exposure to these allergens has been shown not only to reduce asthma symptoms and the need for medication, but also to improve lung function. Environmental tobacco smoke (also called secondhand smoke) is an important irritant that can trigger an asthma episode and possibly

potentiate the effects of allergens. Upper respiratory viral infections are also recognized as important triggers for asthma episodes.

Children with asthma have long been recognized as particularly sensitive to outdoor air pollution. Many common air pollutants, such as ozone, sulfur dioxide, and particulate matter are respiratory irritants and can exacerbate asthma. Air pollution also might act synergistically with other environmental factors to worsen asthma. For example, some evidence suggests that exposure to ozone can enhance a person's responsiveness to inhaled allergens. Whether long term exposure to these pollutants can actually contribute to the development of asthma is not known, though scientists do not believe that outdoor air pollution is a major contributor to the current epidemic. To date, little research has examined the role of other air pollutants in the development or exacerbation of asthma, although this is an issue of increasing public concern.

Children with asthma have long been recognized as particularly sensitive to outdoor air pollution.

In addition to improved understanding of appropriate environmental management of asthma, the medical management of asthma has changed significantly. Inhaled anti-inflammatory medications have become the mainstay of medical management to prevent asthma episodes and lessen chronic symptoms of asthma. In addition, improvements in monitoring techniques now permit objective measures of lung function that are easy for patients and physicians to use in assessing asthma severity and monitoring changes in the disease. In a disease like asthma that varies considerably over time and where changes in lung function can occur before symptoms develop, these objective measures are essential tools for making management decisions.

As a result of these advances, the medical and environmental management of asthma is better defined and the knowledge exists to manage asthma better than ever before. One especially important finding is that patient education has been documented to be cost effective. Teaching patients and their families specific management skills improves asthma management, reduces the use of emergency services, and improves quality of life. This is particularly important for asthma management, since the environmental management of asthma requires knowledge of asthma triggers and specific actions that can be undertaken to reduce exposure to these triggers. The treatment goal for almost all individuals with asthma should be for that person to lead a life unrestricted because of asthma.

Reducing exposure to environmental allergens and pollutants will reduce the frequency and severity of attacks for children with asthma, reduce their need for medicine, and improve their lung function. Children are exposed to many environmental agents that could trigger asthma attacks. For example, 25% of children in America live in areas that regularly exceed EPA limits for ozone. Approximately 38% of children are exposed to environmental tobacco smoke in the home on a regular basis and exposure to environmental tobacco smoke is so widespread that approximately 88% of all children have some level of documented exposure. A high proportion of children living in the inner city are exposed to high levels of cockroach antigen.

Why Has Asthma Reached Epidemic Proportions in Children?

The causes of the increasing rate of asthma over the past 15 years and the particular role that environmental exposures play are not known, but there are some clues. Atopy, the genetically inherited susceptibility to become allergic, is the most important predictor of a child developing asthma. A substantial research effort is underway to identify the genes that are responsible for susceptibility to asthma. Because the genetic make-up of the population changes slowly, genetic susceptibility alone cannot be responsible for the epidemic of asthma that has occurred in the United States over the past 15 years. Further work is essential to clarify how genetic susceptibility and environmental exposures interact to cause asthma. Factors such as the intensity of environmental exposure and the age of the person being exposed are likely to be important.

In the broadest sense, many environmental exposures are suspected of contributing to the epidemic of asthma in children.

Exposure to allergens found indoors is a strong risk factor for developing asthma. Children are spending increasing amounts of time indoors, thus increasing their exposure to indoor allergens.

The environmental exposures most strongly suspected of causing asthma to develop include environmental tobacco smoke and allergens such as house dust mites, cockroaches, mold, and animal dander. Exposures that stimulate the immune system may also be significant, such as diet during the prenatal period and early infancy, the pattern of respiratory infections early in life, and even decreasing rates of exercise have all been suggested as risk factors for the development of asthma. In the broadest sense, many environmental exposures are suspected of contributing to the epidemic of asthma in children.

Scope of the Plan for Environmental Action to Protect Children With Asthma

This action plan is about protecting children from asthma and the consequences of asthma. To accomplish this goal, the environmental aspects of asthma must be considered in the context of other aspects of asthma prevention and management, such as early access to quality medical care and efforts to understand the disproportionate health impact of asthma among minority populations. Childhood asthma is a multi-factorial disease, and efforts to improve its management and to prevent it will require multi-dimensional, multi-disciplinary efforts that must occur simultaneously. This action plan focuses on improving the environment in which children with asthma live, learn, play and work so that they can live productive, active lives and so that future generations of children might be spared the disease altogether.

GOALS OF THE CHILDREN'S ENVIRONMENTAL HEALTH ASTHMA ACTION PLAN

BY THE YEAR 2005, THE NUMBER OF HOUSEHOLDS IN WHICH CHILDREN ARE
REGULARLY EXPOSED TO SECONDHAND SMOKE WILL BE REDUCED TO 15%
(FROM 29% IN 1994).

BY THE YEAR 2010, GUIDELINES FOR PREVENTING THE ONSET OF ASTHMA WILL
BE DEVELOPED.

BY THE YEAR 2010, THE INCREASING RATE OF ASTHMA PREVALENCE IN
CHILDREN WILL BE HALTED.

BY THE YEAR 2010, EVERY CHILD IN AMERICA WILL HAVE PROMPT, AFFORDABLE,
AND CONVENIENT ACCESS TO THE MOST EFFECTIVE ASTHMA MANAGEMENT
TECHNIQUES AVAILABLE.

BY THE YEAR 2010, ASTHMA HOSPITALIZATION RATES IN CHILDREN WILL HAVE
FALLEN TO NO MORE THAN 15 HOSPITALIZATIONS PER 10,000 PEOPLE. (HP 2010
DRAFT)

BY THE YEAR 2010, THE ASTHMA DEATH RATE IN CHILDREN WILL HAVE FALLEN
TO NO MORE THAN 2 PER MILLION PEOPLE. (HP 2010 DRAFT)

BY THE YEAR 2010, NO MORE THAN 10% OF PEOPLE WITH ASTHMA WILL
EXPERIENCE ACTIVITY LIMITATIONS. (HP 2010 DRAFT)

VISION FOR THE 21ST CENTURY

Every child in America will live,
learn, work, and play in
environments that do not cause or
worsen asthma.

Asthma will no longer inhibit
children from leading full and active
lives.

More cost-effective medical and
environmental asthma prevention
and management tools will enhance
the lives of children and their
families.

GUIDING PRINCIPLES

Federal agency actions can provide leadership and direction in reducing environmental risks to protect children from asthma. Recommendations for action put forward in this plan are predicated on the principles that federal action must have:

1. A focus on efforts to better understand and eliminate the disproportionate impact of asthma in minority populations and those living in poverty.

The health burden of asthma is not shared equally throughout the U.S. population. Although the rising prevalence of asthma has affected all populations, poor and minority children are much more likely than white, non-Hispanic children to visit an emergency room, to be hospitalized, or to die from asthma. The reasons for this inequity are not known, although environmental exposures and limited access to quality medical care may all play a role.

The focus on eliminating disparities across racial and ethnic groups has to be considered in all efforts to prevent asthma and its health impact; however, because of the importance of this issue the committee has included a specific recommendation in this action plan to examine, understand, and ultimately eliminate disparities.

2. An emphasis on partnerships and community based programs.

A successful effort to reduce childhood asthma will depend in part on the level of success achieved in enlisting all sectors of society in efforts to implement effective programs to prevent and manage the disease. Federal agencies have already forged effective partnerships with many health and professional organizations, corporations, and foundations to conduct training, educate health care providers and the public, and to implement a wide range of prevention activities at the national, state, and local levels.

Expanded partnerships both within government and between government and the private sector are needed. With increasing knowledge about the primary causes of asthma and triggers of asthma attacks, the challenge for the 21st century will be to learn to integrate successfully these findings into more effective environmental, medical and educational programs. Partnerships will be critical to implementing this broad vision of asthma control. In particular, community-based programs should integrate asthma control activities into existing systems such as schools, child care, youth programs, workplaces, primary health, correctional facilities, and job training programs.

The challenge for the 21st century will be to learn to integrate successfully these findings into more effective environmental, medical and educational programs.

3. A commitment to setting measurable and consistent goals for childhood asthma under the Healthy People 2010 program.

Health objectives are now being developed for the year 2010 and represent a significant revision of the goals set for the year 2000. These objectives will set the nation's health agenda for increasing years of healthy life and reducing disparities among the entire American population. Draft objectives currently encompass an expanded set of asthma-related objectives as well as a series of environmental objectives addressing known asthma triggers such as indoor allergens, secondhand smoke and outdoor air pollution.

The goals embodied in the final Healthy People 2010 document will serve as the tools to measure progress towards control of asthma. Although some of the goals are likely to measure aspects of asthma clinical management that will not be directly affected by this action plan, the primary objectives of morbidity reduction and reducing exposures to environmental hazards will be addressed.

4. Investment in evaluation of programs to identify those strategies that are most effective in reducing the burden of asthma so that they may be replicated.

Asthma intervention programs and related activities need to be fully evaluated to determine those techniques which are successful and should be replicated. Evaluation should be incorporated in the planning and should include:

- identification of desired health outcomes of the program;
- measurement of effectiveness of the intervention activities and processes used to implement them;
- identification of unforeseen obstacles;
- assessment of the cost-effectiveness of the program;
- a prediction of long term sustainability of the program.

RECOMMENDATIONS FOR ACTION

I. RESEARCH

Strengthen and accelerate focused research into the environmental factors that cause or worsen childhood asthma.

A. EXPAND RESEARCH INTO THE ENVIRONMENTAL FACTORS THAT CONTRIBUTE TO THE ONSET OF ASTHMA IN CHILDREN.

Though progress has been made in understanding what causes asthma, there is currently insufficient scientific information to establish specific guidelines and recommendations for public health practices to prevent the onset of asthma in children (i.e. primary prevention).

In order to establish primary prevention guidelines, the top priority for research is to determine the causes of asthma in children and particularly the role of the environment. To understand what causes asthma, research must identify the basic cellular and molecular mechanisms that cause airway inflammation and sensitization and, in particular, the interaction of environmental exposures and genetic susceptibility. In addition, clinical and epidemiologic studies are needed to examine the relationship between environmental exposures and the onset of asthma.



Because of promising preliminary work on the relationship of indoor allergens and asthma onset, as well as the much greater proportion of time that children spend indoors, greater emphasis on examining the relationship of indoor exposures to the development of asthma is warranted. Exposures to high levels of allergens in the indoor environment have been shown in some studies to be associated with the subsequent development of asthma. However, few studies have examined the influence of geographic location on the role of allergens. In studies evaluating the role of indoor allergens on exacerbations of asthma, different allergens, such as those associated with cockroaches, dust mites, and mold, have been implicated in different locations. This suggests that different allergens can exacerbate asthma, and that different allergens may be capable of inducing the new onset of asthma.

In one study, avoiding exposure to dust mite and food allergens early in life was found to reduce the risk of developing asthma in the first year of life. However, this effect was not statistically significant at 2 to 4 years of age. Whether such allergen avoidance strategies are feasible and effective in reducing the development of asthma is not known.

The complex interactions between outdoor air pollutants and allergens and the development of asthma have not been adequately evaluated. Some epidemiologic studies have suggested a relationship between exposure to volatile organic compounds and prevalence rates of childhood asthma. Because adult-onset asthma is known to be associated with occupational exposures to volatile organic compounds including formaldehyde, ethylene oxide, and isocyanates, further work to assess the possible etiologic role of specific pollutants in childhood asthma is appropriate.

Exposures to high levels of allergens in the indoor environment have been shown in some studies to be associated with the subsequent development of asthma.

KEY ACTIONS:

NIH, CDC, and EPA will conduct and fund studies to determine the causes of asthma. Such studies should include the following:

- ▶ examine the role of genetic susceptibility to specific environmental exposures in the development of asthma;
- ▶ assess the importance of early life events, such as *in utero* viral infections, viral infections during infancy, specific antigen exposures and exposures to maternal smoking on the development of asthma;
- ▶ examine the effects of pollutants and allergens on immune responses in animal models and in preclinical studies;
- ▶ Identify the clinical characteristics of asthma associated with different genetic, physiologic, immunologic and environmental factors;
- ▶ examine the effectiveness of combinations of immune modulation to reduce IgE responses to allergen and allergen avoidance as a means to reduce the risk of developing asthma;
- ▶ examine the epidemiology of asthma in different populations to identify risk factors for the onset of asthma.

ATSDR, in partnership with state and local health departments and community groups, will investigate childhood asthma in 5-7 communities where sources of emissions from hazardous waste facilities have already been identified. These investigations will characterize any associations between hazardous materials and the burden of asthma in children.

In addition to intramural and extramural grant programs, NIH, CDC, and EPA will fund medical centers to conduct comprehensive research on environmental aspects of asthma.

The National Academy of Sciences, with support of EPA, will complete its assessment of asthma associated with indoor pollutants. These findings will be used to guide research efforts on the causes of asthma.

B. EXPAND AND ACCELERATE RESEARCH TO DEVELOP AND EVALUATE ENVIRONMENTAL STRATEGIES THAT WILL IMPROVE THE QUALITY OF LIFE FOR CHILDREN WITH ASTHMA.

It is well established that inhaled allergens and irritants and outdoor pollutants provoke asthma symptoms. Research is needed to identify if other environmental exposures are significant. Further, the relative importance of various exposures is not well understood. Cost effective strategies for reducing exposures are not well developed.

Patient education strategies in certain populations have profound impacts on reducing the frequency and severity of exacerbations and improving the quality of life for children. But many of these programs are not responsive to the cultural, ethnic, and economic diversity of the American population. Innovative strategies are urgently needed for reaching a wide range of children and their families, for tailoring recommendations for reducing environmental exposures to their needs, and for providing support to follow the recommendations.

KEY ACTIONS:

NIH and EPA will conduct studies to examine the interrelationship between indoor allergen exposures, viral infections, ambient air pollutants, and exacerbations of asthma. This research will include identifying and evaluating cost effective methods to reduce allergen exposures, as well as methods to render the immune system less susceptible to environmental exposures.

NIH, CDC and EPA will conduct studies to improve and evaluate interventions designed to teach families and patients how to minimize exposure to environmental asthma triggers.

CDC and NIH will work with state and local health departments to develop and evaluate the cost-effectiveness of model public health intervention programs.

NIH and HUD will complete the first National Allergen Survey to provide estimates of allergen exposure for the U.S. population; this survey will provide much needed information about the apparent regional differences in allergen exposures.

NIH, with support from EPA for particulate air monitoring, will continue to fund the National Cooperative Inner-City Asthma Study (NCICAS), 1996-2000, which will determine the capacity of interventions to reduce asthma morbidity among inner city children.

EPA, NIH, and CDC will fund and conduct research in collaboration with the private sector to identify home construction, maintenance and occupancy practices that will reduce children's exposure to environmental agents that trigger asthma episodes.

As part of its program on energy efficient buildings, DOE will study the relative effectiveness of energy conservation strategies and technologies on reducing exposures to allergens.

2. PROGRAMS TO IMPROVE PUBLIC HEALTH

Implement public health programs that improve use of scientific knowledge to prevent and reduce the severity of asthma symptoms by reducing environmental exposures.

Despite uncertainty about the causes of the increase in asthma prevalence rates, much can and should be done to prevent severe illness and death from asthma and improve the quality of life of persons with asthma. Experts convened by the National Asthma Education and Prevention Program (NAEPP) coordinated by the National Institutes of Health (NIH) have reviewed the scientific literature and produced guidelines for managing asthma. These include specific recommendations for controlling environmental factors that contribute to asthma severity.

While there is consensus that NAEPP guidelines define the best diagnosis and management practices for asthma, dissemination of the guidelines must be expanded and adoption improved. Many clinicians do not include advice about environmental control in their patient education. Among families who do receive recommendations, adherence is generally low. Asthma is highly variable, and families need help establishing priorities for environmental control measures that will be suitable for their individual child's asthma and their family circumstances. Effective public health programs can provide this education and support.



For children without access to quality health care, appropriate instruction on the environmental triggers of asthma is impossible or severely limited. Emergency rooms or urgent care facilities may serve as the only source of primary care for such children. These settings should be recruited to provide the kind of education and links to chronic disease management services that are essential to reducing the severity and frequency of asthma attacks.

A. PROMOTE CLINICIAN AND PATIENT IMPLEMENTATION OF NATIONAL GUIDELINES FOR REDUCING ENVIRONMENTAL RISKS THAT WORSEN ASTHMA.

KEY ACTIONS:

NIH will use appropriate existing partnerships and innovative mechanisms to ensure wider use of the most up-to-date Guidelines for the Diagnosis and Management of Asthma published and periodically updated by the NAEPP/NIH. These guidelines offer specific advice on the environmental management of asthma.

Encourage and assist health care practitioners, including doctors, nurses, and personnel in emergency rooms and urgent care facilities, to provide high quality patient education on reducing exposure to pollutants that trigger asthma.

NIH, CDC, and EPA will establish partnerships with managed care organizations to integrate strong messages about management of asthma into existing health education programs, emphasizing the environmental management of asthma.

HCFA will investigate ways to improve the management of asthma, following the NAEPP guidelines, in care provided to Medicaid beneficiaries under 18 years old in the Managed Care Program.

ATSDR will expand to ten the number of pediatric environmental health specialty units across the country. These specialty units will develop environmental medicine materials, health education activities, and risk communication strategies on issues related to asthma and the environment well as other environmental health hazards to children; these educational activities will target both primary care providers and persons potentially exposed to harmful pollutants. In addition, these specialty units will provide consultation services to primary care as well as clinical diagnostic services to patients upon referral.

B. EXPAND SUPPORT FOR STATE AND LOCAL PUBLIC HEALTH ACTION.

Recent advances in the treatment of asthma and in identifying the environmental triggers of asthma attacks make it possible to control and prevent symptoms at a level unheard of just ten years ago. But these gains have not been realized by many of our children. Public health agencies have a critical role in helping to reduce environmental factors affecting asthma and the human and financial toll of the disease. These programs should include the following components:

- (1) Education and training
- (2) Asthma surveillance
- (3) Coalitions for prevention

KEY ACTION:

CDC, in collaboration with NIH, will provide grants to 12 state health departments in FY 2000 to ensure that effective asthma education, prevention, and public health outreach activities in local communities are developed and sustained.

C. REDUCE CHILDREN'S EXPOSURE TO ENVIRONMENTAL TOBACCO SMOKE AND OTHER INDOOR TRIGGERS IN THEIR HOMES.

Secondhand tobacco smoke and indoor allergens are major contributors to the incidence of wheezing in young children and play a significant role in the number and severity of asthma attacks. Reducing smoking in homes with young children will improve the health status of the estimated 2 million children with asthma who are exposed to secondhand smoke. In addition, exposure to allergens such as cockroach, house dust mite, mold, and animal dander causes many attacks of asthma that are preventable.



KEY ACTIONS:

EPA, CDC, and NIH will conduct a national public information campaign to reduce children's exposure to environmental tobacco smoke.

EPA, HUD, and CDC will work within existing public health programs that visit homes to increase the avenues through which parents and children receive key messages about asthma prevention and management. For example, partnerships with the extensive lead paint home intervention network, the AmeriCorps volunteers program, VISTA volunteer program, U.S. Department of Agriculture Extension Service, and the "Welfare to Work" program could all be used to bring asthma prevention messages (e.g., smoking and controlling allergens through techniques such as Integrated Pest Management) directly into millions of homes in a cost-effective manner.

Exposure to secondhand smoke and allergens such as cockroach, house dust mite, mold, and animal dander causes many attacks of asthma that are preventable.

EPA and DHHS, under the coordination of the National Asthma Education and Prevention Program and in close cooperation with the private sector, will undertake a national asthma awareness campaign, targeted at parents and emphasizing avoidable asthma triggers such as environmental tobacco smoke, indoor allergens, and outdoor air pollution episodes as well as early diagnosis and effective management.

HUD will collaborate with health departments with authority over low-income housing, home health educators, and building operators to implement appropriate guidance on building operation and maintenance practices, including ventilation, moisture control and integrated pest management techniques.

EPA will develop innovative means to disseminate information to persons and families with asthma on the health impact of ambient air pollutants, particularly ozone and particulate matter.

D. ESTABLISH SCHOOL BASED ASTHMA PROGRAMS IN EVERY COMMUNITY.

The educational system is a critical component of effective efforts to reduce illness due to asthma in children. Programs need to be implemented at the local school level to assure a healthy physical environment at the school and to promote improved self-management of asthma through education.

KEY ACTIONS:

Develop and expand partnerships between EPA, NIH, CDC, the Department of Education, and non-governmental public and private organizations to implement programs to assure that the school environment is safe for children with asthma. Such efforts should include expanding programs such as the Indoor Air Quality Tools for Schools Program.

EPA and NIH will collaborate with private and voluntary organizations to expand their successful school-based asthma management programs.

E. CONTINUE TO REDUCE OUTDOOR AIR POLLUTION

The U.S. EPA set national ambient air quality standards (NAAQS) for six air pollutants in 1971, in part based on evidence of associations between air pollutants such as ozone, particulate matter, and sulfur dioxide and asthma. Since that time substantial new epidemiological



evidence has been published supporting the association between levels of ozone and particulate matter and increased hospitalization for respiratory causes, such as childhood asthma. In 1997, NAAQS for both ozone and particulate matter were strengthened to improve the protection afforded by these standards and to help reduce the risk of ambient exposures that aggravate asthma in children.

Federal, State, local, and private sector efforts to implement the original NAAQS resulted in substantial improvements in air quality, yet notable problems remain. Following the 1990 Clean Air Act Amendments, efforts were expanded to improve nationwide air quality and reduce related health effects. In conjunction with the strengthening of the ozone and particulate matter NAAQS, EPA has taken steps to integrate implementation measures for these pollutants and to improve the effectiveness of control programs. EPA has also taken steps to inform the public about air pollution that may affect children.

KEY ACTIONS:

EPA has proposed that twenty-two States revise their implementations programs in order to provide widespread regional reductions in ozone and related pollutants.

Revisions will be made to strengthen the Pollutant Standards Index (PSI) to help make the public more aware of days when air pollution levels could affect health and to alert individuals to steps which could be taken to mitigate health effects associated with exposure to air pollution.

The Environmental Monitoring for Public Access and Community Tracking (EMPACT) program will increase the availability of real time ozone data over the Internet and through local TV weather broadcasts.

3. SURVEILLANCE

Establish a coordinated nationwide asthma surveillance system for collecting and analyzing health outcome and risk factor data at the state, regional and local levels.

Current national surveillance permits tracking of asthma prevalence, asthma physician office visits, asthma emergency room visits, asthma hospitalizations and asthma mortality at a national level and in four geographic regions (i.e., Northeast, Midwest, South, and West) through surveys conducted by the National Center for Health Statistics. Surveillance information on asthma, with the exception of mortality data, are not available at the state or local level. This information is needed to identify high risk populations and environmental risk factors of relevance to particular communities and to design and implement interventions that will be most suitable for, and therefore most likely to succeed, in that community. State and local health agencies also need this information to evaluate the impact of local sources of air pollution on childhood asthma in specific communities. A significantly enhanced and expanded surveillance program will be essential to study issues related to race and gender differences in asthma morbidity and mortality among children, identify gaps in providing comprehensive care, and monitor trends in asthma morbidity and mortality at the community level.

KEY ACTIONS:

CDC, in collaboration with NIH, will work with state and local health departments to build a national asthma surveillance system. The first priority in this work will be to develop the state and local infrastructure that will be needed to collect, analyze, and interpret data at the local level. The surveillance system will consist of the following components:

- ▶ Annual surveys of states and major metropolitan areas using standard instruments and methods to define the prevalence of asthma, to characterize the severity of asthma and the quality of life for persons with asthma, and to assess the quality of asthma management
- ▶ Systematic, periodic examinations of existing mortality and morbidity data at state/city or county level to determine: deaths, hospitalizations, and emergency room visits for asthma.

- ▶ Expanded capability to integrate analysis of ambient air monitoring data with asthma morbidity and mortality data.
- ▶ Modify existing data collection systems as needed, to ensure the ability to measure progress toward the Healthy People 2010 goals, now under development.
- ▶ Follow-up studies of geographic and population groups with elevated asthma prevalence rates and elevated rates of morbidity.

4. DISPROPORTIONATE IMPACTS ON THE POOR AND MINORITIES

Identify the reasons for and eliminate the disproportionate burden of asthma among different racial and ethnic groups and those living in poverty.

Poor and minority children are disproportionately affected by asthma, which has reached epidemic proportions in many American inner cities. Prevalence rates vary only by a few percentage points among different race and ethnic groups, yet emergency room use, hospitalization, and mortality rates vary 3- to 4-fold. Understanding the factors that contribute to the disproportionate impact of asthma on minority and lower income populations is the critical first step to reducing and eventually eliminating the disparities between rich and poor, minority and non-minority children. Such factors may include differing intensities of environmental exposures, such as exposure to cockroach antigen and access to and quality of care, among others.

Poor and minority children are disproportionately affected by asthma, which has reached epidemic proportions in many American inner cities.

A. CONDUCT RESEARCH AND SURVEILLANCE ACTIVITIES TO IMPROVE UNDERSTANDING OF THE PROBLEM

CDC, NIH and ATSDR will conduct research and collect surveillance data to better define factors contributing to asthma morbidity and asthma prevalence in minority and lower socioeconomic populations. Such data will:

- ▶ Separate roles of geography and environmental factors from ethnicity and socio-cultural variables in assessing their contribution to asthma prevalence.

- ▶ Examine the differences in asthma prevalence in Hispanics of different origins in order to provide some clues on risk factors contributing to higher rates of asthma.
- Examine the influence of poverty versus racial and ethnic group on use of emergency room services and hospitalization rates.

B. IMPLEMENT PROGRAMS TO ELIMINATE THE DISPROPORTIONATE IMPACT OF ASTHMA IN MINORITY POPULATIONS AND THOSE LIVING IN POVERTY.

KEY ACTIONS:

NIH, EPA, and CDC will implement public health interventions directed specifically to relieve the impact of asthma on vulnerable populations, particularly targeting the environmental exposures of vulnerable populations

- Ensure a substantial and appropriate focus of public health asthma initiatives on vulnerable populations.
- Make culturally and linguistically appropriate information on asthma widely available.
- Expand the availability of services, particularly emphasizing the need to modify the environment to reduce exposure to known asthma triggers, to the under-served in lower socioeconomic communities.

EPA will collaborate with state environmental protection programs to establish targeted compliance monitoring and enforcement efforts in communities with higher than average childhood asthma morbidity and mortality rates.

GLOSSARY

Acute: Brief (days to weeks).

Allergen: A chemical or biological substance (e.g. pollen, animal dander, or house dust mite proteins) that causes an allergic reaction, characterized by hypersensitivity.

Asthma: A chronic lung disease with chronic inflammation of the airways and recurring exacerbations of airflow limitation that result in wheezing, cough, chest tightness, and difficulty breathing.

Atopy: The genetically inherited susceptibility to become allergic.

Chronic: Remains for several years, possibly a lifetime.

Exacerbate: To aggravate or make asthma worse.

Genome: The inherited genetic composition of an organism.

Incidence: The number of individuals that develop an abnormality within a given time (usually a year) expressed as a percentage of the population.

Irritant: Risk factor or trigger that may cause increased symptoms and/or airflow limitation via a neural pathway.

Primary Prevention: Interventions designed to prevent the development of asthma.

Prevalence: The percentage of the population with a disease, disorder, or abnormality.

Secondary Prevention: Interventions designed to prevent the worsening of asthma among individuals who already have the disease.

Surveillance: The ongoing collection, analysis, interpretation, and dissemination of health outcome data used to plan and evaluate public health programs.

Trigger: An exposure that causes symptoms or exacerbations of asthma.

ADDITIONAL READING

Technical

National Heart, Lung, and Blood Institute, National Asthma Education and Prevention Program. *Expert Panel Report 2: Guidelines for the Diagnosis and Management of Asthma*. National Institutes of Health pub no 97-4051. Bethesda, MD, 1997.

~~Mannino DM~~, Homa DM, Pertowski CA, et al., *Surveillance for Asthma, United States, 1960-1995*. MMWR 1998;47(No. SS-1):1-27.

Institute of Medicine. *Indoor Allergens. Assessing and Controlling Adverse Health Effects*. National Academy Press. Washington, D.C. 1993

Families

American Lung Association. *Family Guide to Asthma and Allergies. How You and Your Children Can Breathe Easier*. Little, Brown and Company. New York. 1997

National Heart, Lung, and Blood Institute, National Asthma Education and Prevention Program. *Asthma, Physical Activity and School*. National Institutes of Health pub no 95-3651. Bethesda, MD, 1995.

National Heart, Lung, and Blood Institute, National Asthma Education and Prevention Program. *Facts About Controlling Your Asthma*. National Institutes of Health pub no 97-2339. Bethesda, MD, 1997.

National Heart, Lung, and Blood Institute. Global Initiative for Asthma. *What You and Your Family Can Do About Asthma*. National Institutes of Health pub no 96-3659C. Bethesda, MD, 1996.

Indoor Air Pollution

EPA's *Indoor Air Quality Tools for Schools*. Available from:
Indoor Air Quality Information Clearinghouse: 1-800-438-4318
Indoor Air Quality Web Site: www.epa.gov/iaq/

TIPS FOR AVOIDING AND CONTROLLING ASTHMA TRIGGERS

Dust Mites

- ✓ Cover pillows and mattresses with plastic or other allergen-impermeable material.
- ✓ Reduce humidity below 50% and, if dehumidifiers are used, keep them clean according to manufacturer's instructions.
- ✓ Soft, fabric-covered surfaces (such as carpeting and upholstered furniture) may harbor dust mites; hard surfaces are easier to clean.
- ✓ When vacuuming, use a high efficiency particulate air (HEPA) filter or central vacuum system. Because vacuuming causes increased levels of mite allergen in the air, have the allergic individual wear a mask or stay away while the building is being vacuumed.
- ✓ Wash bedding in hot water.

Cockroaches and Rodents

Use Integrated Pest Management (IPM):

- ✓ Thoroughly clean; remove all cockroach bodies and residues.
- ✓ Keep all surfaces clean and dry.
- ✓ Repair any water leaks.
- ✓ Keep all food away from pests, store in refrigerator or in tightly-sealed containers.
- ✓ Reduce/eliminate exposure to pesticides.

Pet Dander

At home:

- ✓ Choose pets based on the sensitivity of the allergic person.
- ✓ Restrict activity of/isolate pet from sensitive persons (may not be effective with cat allergen which may stay suspended in air for long periods).

Day care/schools:

- ✓ Keep animals in cages as much as possible; do not let them roam.
- ✓ Clean cages regularly.
- ✓ Locate animals away from ventilation system vents to avoid circulating allergens throughout the room or building.
- ✓ Don't use warm-blooded animals, if possible.

Mold

- ✓ Reduce humidity below 50% and prevent condensation.
- ✓ Control moisture sources.
- ✓ Repair any water leaks.
- ✓ Replace water-damaged materials.
- ✓ Don't leave water standing in your home.
- ✓ If you use a humidifier, choose and use it wisely according to manufacturer's instructions.

Outdoor Air Pollution

During air pollution alerts:

- ✓ Stay indoors as much as possible.
- ✓ Avoid strenuous physical activity.

Adapted from: National Heart, Lung, and Blood Institute, National Asthma Education and Prevention Program. *Expert Panel Report 2: Guidelines for the Diagnosis and Management of Asthma.*

Date: Thursday, May 21, 1998

FACT SHEET

Contact: HHS Press Office (202) 690-6343

HHS TARGETS EFFORTS ON ASTHMA

Overview: *Asthma is a major public health problem in the United States, with prevalence increasing rapidly in recent decades, especially among children. More than 15 million Americans are affected, some 5 million of whom are under the age of 18. Between 1980 and 1994, the percentage of Americans with asthma increased 75 percent, and the percentage of pre-school age children with asthma increased 160 percent.*

HHS efforts to combat asthma will exceed \$100 million in discretionary funding for the first time this year, up about 70 percent from 1993. HHS agencies support a wide range of activities to better understand this disease and its increasing prevalence, and to help patients and physicians better recognize and treat it:

- o Basic research into asthma's underlying causes and mechanisms, the triggers that bring on asthma symptoms, and other issues surrounding the disease.*
- o Treatment studies to evaluate the effects of different medications on various populations.*
- o Epidemiology to more precisely identify populations at risk for the disease and the factors that put them at risk in order to better understand and control it.*
- o Prevention efforts to prevent asthma onset and to reduce asthma symptoms, hospitalizations and deaths.*
- o Guidance and education for physicians, patients and their families, and the general public to increase asthma awareness and knowledge.*

The Medicare and Medicaid programs pay for asthma treatment for low-income, elderly and disabled Americans.

In addition to ongoing HHS efforts, Secretary Donna E. Shalala and Environmental Protection Agency Administrator Carol Browner are also making asthma a special focus of the Interagency Task Force on Children's Environmental Health and Safety, created by President Clinton in April 1997.

Today, Secretary Shalala announced that a new National Heart, Lung, and Blood Institute initiative will be launched this summer to better understand the role of respiratory infections in childhood asthma. NHLBI will support \$2.5 million per year for five years of research projects to study asthma using new techniques in cellular and molecular biology.

Background

Asthma is a chronic lung disease that is characterized by intermittent, recurring episodes of wheezing, breathlessness, tightness of the chest, and coughing. More Americans than ever before say they are suffering from asthma, according to a report released April 24 by the Centers for Disease Control and Prevention. The report entitled, "Surveillance for Asthma - United States 1960-1995" also concluded that the increases in cases, deaths, and visits to doctors occurred in persons of all ages, spanned across all racial groups, and occurred in all regions of the US.

People with asthma experience well over 100 million days of restricted activity each year, and costs for asthma care exceed \$6 billion annually. Children with asthma miss an average of twice as many school days as other children. Asthma attacks can vary from mild symptoms to serious, life-threatening episodes. More than 5,000 Americans died last year from asthma attacks.

The prevalence of asthma is greater for women (5.6 percent) than men (5.1 percent) and greater for blacks (5.8 percent) than whites (5.1 percent). Blacks also have significantly more emergency room visits, hospitalizations, and deaths from asthma than whites. From 1993-1995, there were an average of 38.5 deaths per million from asthma in blacks compared to 15.1 per million in whites. In 1995, blacks were more than four times more likely than whites to visit an emergency room because of asthma.

The cause of asthma is not well understood, and scientists do not know why so many more people today are suffering from asthma and why symptoms appear more severe than they were 10 years ago. It is most likely that a combination of environmental and genetic factors is responsible. The best documented factor contributing to the development of asthma is atopy, the genetic, inherited susceptibility to become allergic. In susceptible persons with asthma, exposure to allergens such as dust mites, cockroaches, molds and dander from pets is associated with more severe symptoms. Further, children of smokers are more prone to develop asthma because exposure to environmental tobacco smoke can increase sensitivity to allergens. Although outdoor air pollutants have not been identified as causing asthma, several of them, particularly ozone, have been identified as triggers of asthma attacks. Respiratory infections in early childhood may influence the development of asthma. Some infections may increase the likelihood of developing asthma, while others might actually be protective. Researchers are exploring how respiratory infections early in childhood might stimulate an immune response that suppresses the development of allergies.

Ongoing Asthma Activities at HHS

The National Institutes of Health (NIH)

NIH is supporting an extensive range of research programs examining asthma management, genetics, epidemiology, demonstration and education, and prevention. NIH estimates it spent \$92 million on asthma research in FY 1997, \$99 million in FY 1998 with \$107 million proposed for FY 1999.

- **Genetics of Asthma** -- Researchers supported by the National Heart, Lung, and Blood Institute (NHLBI) and the National Institute of Allergy and Infectious Diseases (NIAID) are working together to identify the major genes that may contribute to asthma and asthma-associated phenotypes such as allergy and airway hyper-responsiveness. Early findings confirm that multiple genes may be involved in asthma and that they may vary between ethnic/racial groups.
- **Pathogenesis and Mechanisms of Asthma** -- The National Institutes of Health supports studies about the role of inflammation in the pathogenesis of asthma. The studies are directed at the examination of the cellular and molecular events that appear to initiate, direct, and perpetuate the development of airway inflammation. Researchers supported by NHLBI and NIAID are studying how respiratory infections in early life acting individually and in combination with each other, regulate airway inflammation, airway hyper-responsiveness, and airway remodeling, thus leading to the onset of asthma. A new NHLBI research initiative will examine the multiple risk factors for the onset of asthma in early life and the mechanisms that cause them. This will lead to the identification of novel interventions to prevent the development of the disease.
- **Epidemiologic Research** -- The National Institute of Environmental Health Sciences (NIEHS) is sponsoring several studies involving asthmatics who live in areas where they are exposed to high levels of ambient air pollutants, factors that are associated with the risk of asthma-related hospitalizations and death, and the respiratory health status of minorities, children under age-5, and the elderly. Other epidemiologic research supported by NHLBI, NIAID, and NIEHS include long-term studies to identify the specific risk factors associated with developing asthma and the risk factors that lead to severe, life-threatening asthma attacks. This research increases our understanding about what causes asthma, and helps identify promising new targets for asthma treatments.
- **Clinical Studies** -- NIH institutes are carrying out several clinical studies that focus on prevention of asthma and effectiveness of new treatments. Clinical studies sponsored by NIH include:

- The Environmental Intervention in the Primary Prevention of Asthma in Children Study (NIEHS)
 - The Childhood Asthma Management Program (NHLBI)
 - Asthma Clinical Research Network (NHLBI)
 - The Asthma and Pregnancy Trial (NHLBI and the National Institute of Child Health and Human Development (NICHD))
 - The National Cooperative Inner-City Asthma Study (NIAID).
- **Demonstration and Education Research** -- NIH supports demonstration and education (D&E) research which evaluate educational and behavioral approaches and organization strategies that may improve the management of asthma. A major thrust of recent D&E research has been on identifying appropriate programs and methods for extending the benefits of asthma management to populations that have been traditionally harder to reach, and who experience a disproportionate burden of asthma illness—for example, minorities and economically disadvantaged children. Outreach education programs using non-medical settings (e.g. the school and community neighborhood centers) are testing the use of community-based and culturally sensitive behavior change strategies for asthma control.
 - **Research Translation: Dissemination and Education** -- An ongoing and important part of the HHS/NIH asthma research program is to translate and disseminate scientific findings to improve the health and quality of life of people with asthma. The NHLBI established the National Asthma Education and Prevention Program (NAEPP) in 1989 to improve the diagnosis, treatment, and control of asthma, to enhance the quality of life of the asthma patients, and to decrease asthma morbidity and mortality. The NAEPP has a three-pronged strategy to achieve these goals: develop science-based clinical practice guidelines for the diagnosis and management of asthma; use partnerships among federal agencies, professional societies, and voluntary and private organizations to disseminate recommendations and implement asthma programs; and organize public communications.

Centers for Disease Control and Prevention (CDC) As the nation's disease prevention agency, the Centers for Disease Control and Prevention (CDC) is working with state and local partners to implement core and comprehensive asthma prevention programs as well as to evaluate programs' success. These programs will include monitoring to identify local disease trends, community asthma prevention interventions, intervention and evaluation research, and state-wide education of practitioners, patients, and health community organizations. CDC sponsors a number of local programs, working with state and local health department partners, to examine how a change in environmental influences can reduce asthma. The goal is to translate research findings into public health action. These include:

- **ZAP Asthma, Atlanta, Georgia:** CDC is one of 17 partners in this project that seeks to show that a comprehensive approach to controlling asthma will reduce the number of asthma hospitalizations for children.
- **The California Community-Based Asthma Intervention Demonstrations Project:** This project seeks to show that a reduction in exposure to environmental tobacco smoke will result in a reduction in asthma hospitalizations in children living in Fresno.
- **Identification and Prevention of Air Pollutants and Other Environmental Determinants in Urban Minority Children: Los Angeles:** This project tracks the asthma status of 100 black children in central Los Angeles County to evaluate the effect of air pollution on asthma among urban, minority children.
- **Asthma Surveillance in Wisconsin:** The purpose of this pilot project was to identify the most effective methods to monitor the trends in asthma through a consensus workshop, and pilot surveillance projects based on the workshop recommendations.
- **Out-of-Hospital Asthma Deaths: North Carolina:** Since out-of-hospital asthma deaths may be preventable, this project is helping to determine what proportion of total asthma deaths they

comprise and what populations they affect.

- **Asthma Prevalence Study in the Catano Area of Puerto Rico:** In collaboration with the Puerto Rico Department of Health, CDC and EPA investigated the possible relationship between air pollution and asthma. The study described the prevalence and severity of asthma among school-aged children in the Catano area, obtained baseline measures for assessment of future trends in the prevalence and severity of asthma, identified risk factors for the disease, and established a framework for further research.

Food and Drug Administration (FDA) The FDA is working in partnership with the pharmaceutical industry to facilitate the timely development and approval of new drugs for the treatment of asthma and related conditions such as allergic rhinitis. This partnership has resulted in a significant number of approvals by the Agency over the past few years for new drugs to treat asthma as well as a significant increase in the number of drugs specifically approved for use in children with asthma and allergic rhinitis. For example, in the past two years the FDA approved the first three members of an entirely new class of asthma therapy that work by blocking leukotrienes which are important mediators of asthma. Other examples of important new products approved by the FDA for first multiple-strength metered-dose inhalers (MDIs) and three new multi-dose dry powder inhalers (DPIs). These new drugs and devices provide physicians and patients with valuable new options that may help to improve the management of asthma.

Health Care Financing Administration (HCFA) As part of Early and Periodic Screening, Diagnosis, and Treatment (EPSDT), **Medicaid** covers all medically necessary services for the diagnosis and treatment of asthma in children, including X-rays, drugs, inpatient stays, outpatient and emergency room visits.

- Medicare provides Part B coverage for both physician visits and durable medical equipment, such as nebulizers, and oxygen equipment required by some asthmatic patients, HCFA also covers the medication that is put into the nebulizers as a necessary supply for the operation of the equipment.
- HCFA recently supported the Aetna Medicare Care Counseling Program in the Phoenix, Arizona, a pilot program for Part B beneficiaries with diabetes and asthma. The Aetna Care Counseling program was a voluntary, confidential, telephone support service offered free of charge to qualifying beneficiaries with asthma or diabetes. In providing care counseling by registered nurses, the program's purpose was to enhance customer service and to improve beneficiaries' health and quality of life by providing a better understanding of asthma and the medications and equipment used to treat the disease. HCFA is currently in the process of reviewing and commenting on the findings.

Agency for Health Care Policy and Research (AHCPR) AHCPR is sponsoring the "Pediatric Asthma Patient Outcome Research Team (PORT) II" a randomized clinical trial, co-funded by NHLBI. The trial tests the cost-effectiveness of NHLBI's practice guidelines designed to reduce asthma morbidity among children. The agency is supporting several other studies measuring quality of life, patient outcomes and other issues related to asthma care.

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