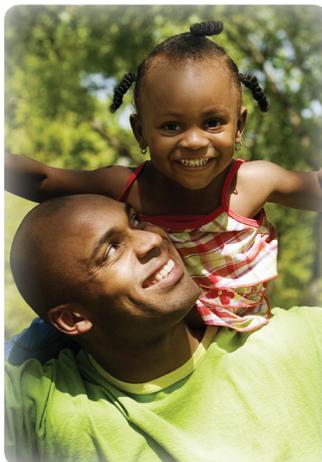


The Maryland Asthma Control Plan:

An Action Agenda to Reduce the Burden of Asthma in Maryland

2010-2015



April 2009



Maryland Department of Health
and Mental Hygiene

Maryland Asthma Control Program

201 W. Preston Street - Baltimore, MD 21201

<http://www.marylandasthmacontrol.org>

The Maryland Asthma Control Plan:

An Action Agenda to Reduce the
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**Maryland Department of
Health and Mental Hygiene**

April 2009



“The focus of the Action Agenda continues to be on reducing the burden of asthma by eliminating disparities, reducing barriers to asthma management, and addressing environmental factors across a variety of settings that are linked to poor asthma outcomes.”



STATE OF MARYLAND
DHMH

Maryland Department of Health and Mental Hygiene
201 W. Preston Street • Baltimore, Maryland 21201

Martin O'Malley, Governor – Anthony G. Brown, Lt. Governor – John M. Colmers, Secretary

April 2009

Dear Maryland Citizens:

Asthma is a serious and complex chronic disease that is affecting an increasing number of Maryland residents. Though asthma cannot be cured, it can be managed. In 2004, the Maryland Asthma Control Program in collaboration with many statewide partners released the State's first strategic plan to provide a framework for addressing asthma in Maryland. The plan presented a broad public health approach to reducing the burden of asthma and included goals and strategies to address surveillance, programmatic interventions, and partnership building. Since that time, Maryland asthma stakeholders have achieved many of the strategies and activities outlined in the Plan. Based on these successes, lessons learned and continuing challenges, the State has revised the strategic plan to build on its successes and to provide a framework for moving forward through 2015.

I am pleased to present the updated **Maryland Asthma Control Plan: *An Action Agenda for Reducing the Burden of Asthma in Maryland, 2010-2015***. The Action Agenda represents a comprehensive framework for action by the Maryland Department of Health and Mental Hygiene (the Department) and its committed partners. The focus of the *Action Agenda* continues to be on reducing the burden of asthma by eliminating disparities, reducing barriers to asthma management, and addressing environmental factors across a variety of settings that are linked to poor asthma outcomes. Implementation of the goals and objectives of this *Action Agenda* should result in an improved quality of life for persons with asthma and a reduction in the burden of asthma.

Progress towards achieving the *Action Agenda's* goals can only be accomplished through the committed work of many partners. I want to thank all of those who participated in the development of the *Action Agenda*. The Department is fortunate to have so many partners committed to working together to ensure a better future for the 500,000 Marylanders with asthma.

Sincerely,

John M. Colmers
Secretary

Toll Free 1-877-4MD-DHMH • TTY for Disabled - Maryland Relay Service 1-800-735-2258

Web Site: www.dhmh.state.md.us

“Maryland is privileged with tremendous assets committed to address the burden of asthma in our State... The evolving Action Agenda ... will lead us forward in a coordinated manner to decrease the impact of asthma on our citizens.”



STATE OF MARYLAND

DHMH

Maryland Department of Health and Mental Hygiene

201 W. Preston Street • Baltimore, Maryland 21201

Martin O'Malley, Governor – Anthony G. Brown, Lt. Governor – John M. Colmers, Secretary

Family Health Administration

Russell W. Moy, M.D., M.P.H., Director – Joan H. Salim, Deputy Director

April 2009

Dear Colleagues and Supporters:

Asthma is an increasing public health problem in Maryland and the Nation and currently affects an estimated 500,000 Marylanders. To address this growing concern, the Maryland Department of Health and Mental Hygiene, the American Lung Association of the Atlantic Coast and a vast array of public and private partners in the State have worked over the past two years to update the State's 2004 Asthma Control Plan. The Centers for Disease Control and Prevention has provided funding and technical support for the updated, **Maryland Asthma Control Plan: An Action Agenda to Reduce the Burden of Asthma in Maryland, 2010-2015 (Action Agenda)**. The *Action Agenda* serves as a road map for immediate action as well as a guide to address asthma in the years to come.

Maryland is privileged with tremendous assets committed to address the burden of asthma in our State. The *Action Agenda* helps to bring together these assets to work toward common goals. The evolving *Action Agenda*—informed by our surveillance activities and supported by the ongoing collaboration of the Maryland Asthma Coalition—will lead us forward in a coordinated manner to decrease the impact of asthma on our citizens.

We have many to thank for the successful completion of the *Action Agenda*. We thank the members of the Maryland Asthma Coalition and our Advisory Board for their diligent work to produce the *Action Agenda*, participants at the 2007 Maryland Asthma Summit for their expert contributions, those who served as key informants for their views shared during interviews, and everyone in Maryland who work every day to help individuals living with asthma breathe more easily. It has been inspirational and rewarding to work with such committed individuals.

The *Action Agenda* is the next step in reducing the burden of asthma in Maryland. We look forward to ongoing collaboration with our established and future partners to achieve the progress necessary to improve the health and lives of the many persons with in Maryland with asthma.

Sincerely,

Cheryl D. De Pinto, M.D., M.P.H.
Medical Director
Maryland Asthma Control Program

Valerie Nozea, BS, RRT, AE-C
Regional Director of Mission Services
American Lung Association of the Atlantic Coast



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In 2006 alone, asthma in Maryland resulted in 55 deaths, 9,700 hospitalizations, 44,300 visits to hospital emergency departments, and thousands of hours of lost school and work days.

The Maryland Asthma Control Plan: An Action Agenda to Reduce the Burden of Asthma in Maryland, 2010-2015

Asthma is a serious chronic respiratory disease with no known cure that currently affects an estimated 500,000 Maryland children and adults. In 2006 alone, asthma in Maryland resulted in 9,700 hospitalizations, 44,300 visits to hospital emergency departments, thousands of hours of lost school and workdays and 55 deaths. Maryland costs for hospital and emergency department care for asthma totaled more than \$84 million in 2006. Due to its large burden, asthma is considered a major public health problem both in Maryland and nationally.

Addressing asthma requires a coordinated and comprehensive public health approach. Surveillance, planning, partnerships, and implementation of interventions based on best practices have been the foundations of Maryland's efforts to address asthma since 2000. In 2001, the Maryland Department of Health and Mental Hygiene received a three-year grant from the Centers for Disease Control (CDC). The grant, entitled "Addressing Asthma from a Public Health Perspective" supported the development of a surveillance system and a State plan to reduce the burden of asthma. In 2002, the Maryland Legislature passed HB 420, which established the Maryland Asthma Control Program (MACP) in statute to address asthma through surveillance, planning, and interventions.

In 2002, an Asthma Planning Task Force convened to complete the State's first statewide Asthma Control Plan (2004 Plan); published in March 2004.¹ The 2004 Plan was intended as a "living," evolving document to be consistently evaluated and updated. In 2007, the MACP began a process to update the State Plan in response to new surveillance findings, program successes, and guidance from the Maryland Asthma Coalition. The result is the *Maryland Asthma Control Plan: An Action Agenda to Reduce the Burden of Asthma in Maryland, 2010-2015* (Action Agenda) that will serve as Maryland's Asthma Control Plan through 2015.

The Action Agenda reflects the MACP's desire to move toward action oriented program development and outcomes-focused public health efforts to address asthma. Section One highlights data/surveillance updates. Sections Two and Three describe progress toward meeting the objectives of the 2004 Plan as well as the process used to develop the Action Agenda. Finally, Section Four includes a set of revised and expanded goals, objectives, and strategies to address asthma from a public health perspective. The Action Agenda provides a comprehensive framework for local and statewide action to address asthma. It offers a unified vision and sets the direction for asthma activities in Maryland from 2010 through 2015.



Although asthma has **NO CURE**, it can be well managed or controlled with access to **QUALITY HEALTH CARE** services, appropriate medications, environmental controls and management, and self-management strategies.

Asthma in Maryland - A Public Health Response

WHAT IS ASTHMA?

Asthma is an incurable, but controllable, chronic lung disease characterized by inflammation of the airways that leads to reversible airway constriction and excess mucus secretion. This narrowing of the airway results in reduced airflow that may cause symptoms of wheezing, coughing, chest tightness, and difficulty breathing.

Asthma is a serious and complex chronic disease whose exact cause(s) remain unknown. Current knowledge suggests an interplay between genetic and environmental factors. Exposure to certain asthma triggers can lead to asthma episodes or “attacks.” These triggers may include allergens (e.g., dust mites, mold, animal dander), irritants (e.g., air pollution, tobacco smoke), as well as other factors (e.g., exercise, viral infections, medical conditions such as gastric reflux). Other risk factors for asthma include family history, obesity, and poverty.

Asthma has numerous direct and indirect impacts on patients, their families, and society. Frequent exacerbations can result in lost work and school days, multiple hospitalizations and emergency department (ED) visits, limitations in daily activities, a lessened quality of life, and even death. Although asthma has no cure, it can be well-managed or controlled through access to quality health care services, appropriate use of medications, environmental controls and management, and self-management strategies.

In 2007, the National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health (NIH) published the *Expert Panel Report-3: Guidelines for the Diagnosis and Management of Asthma* (EPR-3

guidelines). The guidelines provide clinicians with best practice guidelines for the diagnosis, and management of asthma.² The EPR-3 guidelines stress the importance of assessing asthma severity and control, using an asthma action plan, having access to quality health care, using medications appropriately, and reducing exposure to allergens and irritants that worsen asthma symptoms. The use of effective treatment and self-management options as outlined in the guidelines can help persons with asthma live productive lives without limitations to their daily activities. Use of the EPR-3 Guidelines is an important part of addressing the needs of Marylanders with asthma and reducing the burden of asthma in Maryland.

What is the Burden of Asthma in Maryland?

Asthma affects nearly 500,000 Marylanders and is one of the most common chronic diseases of childhood, affecting an estimated 125,000 Maryland children. Asthma is recognized as a growing public health problem and is thought by some to have reached epidemic levels. Nationally, the number of persons with asthma has more than doubled since 1980.³

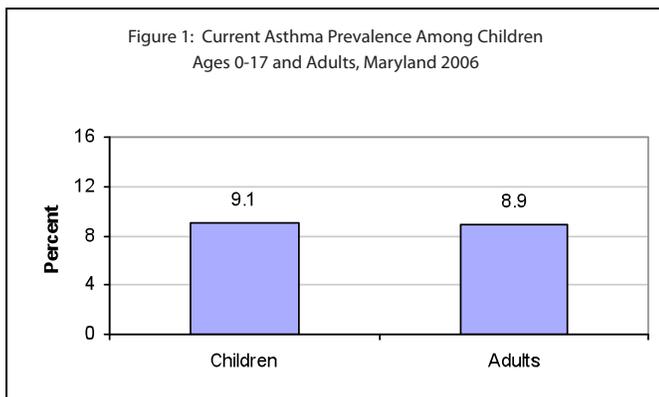
How do we measure the burden of asthma?

The burden of asthma is generally measured in terms of asthma prevalence (the number of persons with asthma), mortality, asthma management indicators (e.g., work or school absences, medication usage), health care utilization (e.g., hospitalizations and ED visits) and both direct (e.g., health care services) and indirect (e.g., loss productivity) costs. Surveys and secondary data sources (e.g., vital statistics data, health insurance claims) are often used collectively to comprise an asthma surveillance system for monitoring and tracking

asthma measures. Maryland began collecting data for a statewide asthma surveillance system in 2001 and annual surveillance reports have been published since 2002.

How many Marylanders have asthma?

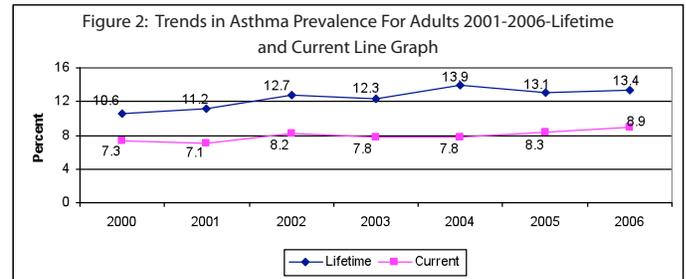
The Behavioral Risk Factor Surveillance System (BRFSS) provides data on asthma prevalence in Maryland. Asthma currently affects an estimated 497,500 Marylanders (9%) based on 2006 BRFSS data. This translates to 373,000 adults (8.9%) and 124,500 children (9.1%) with a current diagnosis of asthma (current prevalence) (Figure 1). Even more Marylanders (746,000) reported being diagnosed with asthma at some point during their lifetime (lifetime prevalence). This includes an estimated 566,000 adults (13.4%) and 180,000 children (13.1%). Among Maryland Medicaid enrollees, in 2006, 71,236 (9%) had a current diagnosis of asthma. For some populations within Baltimore City, the prevalence rate exceeds 20%.⁴



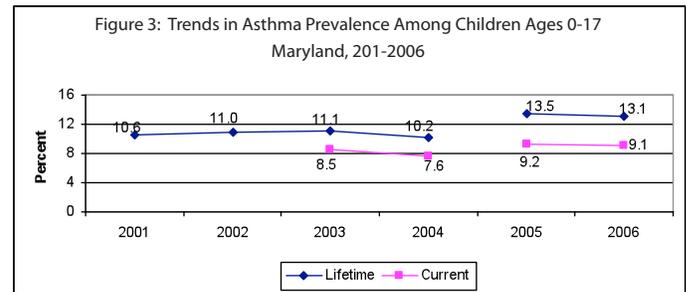
Source: Maryland BRFSS

What are the current asthma trends?

Trend data from the surveillance system suggest that asthma prevalence is increasing among both children and adults in Maryland. Statewide, the lifetime asthma prevalence rate for adults increased from 10.6% in 2000 when the State first began collecting this information to 13.4% in 2006. Similarly, the State's current prevalence rate for adults increased from 7.3% in 2000 to 8.9% in 2006 (Figure 2). For children ages 17 and under, the lifetime asthma prevalence rates are comparable (13.5% in 2005 and 13.1% in 2006). Current prevalence rates among children are comparable (9.2% in 2005 and 9.1% in 2006) (Figure 3).



Source: Maryland BRFSS



Source: Maryland BRFSS

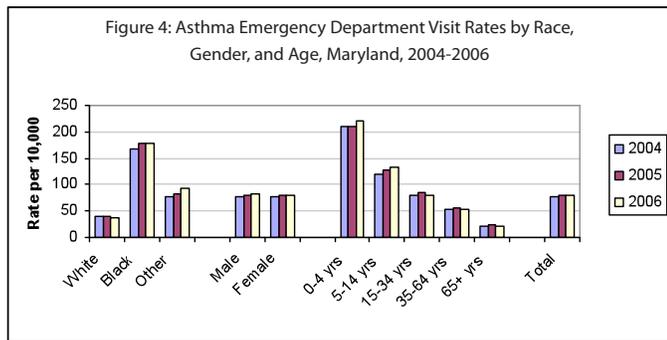
*Survey question changed in 2005

Surveillance data also indicate a trend towards increasing hospitalization and ED visit rates for asthma. One positive note is that there has been a decline in age-adjusted asthma mortality rates in Maryland since 2002.

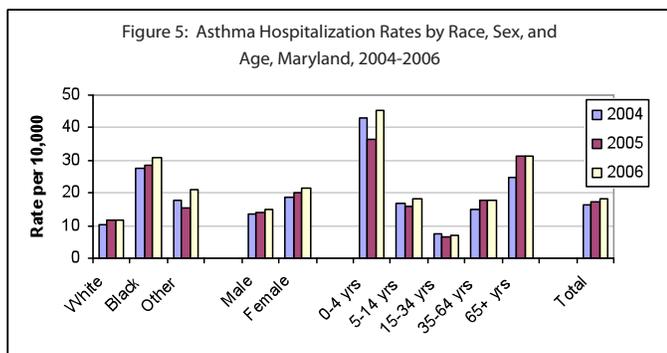
How well controlled is asthma in Maryland?

High rates of ED visits, hospitalizations, and death suggest that asthma is often poorly controlled in Maryland. Poorly controlled asthma may be the result of lack of self-management skills, inadequate access to quality medical care including medications, or other factors. Recurrent asthma episodes, ED visits, hospitalization and even death may be the result of poorly controlled asthma.

Maryland's surveillance systems track data from the Health Services Cost Review Commission (HSCRC) on emergency department visits for asthma. In 2006, there were 44,308 visits to Maryland hospital emergency departments for asthma. This represents a rate of 80.9 visits per 10,000 population. In 2005 (the most recent year for which data on U.S. ED visit rates for asthma are available), Maryland's rate of 81.3 exceeded the nation's rate of 62.7 by 29.7% (Figure 4). The ED visit rates vary by age, race, and jurisdiction, and in 2006 were highest among young children under the age of five, African Americans, and Baltimore City residents.



Source: HSCRC
Total ED visit rate, and rates by race and gender are age adjusted to the 2000 U.S. standard population

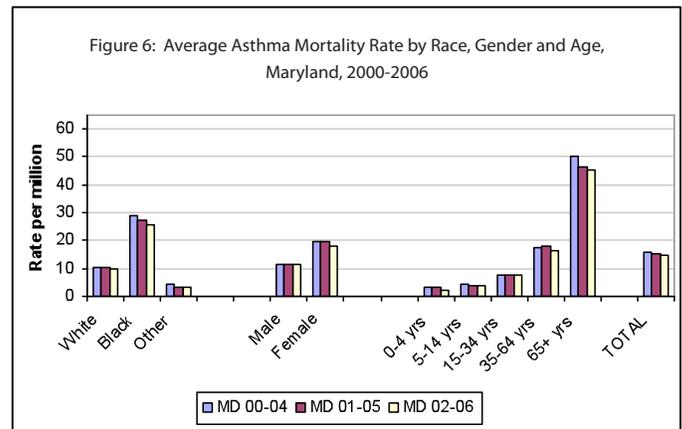


Source: HSCRC, Maryland Health Care Commission, West Virginia Health Care Authority, Pennsylvania Health Care Cost Containment Council, and Delaware Department of Health. Hospitalizations of Maryland residents in West Virginia are included in all data except rates by race, because West Virginia does not collect data on race. Hospitalizations of Maryland residents in the District of Columbia, Pennsylvania, and Delaware are included in all data. Total hospitalization rate, and rates by race and gender are age adjusted to the 2000 U.S. standard population.

HSCRC data are also used to track asthma hospitalizations over time. Between 2004 and 2006, both the number and rate of asthma hospitalizations increased. In 2006, there were 9,677 hospitalizations of Maryland residents in Maryland hospitals with a primary diagnosis of asthma. This is a 15% increase from 8,433 in 2004. Hospitalization rates over this period vary by age, race, and jurisdiction and are highest among children under the age of five, females, African Americans, and residents of Baltimore City and Allegany County. Asthma is the leading cause of hospitalizations among Maryland children ages three to twelve years old. Maryland's asthma hospitalization rate of 18.4 per 10,000 populations was higher than the national average of 14.9 in 2006 (Figure 5).

While asthma deaths are largely preventable, from 2002 to 2006, an average of 81 Marylanders died each year from asthma, a rate of 14.7 deaths per 1,000,000 population (Figure 6). Asthma mortality rates are highest among females, the elderly, African Americans and Baltimore City residents. Since 1997, asthma

mortality rates in Maryland have generally paralleled the U.S. average and exceed the HP 2010 goals for all age groups except for persons 65 years and older.

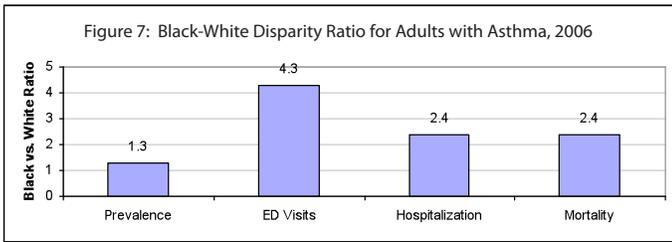


Source: Maryland Vital Statistics Administration
Total mortality rate and rates by race and gender are age adjusted to the 2000 U.S. standard population.

Does asthma affect everyone equally?

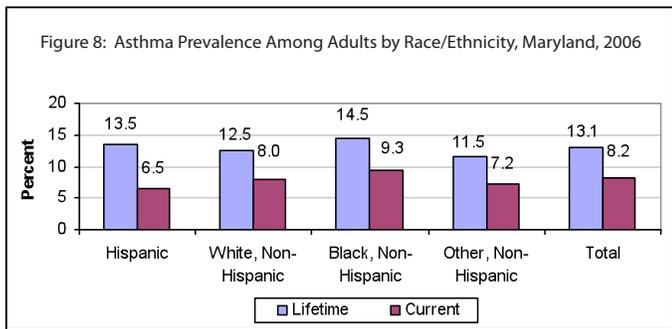
Asthma affects Marylanders of both genders and of all ages, races, and ethnicities; however, there are considerable disparities in the burden and control of asthma by age, race, ethnicity, and geography. By age, asthma is most severe for young children as measured by prevalence and hospital use rates and for the elderly as measured by mortality rates. While there are three times as many adults as compared to children with asthma in Maryland, young children in Maryland carry a disproportionate burden of asthma in Maryland. Asthma prevalence rates are slightly higher for children and rates of asthma ED visits and hospitalizations are about twice the rate for adults.

By race, African Americans in Maryland carry the greatest asthma burden. Current asthma prevalence is 30 percent higher for African Americans as compared to Whites. However, rates of ED visits were four times higher, and hospitalization and death rates were more than twice as high for African Americans as compared to non-Hispanic Whites in 2006 (Figure 7). The increased asthma morbidity and mortality among African Americans cannot be fully explained by higher prevalence rates. Other factors including limited access to quality health care, differentials in income, environmental exposures and asthma severity may further explain these differences.



Source: Maryland BRFSS, HSCRC, Vital Statistics Administration

Hispanic adults have higher lifetime asthma prevalence than non-Hispanic Whites. Conversely, non-Hispanic Whites have a higher current prevalence rate than Hispanics (Figure 8). Hispanic adults have ED visits and hospitalizations rates below the statewide average.



Source: Maryland BRFSS

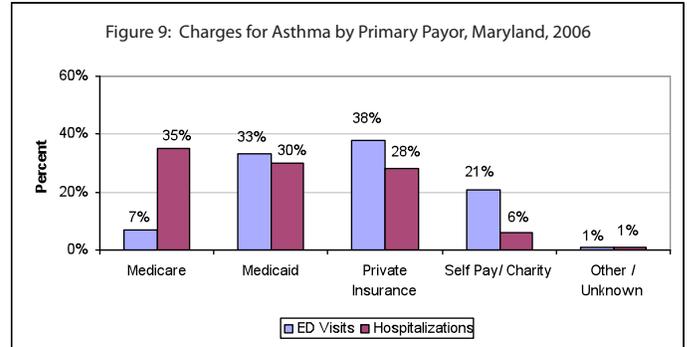
Several Maryland jurisdictions are particularly burdened by asthma. Baltimore City has the State's highest asthma prevalence, ED visits, hospitalization, and mortality rates. While other counties have prevalence rates similar to the State average, some exhibit comparatively higher ED visit, hospitalization, or mortality rates as compared to statewide averages.

Research shows that low income is a significant risk factor for asthma morbidity. Maryland BRFSS data on asthma prevalence by income indicate that asthma prevalence decreases as income increases. Maryland surveillance data also documents higher asthma hospitalization and ED visit rates in lower income communities of the State.

What are the costs of asthma in Maryland?

Asthma leads to significant direct and in-direct costs to the State and its residents. Hospitalization and ED visits

alone totaled \$84 million in 2006. BRFSS data indicate that adults with asthma are more likely to consider their health status as fair or poor as compared to Marylanders without asthma. Together, Medicaid and Medicare pay the majority of the costs associated with asthma care (Figure 9).



Source: HSCRC

In light of the extensive burden of asthma on Maryland citizens, it is imperative that the State mount a public health response to asthma with the guidance of a comprehensive statewide plan. Maryland asthma surveillance data document the need for this approach.

For more Maryland asthma surveillance data, see Maryland Asthma Surveillance Reports and Factsheets at www.Marylandasthmacontrol.org.





Current knowledge suggests that an interplay between genetics and exposure to environmental and other asthma triggers can lead to asthma episodes or “attacks.” These triggers may include:

- allergens (e.g., dust mites, mold, animal dander)
- irritants (e.g., air pollution, tobacco smoke)
- exercise
- viral infections
- medical conditions, such as gastric reflux

The 2004 Asthma Plan and Maryland Progress

Maryland public health officials have recognized the need to develop a statewide Asthma Plan to provide a common vision for individuals, organizations, and communities to address the burden of asthma in Maryland. In 2001, the Maryland Department of Health and Mental Hygiene was awarded a three-year planning grant from the Centers for Disease Control and Prevention (CDC) to develop the State's first *Maryland Asthma Plan*. Plan development began by convening an Asthma Planning Task Force comprised of stakeholders from various disciplines, professions, and areas of Maryland. Consumer and health care

provider focus groups were held throughout the State to inform the process. An Asthma Summit then allowed other stakeholders to provide additional input. The expertise of the Task Force members, combined with findings from the focus groups and other stakeholder input, guided the planning process and enabled a comprehensive Plan to emerge. The Plan was completed in the spring of 2004, approved by the then Secretary of the Department of Health and Mental Hygiene, and distributed statewide to stakeholders and partners.



The 2004 Plan included two major goals, 11 objectives, and more than 150 strategies and action steps. The goals and objectives are summarized as follows:

The intent was for the 2004 Plan to serve as an ambitious and broad roadmap for implementing and evaluating local and statewide actions based on best practices of medical and environmental asthma management over a ten-year period. Since the development of the State’s first Asthma Plan, Maryland has made substantial progress in creating a State public

health infrastructure for addressing asthma. Table 1 summarizes State progress toward addressing the burden of asthma.

PROGRESS ON PLAN IMPLEMENTATION

In the five years since the 2004 Plan was completed, Maryland has used available funding, partnerships, and other resources to begin implementing priority areas of the Plan. Selected 2004 Plan accomplishments are summarized in Table 2.

Goal I: Decrease the prevalence of asthma and the occurrence of its complications.

- **Surveillance/Tracking:** Maintain and expand an asthma surveillance/tracking system.
- **Provider Issues:** Increase provider use of the NIH Asthma Guidelines
- **Patient Issues:** Improve access to care and increase self-management knowledge and behavior in people with asthma, their families, and other caregivers.
- **Environment:** Decrease exposure to environmental factors that negatively influence asthma.
- **Schools:** Maximize management of asthma in the school setting.
- **Childcare:** Maximize management of asthma in the childcare setting.
- **Collaboration and Coordination:** Establish and maintain an ongoing statewide asthma coalition.
- **Communication:** Improve public awareness and sensitivity to the needs of persons with asthma.
- **Research:** Support activities of researchers investigating causes, triggers, and management of asthma, particularly as the activities relate to Maryland issues.

Goal II: Decrease disparities in health outcomes related to asthma.

- **Exploring Disparities:** Utilize surveillance/tracking data to identify determinants of disparities in asthma occurrence or outcome among population groups.
- **Eliminating Disparities:** Ensure that all persons with asthma receive the appropriate level of care and services.

Table 1. Progress Toward Addressing the Burden of Asthma in Maryland

Before 2001

- Lack of a focus on asthma control from a public health perspective in Maryland
- Lack of viable State and local partnerships to address asthma
- Limited data sources describing the burden of asthma in Maryland

2001- Present

- A more coordinated public health infrastructure to support asthma activities
- Maryland Asthma Control Program created in State statute (2002)
- Maryland Asthma Control Surveillance System initiated and five annual surveillance reports published
- Maryland’s first Asthma Control Plan completed in 2004
- Statewide Asthma Coalition and three local/regional asthma coalitions formed
- Expanded intra- and inter-departmental collaborations to develop a public health response to asthma control
- Strengthened environmental health focus using national frameworks for prevention
- Expanded awareness, outreach and education

Table 2. Examples of Maryland 2004 Asthma Plan Implementation Progress by Goal Area

Clinical Services	School and Child Care	Surveillance	Education, Awareness and Partnerships	Environmental and Occupational Health
Disseminated the 2002 and 2007 NIH Guidelines to health providers	Piloted Asthma Friendly Schools Initiative in four jurisdictions	Published four annual Maryland Asthma Surveillance reports, one mini-surveillance report and four data briefs	Supported a statewide Asthma Coalition as well as three local/ regional coalitions	Supported a childhood asthma program in Baltimore City that uses a “healthy homes” model
Developed and disseminated a statewide “Asthma Resource Guide”	Trained child care providers and school health personnel	Published brochures with information on racial disparities	Managed an asthma website and listserv	Passage of the Clean Indoor Air Act to decrease exposure to tobacco smoke in public places
Developed and widely disseminated a State “Asthma Action Plan” form	Provided annual funding to University of Maryland Breathmobile for outreach and education to school aged children in Baltimore City	Participated in Agency for Health Care Research and Quality sponsored learning lab on asthma disparities in childhood	Developed “Asthma and the Older Adult” Toolkit and presented to audiences throughout State	Created and disseminated work-related asthma brochure and information; Held Work-Related Asthma Summit
Trained community primary care providers on the 2007 NIH guidelines	Developed new school health guidelines for asthma management in schools	Enhanced GIS mapping capabilities	Developed and disseminated educational materials statewide	Collaborated with other agencies such as the Children’s Environmental Health and Protection Advisory Council

HEALTHY PEOPLE 2010 GOALS AND MARYLAND PROGRESS

Healthy People 2010 is a set of health goals and objectives for the Nation to achieve by 2010. Indicator targets are set for a number of health conditions including asthma. Table 3 summarizes Maryland's progress to date on improving outcomes and rates related to specific objectives for asthma. Both surveillance reports and progress to date on reaching the HP 2010 goals suggest that much work remains to be done.

Table 3: Maryland Progress on Healthy People 2010 Goals

Healthy People 2010 Objective	Target Age Group	HP 2010 Target ¹	Maryland 2006 ^a
1-9a. Reduce pediatric asthma hospitalization rates. (Rate per 10,000)	< 18 yrs	17.3	20.7 ^{2,b}
	< 5 yrs	0.9	2.2 ^{3,b}
	5 – 14 yrs	0.9	3.9 ^{3,b}
24-1. Reduce asthma deaths. (Rate per million)	15 – 34 yrs	1.9	7.5 ^{3,b}
	35 – 64 yrs	8.0	16.5 ^{3,b}
	≥ 65 yrs	47.0	45.5 ^{3,b}
	< 5 yrs	25	40.5 ^{2,b}
24-2. Reduce hospitalizations for asthma. (Rate per 10,000)	5 – 64 yrs	7.7	13.0 ^{2,b}
	≥ 65 yrs	11	30.8 ^{2,b}
	< 5 yrs	80	222 ^{3,b}
24-3. Reduce emergency department visits for asthma. (Rate per 10,000)	5 – 64 yrs	50	78 ^{3,b}
	≥ 65 yrs	15	21 ^{3,b}
	< 5 yrs	80	222 ^{3,b}
24-4. Reduce activity limitations among persons with asthma.	c	6%	Data not available
24-5. Reduce number of school or workdays missed due to asthma.	c	2.0 days	Data not available
24-6. Increase number who receive formal asthma education.	c	30%	Data not available
24-7. Increase number who receive appropriate asthma care		38.0%	Data not available
	• Written asthma management plan	98.8%	
	• Instruction on proper use of prescribed inhaler	71.1%	
	• Education on early signs and symptoms	c	
	• Medication regimens	92.0%	
	• Follow-up medical care after hospitalization	87.0%	
	• Assessment and reduction in exposure to environmental risk factors	50.0%	

Notes:

- ^a. Latest data available that is comparable to the Healthy People 2010 targets.
- ^b. Age adjusted to the year 2000 U.S. standard population.
- ^c. No specified age group.

Sources:

- ¹ Healthy People 2010 Midcourse Review, U.S. Department of Health and Human Services, 2006
<http://www.healthypeople.gov/data/midcourse>
- ² Maryland HSCRC Hospital Discharge Data 2006.
- ³ Maryland Vital Statistics Administration 2002-2006.





These next five years will provide an **OPPORTUNITY** for Maryland to further define and **EXPLORE** the issues that directly contribute to the burden of asthma in Maryland and to structure and implement interventions to **REDUCE THE BURDEN.**

Revising the 2004 Plan: The Next Five Years

Maryland's first Asthma Control Plan was completed and disseminated in 2004. The Asthma Control Program surveyed Maryland Asthma Coalition members and others in early 2007 to determine the Plan's usefulness. While respondents applauded the work of the initial Asthma Planning Task Force and the importance of the 2004 Plan in promoting a public health response to asthma, many felt that the Plan was too broad and lacked a strategic focus. They expressed a need to develop a more focused Plan that could be viewed as relevant by a wide audience of stakeholders from policymakers to health care providers to families.

The 2004 Plan was developed to serve as a planning document covering the period, 2004-2014. Stakeholders expressed a need to continually review and revise the Plan as needed or at least every five years to ensure that the Plan reflected the most up-to-date knowledge and research on the burden of asthma and strategies to reduce the burden. Stakeholders felt it important that the Plan be a "living" evolving document based on Maryland needs and resources. Hence, the decision was made to update the Plan to cover the years, 2010-2015.

A Steering Committee comprised of Maryland Asthma Control Program and Maryland Asthma Coalition members began meeting in 2007 to start the Plan revision process. The Steering Committee focused initially on organizing the State's 2nd Asthma Summit. The purpose of the Summit was to update stakeholders on Plan progress and to obtain input for revising the Plan.

The Summit brought together more than 120 asthma stakeholders from across the State to review the 2004 Plan. Participants provided feedback on methods to update and strengthen the goals, objectives, and action steps of the Plan. Summit findings were then compiled and shared with the Executive Committee, an advisory board to the Maryland Asthma Coalition and MACP. The Executive Committee was charged with overseeing Plan revision. Following the Summit, changes were made to the framework to reflect surveillance findings, progress in meeting the first Plan's objectives, and the priority needs identified by MACP and asthma stakeholders. The identified priority needs included an increased emphasis on environmental factors in asthma prevalence and control, integration and collaboration with other State and local efforts focusing on disparities, and a renewed focus on outreach and education to reach communities and populations most at risk. To create a more cohesive framework, the Plan goals were collapsed from the ten identified in the 2004 Plan to five for the 2010-2015 Plan.

Interviews with 25 key informants were conducted in 2008 to gain additional perspectives and justification for the Plan's new framework. For each of the five goals identified, a Workgroup was created. These Workgroups worked with MACP staff and a contractual project consultant to develop objectives, strategies, and performance indicators. Workgroup members were also tasked to prioritize objectives and strategies for minimizing the burden of asthma in Maryland.

Throughout the process, program staff continually reviewed Asthma Plans developed in other states as well as CDC reports and guidelines and other documents

for integration of key asthma management concepts of relevance to Maryland's approach to addressing asthma. These reports included:

- NHLBI. National Asthma Education and Prevention Program Guidelines Implementation Panel Report (GIP Report), December 2008;
- NIH. Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma, August 2007;
- HUD. Healthy Homes Strategic Plan (Draft);
- CDC. Guide for State Health Agencies in the Development of Asthma Programs, December 2003; and
- Agency for Health Care Research and Quality. Asthma Care Quality Improvement: Resource Guide for State Action. April 2006.

MACP staff prepared a draft revised Plan based on feedback from Summit participants, key informant interviews, focus group findings, and Executive Committee member recommendations. The consultant also assisted with this process. The Draft Plan was completed in March 2009 and placed on the MACP website for review and comment. These comments were then considered for incorporation into the final revision of the Plan. The revised Plan was completed and released in April 2009 and reflects comments and input from a vast array of stakeholders. The Maryland Asthma Control Program and the Maryland Asthma Coalition plan to hold periodic regional community meetings to solicit feedback on the Plan's relevance and usefulness to ensure the Plan's responsiveness.

THE NEXT FIVE YEARS

The purpose of the revised Maryland Asthma Control Plan remains the same as the first Plan - to provide a common vision for individuals, organizations, and communities to address the burden of asthma in Maryland. This 2010-2014 Action Agenda serves as a revised roadmap for implementing and evaluating local and statewide actions based on best practices of medical and environmental asthma management. The Plan encompasses the CDC Asthma Program components that include surveillance, planning, evaluation, partnerships, and identification and



implementation of science-based asthma interventions. The Action Agenda is designed to meet its goals in a five-year period as part of an ongoing, dynamic, and collaborative process.

**Many more Marylanders
will be “breathing easier” if
these goals can be achieved.
This is our hope.**

The Action Agenda sets the stage for a re-energized focus on reducing the burden of asthma in Maryland while building upon the foundation laid by the 2004 Plan. These next five years will provide an opportunity for Maryland to further define and explore the issues that directly contribute to the burden of asthma in Maryland and to structure and implement interventions to reduce the burden. The Action Agenda specifically seeks to expand and sustain a comprehensive public health infrastructure, maintain and enhance an asthma surveillance system, reduce asthma disparities, reduce exposure to environmental triggers, and improve the system of health care for persons with asthma. Many more Marylanders will be “breathing easier” if these goals can be achieved. This is our hope.





The Maryland Asthma Control Program
ENVISIONS A FUTURE in Maryland in which
individuals and the population as a whole are
FREE OF THE IMPACT OF ASTHMA.

The Action Agenda

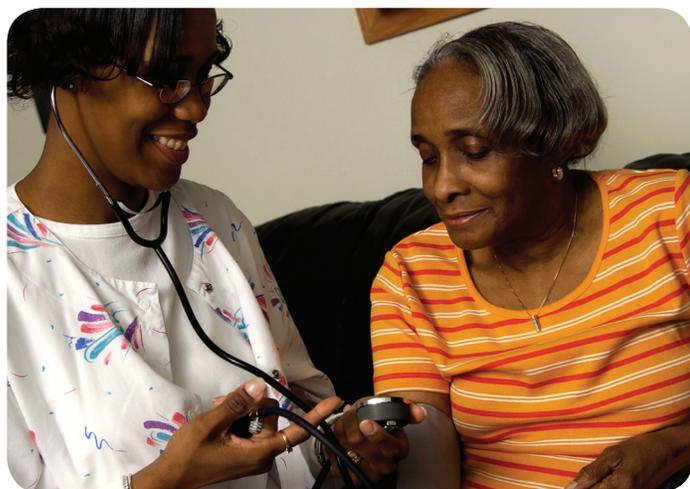
The Maryland Asthma Control Program, the Maryland Asthma Coalition, and its Executive Board defined vision, and mission statement for asthma control in Maryland:

VISION

The Maryland Asthma Control Program envisions a future in Maryland in which individuals and the population as a whole are free of the impact of asthma.

MISSION

The Maryland Asthma Control Program's mission is to reduce the burden of asthma in Maryland, optimize asthma control, and minimize asthma disparities by identifying and supporting the implementation and evaluation of quality, and evidence-based strategies of asthma management, and promoting increased access to high quality, evidence based, state-of-the-art asthma care.



GOALS – MARYLAND ASTHMA CONTROL PLAN

The Action Agenda to Reduce the Burden of Asthma in Maryland, 2010-2015, outlines five major goal areas as a framework for identifying important objectives and strategies for action over the next five years. The goal statements were developed as a part of the State Asthma Control Plan development process. The goal areas are:

1. **Public Health Infrastructure:** Develop, expand and sustain a comprehensive public health infrastructure to reduce the burden of asthma in Maryland.
2. **Asthma Surveillance, Research and Evaluation:** Implement an asthma surveillance system to assess the burden of asthma, identify disparate populations, and inform program priorities and evaluation activities.
3. **Disparities:** Reduce asthma disparities in Maryland.
4. **Indoor and Outdoor Environments:** Reduce exposure to environmental triggers that could lead to or exacerbate asthma.
5. **Clinical and Self-Management:** Improve the system of care for persons with asthma through assuring quality intervention to promote asthma awareness and education and promote high quality clinical and self-management services.

For each of the five goals, strategies and sample performance indicators are identified. An introductory statement follows each goal statement.

PLAN FRAMEWORK

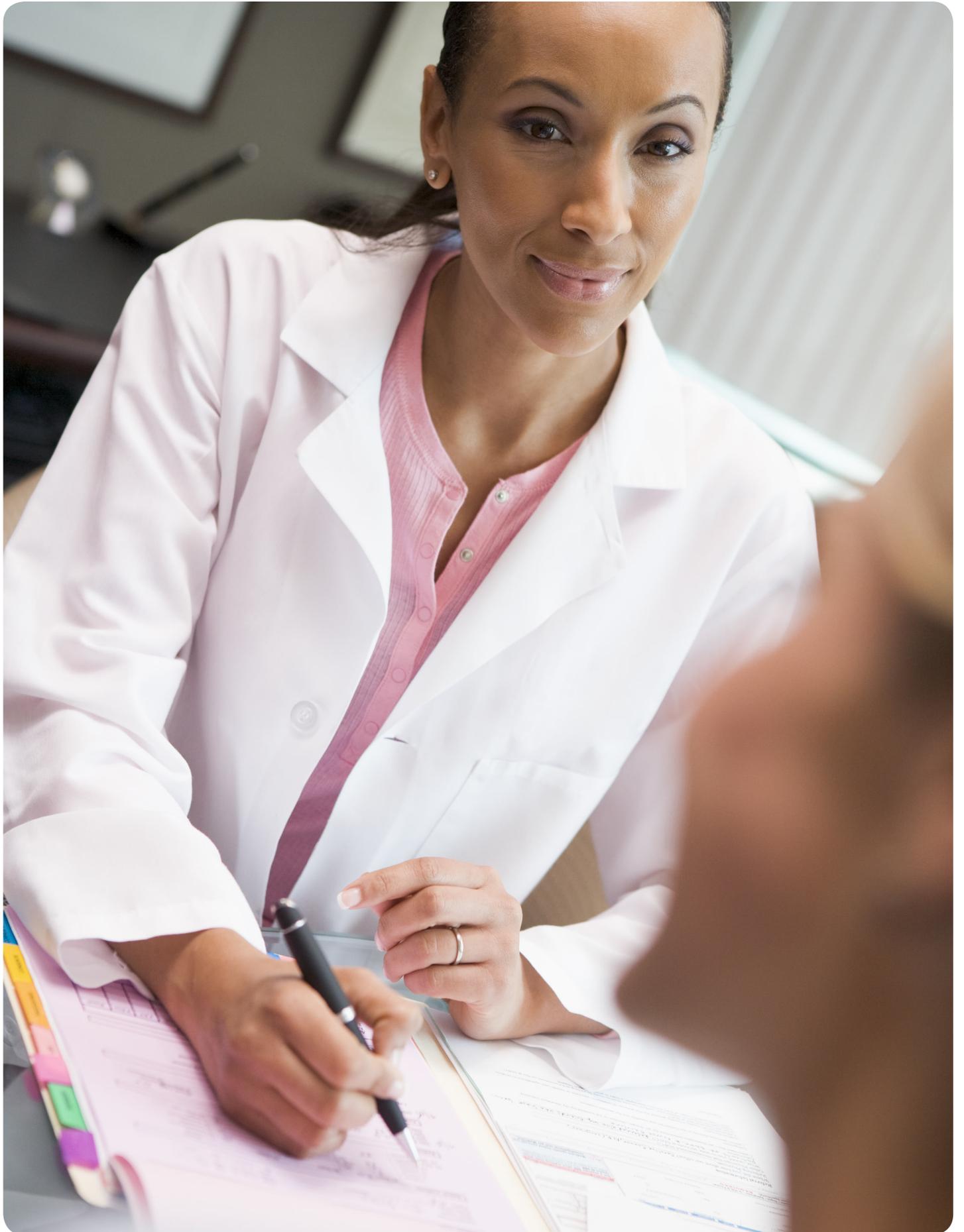
The Institute of Medicine (IOM) states that “effective public health activities are essential to the health and well-being of the American people now and in the future,”⁵ and defines the core functions of public health agencies as assessment, assurance, and policy development. The *Action Agenda to Reduce the Burden of Asthma in Maryland, 2010-2015* is built on the framework of these core public health functions and the IOM’s subsequent urging that governments must “build and maintain partnerships with other organizations and sectors of society, working closely with communities and community based organizations, the health care delivery system, academia, business, and the media.”⁶ The IOM suggests that several actions are necessary in collaboration with partners. These actions include:

- Adopting a focus on population health that includes multiple determinants of health;
- Strengthening the public health infrastructure;
- Building partnerships;
- Developing systems of accountability;
- Emphasizing evidence; and
- Improving communication.

The important and sustainable elements of this framework are reflected in the Action Agenda. The successful implementation of these elements are predicated on partnerships with communities, employers and businesses, local and state government agencies, the health care delivery system including insurers and providers, and academic institutions. Each of the partners plays a vital role in the system of care and supports for those with asthma.

...”build and maintain partnerships with other organizations and sectors of society, working closely with communities and community based organizations, the health care delivery system, academia, business, and the media.”

According to the social-ecological model of health behaviors, programs and activities must address multiple “levels” of influences on health. The social and behavioral determinants of health form the basis for the targeted activities within the Plan. The interventions and activities are directed toward each of these levels, including: **individuals** (adults and children with asthma), **interpersonal** structures such as families (parents and caretakers), **communities** (neighborhoods), **institutions** (schools, childcare, and work places), and the public health **infrastructure/society** (local health departments, state agencies, and policy frameworks). Each of these levels of influence are integral to a comprehensive approach for addressing asthma from a public health perspective.



Goals and Objectives: The Action Agenda for 2010-2015



GOAL #1: PUBLIC HEALTH INFRASTRUCTURE:

Develop, expand, and sustain a comprehensive public health infrastructure to reduce the burden of asthma in Maryland.

BACKGROUND

Goal one stresses the importance of building and strengthening the public health infrastructure to address the multi-factorial issues related to asthma, and to do so from a comprehensive public health perspective. This approach, as recommended by the Centers for Disease Control and Prevention, stresses surveillance, planning, implementation of science based interventions and maintenance of sustainable partnerships. The objectives and strategies of this goal reflect key elements of sustaining the Maryland Asthma Control Program's operations: building partnerships, promoting asthma awareness and developing a policy framework for program development and quality. Surveillance and intervention activities are addressed further in subsequent goals.

This goal ensures that a foundation is in place to facilitate movement from planning to action at the State, regional and local levels. The objectives and strategies promote State Asthma Control Program linkages with local and regional partners and initiatives. Collaboration with partners is a critical component of the public health response to asthma through planning and implementing interventions and developing and aligning public health policies. These public-private partnerships are vital to the success of the Plan. Public awareness of the burden of asthma as well as a commitment to reducing the

burden of asthma is essential to meeting Plan goals and objectives. Coordinated government efforts will ensure that progress on the Plan is monitored, successful interventions are widely communicated, and diverse resources are available to support State and local asthma initiatives.

OBJECTIVE 1.1: Support and sustain the necessary infrastructure to develop and maintain a coordinated and comprehensive approach to asthma control in Maryland.

Strategies:

- 1.1.1: Obtain resources to support the staff, interventions, and surveillance activities of the legislatively mandated Maryland Asthma Control Program.
- 1.1.2: Implement, monitor, and evaluate the Action Agenda and perform ongoing modifications, and revisions based on evaluation results and stakeholder input.
- 1.1.3: Sustain and expand the Asthma Control Program Executive Committee to advise and assist in implementing the Action Agenda.
- 1.1.4: Raise awareness about asthma, current activities to address the burden of asthma, unmet needs, and strategies to address unmet needs among key stakeholders including policymakers and multiple State and local agencies.

1.1.5: Evaluate the current legal, regulatory and policy framework for asthma control activities including indoor and outdoor environments, asthma management, and prevention, data collection and sharing, and funding mechanisms.

Sample Performance Indicators:

- A review of current regulations and policies related to asthma across multiple programs and agencies is completed.
- The Maryland Asthma Control Plan is reviewed annually for relevance and updating, as needed.

OBJECTIVE 1.2: Maintain, enhance and promote the Maryland Asthma Coalition and other collaborative efforts among asthma stakeholders at the State, regional, and local levels.

Strategies:

- 1.2.1: Support, sustain and expand the statewide Maryland Asthma Coalition to facilitate collaborations and active participation of current members and recruitment of new members (e.g., persons with asthma, community based organizations, cultural and ethnic minorities, geographically diverse populations, and state and local government agencies).
- 1.2.2: Conduct outreach activities to promote awareness of the Maryland Asthma Coalition.
- 1.2.3: Support local efforts to maintain and expand local asthma coalitions to provide asthma outreach and education, and to collaborate and implement locally driven initiatives based on local needs and priorities in support of the Action Agenda.

Sample Performance Indicators:

- Outreach materials are developed and distributed to increase coalition membership.
- Asthma coalitions are developed and supported in each region of the State.



OBJECTIVE 1.3: Improve asthma awareness knowledge, attitudes, and behaviors to support the needs of people with asthma across a variety of settings (e.g., schools, childcare settings, home, and work sites).

Strategies:

- 1.3.1: Utilize best practices in health communication and marketing to develop at least one statewide media campaign to promote awareness of asthma as a serious but manageable chronic disease.
- 1.3.2: Develop and communicate a coordinated message about asthma, tobacco prevention, and chronic lung disease (e.g., tobacco related diseases such as COPD).
- 1.3.3: Educate the public about ways they can contribute to the implementation of the State Plan.
- 1.3.4: Identify, develop, and disseminate culturally appropriate asthma education and resource materials.
- 1.3.5: Strengthen partnerships with community, school, childcare, faith-based and workplace groups to promote asthma awareness.

Sample Performance Indicators:

- Culturally appropriate educational materials are developed and distributed to high risk communities through partnerships developed within the Maryland Asthma Coalition.
- Community meetings are held to increase asthma awareness.

OBJECTIVE 1.4: Promote alignment of environmental (i.e., asthma friendly) policies for homes, schools, childcare settings, recreation sites, communities, public use buildings, and worksites as the foundation for facilitating effective coordinated interventions and program monitoring.

Strategies:

- 1.4.1: Evaluate environmental policies and identify overlap as well as gaps and challenges for implementation.
- 1.4.2: Educate policy makers on the burden of asthma and strategies to address asthma.

- 1.4.3: Use current and new training opportunities to promote best practices in asthma prevention and management, and the policies needed for their adoption.
- 1.4.4: Use the Maryland Asthma Coalition as a resource to support stakeholders to evaluate current asthma related policies and to promote adoption of new policies in multiple settings (e.g., schools, childcare, and work sites).

Sample Performance Indicators:

- Childcare providers receive updated material on asthma management at the statewide childcare conferences.
- State advisory councils (e.g., the Lead Commission, Children’s Environmental Health and Protection Advisory Council, Office of Child Care Advisory Board) review current environmental health polices related to asthma.



GOAL #2: ASTHMA SURVEILLANCE, RESEARCH, AND EVALUATION:

Implement an asthma surveillance system to assess the burden of asthma, identify disparate populations, and inform program priorities and evaluation activities.

BACKGROUND

Goal two focuses on asthma assessment defined here broadly to include surveillance, research, and evaluation. Surveillance is the cornerstone of asthma activities in Maryland and is a core function necessary to support other Action Agenda activities including identification of disparities. A strong surveillance system is needed to drive planning, targeting of resources, program intervention and evaluation. Research is used to determine the causal factors linked to asthma prevalence, morbidity, mortality, and outcomes. Program evaluation provides the information necessary to develop effective approaches to asthma control and informs evidence-based resource allocation. Surveillance, research, and program evaluation together provide the basis for asthma prevention, management, interventions, education, and policy development.

The main surveillance objective is to maintain and expand asthma surveillance activities in Maryland. Epidemiological surveillance has been described as “the ongoing systematic collection, analysis, and interpretation of health data essential to the planning, implementation, and evaluation of public health practice, closely integrated with timely dissemination of these data to those who need to know.”⁷ Because asthma is a highly prevalent condition with significant morbidity, mortality, and health care costs, and because there are known best practices in prevention

and management, it is considered as a public health problem warranting surveillance.

Asthma surveillance activities have served as a critical component of the Maryland Asthma Control Program since its inception in 2001. The State’s first Burden of Asthma report was disseminated in 2002. Since that time, asthma surveillance has primarily depended upon existing datasets including:

- The Behavioral Risk Factor Surveillance System (BRFSS) for prevalence estimates and asthma related health behaviors;
- The Maryland Health Services Cost Review Commission (HSCRC) dataset for emergency department visits, hospitalizations, and cost data; and
- The Vital Statistics Dataset for Mortality and demographics data.

Data briefs and surveillance reports are shared with Maryland Asthma Coalition members, State and local agencies, schools and other stakeholders to highlight trends, monitor progress toward meeting program goals, and determine unmet needs.

While the current asthma surveillance system provides prevalence data, it currently lacks data on the severity of asthma. Prevalence data are also currently unavailable for certain settings including schools, childcare facilities and the workplace. Data from the

CDC's Asthma Call-Back Survey will soon be available to generate detailed information on a variety of issues related to asthma knowledge, and management in the home, school, and workplace.

Key remaining questions for asthma surveillance include:

1. Asthma severity: How does asthma severity relate to current surveillance findings for prevalence, hospitalizations, and ED visits?
2. Control and management: What factors related to asthma control contribute to current hospitalization and emergency department visit rates? Who has poorly controlled asthma and why? How well is asthma managed with respect to current management guidelines? What is the current level of knowledge of persons with asthma regarding appropriate management?
3. Triggers: What are the most prevalent environmental triggers? How successful are we in eliminating triggers and reducing exposure to both indoor and outdoor environmental triggers? What is the public's current capacity to reduce asthma triggers in the environment?
4. Disparities: What environmental, clinical, and other factors contribute to disparities in asthma prevalence, morbidity, and mortality? What interventions are successful in reducing disparities?

These and other questions will be a focus of Maryland's asthma surveillance in the coming years.

OBJECTIVE 2.1: Maintain and expand the capacity of the asthma surveillance system to conduct data collection, analysis, reporting, and evaluation activities.

Strategies:

- 2.1.1: Expand surveillance activities to include new datasets and data collection strategies and analyses. For example:



- Use the Asthma Call Back Survey to identify barriers to asthma care, and self-management skills of Marylanders with asthma;
- Create new data systems to track asthma prevalence and absenteeism in school, child care, and workplace settings;
- Examine health insurance (Medicaid and private insurers) data on medication use and asthma control;
- Analyze the relationship between cost, quality of care, and asthma morbidity;
- Identify environmental factors and asthma triggers that can be reduced or eliminated;
- Identify disparate populations and geographic "hot spots"; and
- Coordinate with the Environmental Public Health Tracking System.

- 2.1.2: Assist regional and local jurisdictions in gathering, analyzing and using asthma surveillance data.
- 2.1.3: Partner with academic research institutions to develop an asthma research agenda aimed at the design of methodologies and processes to answer priority questions.
- 2.1.4: Collaborate with State and local agencies to develop methodologies to track new asthma indicators (e.g., work-related asthma, school and work absenteeism, medication usage).
- 2.1.5: Collaborate with agencies that track and evaluate indoor and outdoor air quality complaints in a variety of settings including work places, schools and housing to determine asthma related outcomes.

Sample Performance Indicators:

- New data elements and analyses are included in annual surveillance reports beginning in 2010.
- Regional and local groups are trained to conduct asthma surveillance.

OBJECTIVE 2.2: Improve the capacity for effective data use, sharing, and integration.

Strategies:

- 2.2.1: Continue to support an asthma surveillance workgroup to develop and adopt standardized measurements and definitions to characterize asthma impact and outcomes.
- 2.2.2: Establish new partnerships and develop data sharing agreements to support surveillance activities.
- 2.2.3: Collaborate with local as well as regional and national efforts to develop an integrated asthma surveillance/tracking system including data sharing strategies.
- 2.2.4: Continually assess the strengths, gaps and needs, and usefulness of the surveillance system to asthma stakeholders (i.e., develop mechanisms for monitoring data use).

- 2.2.5: Integrate chronic disease prevention and surveillance data for individuals with co-morbid chronic conditions (e.g., obesity, heart disease, COPD).
- 2.2.6: Integrate State’s Environmental Public Health Tracking System with the asthma surveillance system, where appropriate.
- 2.2.7: Facilitate networking, data sharing, and collaboration among asthma coalitions, stakeholders and persons pursuing asthma research activities in Maryland.
- 2.2.8: Maintain systematic annual exchange of asthma surveillance data between stakeholders, partners, and the Asthma Control Program.

Sample Performance Indicators:

- New data sharing agreements are signed that allow new data elements to be included in future reports.
- A review/survey of the use and usefulness of the surveillance reports, data briefs and mini-surveillance reports is conducted and the reports/briefs are modified based on the review findings.

OBJECTIVE 2.3: Use surveillance data to inform planning, research, and program evaluation activities.

Strategies:

- 2.3.1: Partner with academic research institutions to evaluate asthma program activities.
- 2.3.2: Continuously evaluate the asthma surveillance system and its supports of activities and priorities in the Action Agenda.
- 2.3.3: Identify resources to support research and evaluation activities.

Sample Performance Indicators:

- Conduct one research project based on surveillance data to address specific surveillance findings by 2012.
- Complete a report on an evaluation of the asthma surveillance system by 2011.

OBJECTIVE 2.4: Utilize asthma surveillance data to document and monitor disparities to identify reasons for disparities and to target interventions designed to reduce disparities.

Strategies:

- 2.4.1: Continue to identify and monitor disparities in asthma burden and care, including but not limited to exploring differences by age, race/ethnicity, geographic residence, occupation, and insurance status.
- 2.4.2: Develop new data sources and strategies to explore identified disparities in the burden of asthma (i.e., special surveillance activities including surveys in other languages to identify and explore reasons for disparities).
- 2.4.3: Assure the use of surveillance data for program planning and evaluation of initiatives aimed at reducing disparities.
- 2.4.4: Conduct specific and targeted surveillance activities to monitor asthma disparities at the local and program level (e.g., expanded studies to increase sample size to increase the statistical validity of surveillance findings for certain minorities).
- 2.4.5: Evaluate the effectiveness of programs and activities related to the reduction of asthma disparities.
- 2.4.6: Use surveillance and program evaluation data to continually improve initiatives and programs that address disparities.

Sample Performance Indicators:

- Surveillance data on documented asthma disparities is included in each annual surveillance report.
- Surveillance data on disparate populations is disseminated to local programs and service providers.
- Asthma stakeholders use surveillance data to target resources to disparate populations (e.g., developing educational messages and campaigns).

OBJECTIVE 2.5: Disseminate surveillance, research, and evaluation findings to promote asthma awareness, policy development, and program implementation to achieve the Asthma Control Program’s goals.

Strategies:

- 2.5.1: Continue to publish and disseminate an annual asthma burden report.
- 2.5.2: Continue to publish and disseminate new asthma data and/or issue briefs.
- 2.5.3: Increase awareness of asthma research and evaluation projects, particularly Maryland specific projects through multiple electronic means (i.e., websites, list serves).

Sample Performance Indicator:

- Evaluation, research, and special surveillance activity results are disseminated annually.



GOAL #3: ASTHMA DISPARITIES: Reduce asthma disparities in Maryland.

BACKGROUND

There are considerable disparities in the burden of asthma by age, race, ethnicity, and geography. Young children, African Americans, those with low income, and residents of Baltimore City carry a disproportionate burden of asthma in Maryland. Access to quality care is thought to be a significant factor contributing to disparities. Disparate populations may lack insurance, asthma education, or access to quality primary or specialty care providers. These and other barriers to quality care have significant impacts on asthma morbidity and mortality.

To reduce disparities, interventions must focus on the most affected groups. Success in reducing disparities will be achieved through initiating new and innovative approaches to reaching disparate populations. Interventions to address asthma must consider available data, social-ecological factors, culturally appropriate methods, and best practices in their design. Activities should take into account each community's unique strengths and challenges, be developed from the "ground up," and involve communities and persons with asthma in order to build local momentum for change.

Leadership and a "call to action" are necessary elements for success. Addressing disparities will take the concerted effort of many local and State agencies, community based organizations, State and national organizations, clinicians and communities. Education

about asthma, as well as application of data and science based strategies form the basis of efforts to reduce disparities. The Action Agenda's priority disparate populations of concern include young children, African Americans, and Baltimore City residents.

OBJECTIVE 3.1: Collaborate with stakeholders within disparate populations, and those working with disparate populations to develop strategies to raise awareness of and commitment to reducing asthma disparities.

Strategies:

- 3.1.1: Expand the MACP Executive Committee and the Maryland Asthma Coalition to include community based experts in asthma disparities (e.g. research institutions, CBOs focusing on health disparities), and community members from disparate populations.
- 3.1.2: Work with partners and health communications experts to develop educational materials and media messages targeted toward disparate populations.
- 3.1.3: Disseminate surveillance data regarding the greater burden of asthma for various demographic and geographic populations particularly young children, African Americans, the elderly, and Baltimore City residents.
- 3.1.4: Develop a "Call to Action" document to facilitate partners' implementation of activities in the Plan that target reducing disparities.

- 3.1.5 Conduct targeted community based outreach and training in communities with a large percentage of disparate populations.

SAMPLE PERFORMANCE INDICATORS:

- At least three new members representing disparate populations and their needs join the MACP Executive Committee.
- A “Call to Action” document is produced and disseminated.

OBJECTIVE 3.2: Apply known scientific evidence, results from local surveys, special surveillance studies, and best practices to address asthma causal factors, and barriers to optimal asthma prevention, management and control, and care for disparate populations.

Strategies:

- 3.2.1: Collaborate with research institutions to identify causal factors and barriers to optimal care, and to translate data into evidence-based practices targeted to disparate populations.
- 3.2.2 Assess the knowledge about asthma medications, and asthma action plans within disparate populations.
- 3.2.3 Develop training and professional development opportunities to promote use of evidence-based practices activities targeted to specific disparate populations.

Sample Performance Indicators:

- A disparities workgroup continually reviews current research and evidence-based practices to reduce disparities in asthma care and management.
- Health care providers who provide services to disparate populations receive education regarding best practices in asthma management and reducing barriers to care.
- Disparate populations are surveyed to determine education needs around asthma medications, self-management tools and skills, and access to clinical services.

OBJECTIVE 3.3: Develop, implement, and evaluate local and statewide initiatives to address asthma disparities by age, race, and geographic residence.

Strategies:

- 3.3.1: Provide information and technical assistance to regional and local asthma initiatives to address disparities.
- 3.3.2: Develop and disseminate patient education materials that are culturally competent and linguistically appropriate to be used by healthcare providers in various health care settings.
- 3.3.3: Implement participatory evaluation strategies to continually improve the quality of local and State initiatives in reducing health disparities.



- 3.3.4 Promote culturally competent patient education within Medicaid Managed Care Organizations.
- 3.3.5 Promote the use of community health centers and community health workers as vehicles for reaching disparate populations.
- 3.3.6 Evaluate interventions to determine effectiveness in addressing causal and/or risk factors for disparate populations at greatest risk.

Sample Performance Indicator:

- Current programs targeting disparate populations are evaluated and replicated, if effective.
- Community health workers are trained to provide outreach and education to high risk disparate communities



GOAL #4: ENVIRONMENTAL MANAGEMENT:

Reduce exposure to environmental triggers that could lead to or exacerbate asthma.

BACKGROUND

Environmental factors may contribute to the development of asthma and to negative asthma outcomes. Reducing environmental exposures to known asthma triggers is important to reducing asthma prevalence, morbidity, and mortality. State health and environmental agencies, community-based organizations, environmental health experts and individuals must work together to decrease the impact of these factors. Effective actions to reduce environmental exposures require education, assessment of environments, as well as a policy framework. Legal and regulatory efforts may also be required to create sustainable change, as well as monitoring and accountability structures.

Interventions to address environmental asthma triggers must be tailored to specific environments. The CDC recommends addressing asthma management in schools within the context of coordinated school health programs. Frameworks for addressing asthma in childcare environments are promoted by the Maternal and Child Health Bureau, American Public Health Association, the American Academy of Pediatrics and the Health Services Resource Administration. The ability to apply these standards is dependent upon the availability of training opportunities, as well as collaboration between childcare providers, families and health care providers. Engaging employers, insurers, as well as the community is necessary to address work place asthma. Environmental strategies that address the home are effective when using a healthy homes

approach. The Maryland Action Agenda proposes use of these frameworks for addressing environmental triggers in a variety of settings.

OBJECTIVE 4.1: Decrease exposure to indoor environmental asthma triggers in multiple settings.

Strategies:

- 4.1.1: Increase the awareness, knowledge, and capacity of families, employers, and communities to identify and reduce environmental factors related to asthma causation and exacerbation across multiple settings through training, outreach, implementation of programs, and local coalition development.
- 4.1.2: Collaborate with agencies that track and evaluate indoor air quality complaints in a variety of settings (e.g., work places, schools and housing) to determine impacts on asthma outcomes.

Site Specific Strategies:

A: HOMES AND HOUSING

Strategies:

- 4.1.3 Develop the skills of and resources for families to implement cleaning and maintenance practices for healthier homes that reduce asthma exacerbations (e.g., knowledge and behaviors related to cleaning practices, cleaning

products, and allergen exposure reduction strategies such as bedding covers.)

- 4.1.4: Utilize the healthy homes framework to develop and promote evidence-based standards, guidelines, and model policies that minimize indoor environmental asthma triggers in homes/housing units.
- 4.1.5: Develop a collaborative process to evaluate and document ways in which State and local policies regarding pesticides, ETS, ventilation, and other home environmental concerns support the goals of the Asthma Control Plan.
- 4.1.6: Collaborate with existing home visiting programs and home visiting opportunities to educate families regarding environmental triggers.
- 4.1.7: Explore documented approaches to funding home based environmental interventions.

Sample Performance Indicator:

- Home visiting programs receive training on the healthy homes approach and promote asthma awareness through their programs.

B: “ASTHMA FRIENDLY” SCHOOLS.

Strategies:

- 4.1.7: Develop a data system for estimating the prevalence of asthma in schools.
- 4.1.8: Improve the knowledge, and capacity of school districts, schools, and school staff to identify and reduce environmental asthma triggers through training and technical assistance activities.
- 4.1.9: Establish comprehensive and coordinated policies and procedures for schools and school districts to reduce exposure of students to asthma triggers in school and afterschool programs.
- 4.1.10: Increase capacity for coordinated school health programs to address environmental asthma triggers in schools including promoting the use of the EPA “Tools for Schools” program, asthma friendly schools programs and materials, and school health services guidelines.



Sample Performance Indicator:

- The Asthma Friendly Schools Initiative is expanded to additional jurisdictions.

C: “ASTHMA FRIENDLY” CHILDCARE SETTINGS

Strategies:

- 4.1.11: Develop a system for estimating the prevalence of asthma in childcare settings.
- 4.1.12: Improve the knowledge and capacity of childcare providers and facility staff to identify and reduce environmental asthma triggers utilizing current health and safety core of knowledge training requirements.
- 4.1.13: Promote training regarding asthma triggers reduction in childcare as a priority for childcare providers and childcare licensing staff.
- 4.1.14: Establish comprehensive and coordinated policies and procedures for childcare settings to reduce exposure of children to asthma triggers.
- 4.1.15: Promote family and provider knowledge regarding the importance of healthy indoor and outdoor environments in childcare settings.
- 4.1.16: Promote the use of healthy indoor environments as a measure of childcare quality.

Sample Performance Indicator:

- Healthy indoor environment guidelines are part of the quality rating improvement scale (QRIS) for childcare settings.

D: WORKPLACES

Strategies:

- 4.1.17: Improve the knowledge and capacity of employers and employees to identify and reduce environmental asthma triggers.
- 4.1.18: Increase the capacity of employers to utilize comprehensive and coordinated policy approaches and best practices to reduce environmental asthma triggers in the workplace.
- 4.1.19: Develop policy recommendations to reduce work-related or work-exacerbated asthma.

Sample Performance Indicator:

- An outreach campaign for employers is conducted to raise awareness of work related asthma.



OBJECTIVE 4.2: Reduce smoking and exposure to environmental tobacco smoke (ETS).

Strategies:

- 4.2.1: Collaborate with tobacco prevention efforts to incorporate asthma awareness messages in their program materials and activities.
- 4.2.2: Develop smoking prevention efforts targeted toward the elimination of disproportionate smoking among those with greatest burden of asthma.

- 4.2.3: Develop targeted efforts for the elimination of exposure to ETS in populations with greatest burden of asthma morbidity and mortality.
- 4.2.4: Educate the public about the health effects of smoking and ETS, especially those with asthma.
- 4.2.5: Improve families and communities understanding of the importance of reducing ETS as a means to reduce asthma trigger exposure in the home.
- 4.2.6: Provide opportunities for families to develop personal behaviors to eliminate ETS in the home especially those with asthma (i.e., smoking cessation interventions and resources such as the Maryland Quit line).

Sample Performance Indicator:

- Current tobacco prevention staff are trained to become knowledgeable about asthma related issues and the link with tobacco use.
- Asthma care specialists are aware of the data regarding smoking among those with asthma.

OBJECTIVE 4.3: Decrease exposure to outdoor environmental asthma triggers.

Strategies:

- 4.3.1: Target the elimination of disproportionate exposure to outdoor air pollution among specific groups or communities.
- 4.3.2: Promote state and local policies to improve outdoor air in communities, schools, and the workplace.
- 4.3.3: Partner with Smart Growth efforts to promote clean outdoor environments.

Sample Performance Indicator:

- One member of the Smart Growth initiative is a member of the Maryland Asthma Control Program Advisory Board.

OBJECTIVE 4.4: Develop and implement a policy framework and legal and regulatory recommendations to facilitate the recognition and elimination of environmental triggers of asthma.

Strategies:

- 4.4.1: Evaluate current policies across a variety of settings (i.e., housing, schools, childcare, and work places) regarding environmental factors that exacerbate asthma.
- 4.4.2: Incorporate asthma control concepts into state and local programs that assess and regulate indoor and outdoor environments.
- 4.4.3: Collaborate with state and local agencies and organizations with the authority to enforce building, housing, and health codes to help address and reduce issues known to exacerbate asthma (e.g., pests, mold, and ventilation).
- 4.4.4: Expand the MACP Executive Committee to include member of State Agencies that have the oversight and authority develop policies regarding indoor environments in schools, homes, work places, and childcare settings.

- 4.4.5: Maintain comprehensive and coordinated policies and procedures for childcare settings to reduce asthma triggers and other environmental hazards using best practice models.
- 4.4.6: Collaborate with existing boards, councils and commissions (e.g., Children’s Environmental Protection Advisory Council, Lead Commission, Child Care Advisory Council, Youth Camp Safety Council, School Health Council) in their regulations review processes to ensure that proposed policies, regulations, and practices do not impact negatively on children with asthma.

Sample Performance Indicator:

- Current policies regarding environmental issues in schools, childcare and work places are reviewed.



GOAL #5: CLINICAL AND SELF-MANAGEMENT:

Improve the system of care for persons with asthma through assuring quality intervention to promote asthma awareness and education and promote high quality clinical and self-management services.

BACKGROUND

Standards for the diagnosis and management of asthma have been available for at least a decade. Effective management includes controlling exposure to asthma triggers, optimizing asthma medication usage, promoting and monitoring of patient self-management skills, action planning for managing asthma exacerbation, and asthma education. Increasing provider awareness and utilization of these established standards to provide quality, comprehensive asthma care for Marylanders is an ongoing process.

The effective use of asthma medication is a significant challenge. The National Heart, Lung, Blood Institute of the National Institutes of Health (NHLBI) in conjunction with the National Asthma Education and Prevention Program (NAEPP) published new asthma management guidelines in 2007. The new guidelines promote the use of medications to control or prevent airway inflammation (e.g., inhaled corticosteroids). Assessment of asthma control, along with severity, is now an integral part of asthma management. Promoting the use of asthma control and controller medications is an important element of quality asthma care and important to addressing asthma morbidity and mortality.

Support and education for asthma self-management is another important aspect of effective asthma

management. Policies and programs that increase access to asthma education and training are important to the system of care for persons with asthma. The availability of asthma specialists and other health care providers and educators with more expert knowledge of asthma management is vital to providing quality community based care, particularly for disparate and hard to reach populations.

OBJECTIVE 5.1: Improve public awareness of asthma management principles (e.g., environmental control, medications, and self-management).

Strategies:

- 5.1.1: Implement multi-faceted communication campaigns at the State, regional, and local levels.
- 5.1.2: Partner with experts in health information systems to develop innovative technologies for patient education to improve self-management skills.

Sample Performance Indicator:

- A campaign is developed and implemented at the local, regional and State levels.

OBJECTIVE 5.2: Utilize the NAEPP Guidelines Implementation Panel Report (GIP) to increase health care provider knowledge and capacity to provide quality asthma management including self-management education (i.e., promote the six key messages in the report).

Strategies:

- 5.2.1: Provide training to health care providers (e.g., primary care providers, and school nurses) on NHLBI/NIH asthma management guidelines using various modes of training in multiple venues.
- 5.2.2: Promote the use of the State “Asthma Action Plan”.
- 5.2.3: Increase health care provider knowledge and use of effective asthma medication management especially the use of inhaled corticosteroids.
- 5.2.4: Develop and utilize clinical asthma pathways in emergency care and hospital inpatient settings.
- 5.2.5: Partner with experts in health information systems to develop innovative technologies for provider education and patient management.

Sample Performance Indicators:

- Copies of the GIP report are distributed to primary care providers. Workshops are available to assist providers in using the asthma management guidelines. Workshops are modeled after successful activities implemented in 2004-2009.

OBJECTIVE 5.3: Increase the number of and access to certified asthma educators (AE-C) to motivate, educate, and assist patients with asthma self-management.

Strategies:

- 5.3.1: Provide training and resources to current and new AE-Cs.
- 5.3.2: Promote availability of AE-C through database registry.
- 5.3.3: Identify and enhance insurance reimbursements for individual and group asthma education provided by an AE-C.

- 5.3.4: Collect data to determine effectiveness of AE-C services in improving health outcomes, health care quality, and reduce costs related to asthma.

Sample Performance Indicators:

- Training for AE-C certification is provided and promoted in three regions of the state.
- Data related to AE-C activities is collected and analyzed.



OBJECTIVE 5.4: Improve communication between health care providers, pharmacists, employers, school-based providers, childcare providers, and patients on asthma management, trigger avoidance, and self-management.

Strategies:

- 5.4.1: Increase healthcare provider and caregiver use of the asthma action plan as a communication and asthma management tool.
- 5.4.2: Provide technical assistance to childcare providers and school staff on strategies for communicating how well the asthma action plan is working in school and childcare sites.
- 5.4.3: Encourage healthcare provider and caregiver use of culturally and linguistically appropriate education materials and messages.
- 5.4.4: Include cultural competency principles into asthma training and resources for healthcare providers.

- 5.4.5: Increase healthcare provider skills in communicating to patients and caregivers the key messages of asthma management, especially the role of inhaled steroids in asthma care.
- 5.4.6: Increase healthcare provider and caregiver awareness and utilization of asthma control tests.

Sample Performance Indicators:

- Asthma action plans are distributed statewide.
- The Guidelines Implementation Panel Report and the NHLPI asthma management guidelines are distributed through State medical societies and associations for local implementation.

OBJECTIVE 5.5: Increase access to asthma primary and specialty care especially to populations with the highest burden of asthma mortality and morbidity.

Strategies:

- 5.5.1: Increase the number of asthma specialists or primary care providers with additional asthma training in geographic areas of need. (i.e., develop community-based “Centers of Excellence” in asthma care).
- 5.5.2: Provide resource materials to improve access to specialty asthma care services.
- 5.5.3: Explore alternative care modalities (e.g., telemedicine, mobile medicine, school-based clinics) as means to increase access to care among high-risk populations including the elderly, racial/ethnic minorities, and hard to reach populations (e.g., rural populations).
- 5.5.3: Provide outreach and education to support knowledge of and enrollment in Medicaid, SCHIP, and other available funding for clinical services.

Sample Performance Indicator:

- Health care providers in areas of the State with few specialist resources will receive special training to increase their capacity to provide specialty care.



OBJECTIVE 5.6: Maximize asthma awareness, management, and self-management in the workplace.

Strategies:

- 5.6.1: Increase awareness and knowledge about work related asthma, including triggers, among health care providers, employers, workers, and communities.
- 5.6.2: Develop and implement outreach and education programs in workplaces to increase awareness and management of asthma in the workplace.
- 5.6.3: Develop local and state policies and support state legislative efforts to promote asthma management and self-management in the workplace.

Sample Performance Indicator:

- An employer outreach campaign is conducted to raise awareness of work related asthma.

OBJECTIVE 5.7: Maximize asthma awareness, management, and self-management in schools and childcare.

Strategies:

- 5.7.1: Promote the use of programs that increase student knowledge and self-management skills and behaviors including trigger avoidance while in school (e.g., Open Airways, Tools for Schools, and Asthma Friendly Schools).

- 5.7.2: Train and provide resources to childcare providers and childcare health consultants, school staff and other school personnel, and Head Start staff and personnel to assist them in managing children with asthma.
- 5.7.3: Provide ongoing technical assistance and monitoring of the implementation of school health services guidelines for management of students with asthma.

Sample Performance Indicator:

- Implementation of asthma guidelines is included in the State School Health Services site review process.
- Childcare providers receive asthma management training as part of their required core of knowledge training.

OBJECTIVE 5.8: Develop pharmacy-based interventions to provide pharmacists with asthma education and communication strategies to increase their skills to communicate information regarding medication usage to patients and caregivers.

Strategies:

- 5.8.1: Provide training to pharmacists to improve patient understanding of proper use of asthma medications.
- 5.8.2: Work with local pharmacies to promote pharmacists becoming AE-C.

Sample Performance Indicator:

- An assessment is completed to determine willingness of pharmacists to receive asthma training.
- Assessment results are used to develop pharmacist-training opportunities.

SOURCES

- ¹ *The Maryland Asthma Plan 2004. Prepared by the Maryland Asthma Control Program, Maryland Department of Health and Mental Hygiene. March 2004.*
- ² *The Expert Panel Report-3 Summary Report 2007: Guidelines for the Diagnosis and Management of Asthma – Full Report 2007. <http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.htm>*
- ³ *Action Against Asthma: A Strategic Plan for the Department of Health and Human Services. May 2000.*
- ⁴ *Personal Communication, Baltimore City Health Department*
- ⁵ *Institute of Medicine. Division of Health Care Services. The Future of Public Health: Committee for the Study of the Future of Public Health. National Academies Press. 1988.*
- ⁶ *Institute of Medicine. Committee on Assuring the Health of the Public in the 21st Century. The Future of the Public's Health in the 21st Century. National Academies Press. 2002.*
- ⁷ *Centers for Disease Control. Comprehensive Plan for Epidemiologic Surveillance. Centers for Disease Control. Atlanta, Ga, 1986.*



Acronyms

AE-C: Asthma Educator-Certified

BRFSS: Behavioral Risk Factor Surveillance System

CDC: Centers for Disease Control and Prevention

COPD: Chronic Obstructive Pulmonary Disease

DHMH: Maryland Department of Health and Mental Hygiene

ED: Emergency Department

ETS: Environmental Tobacco Smoke

HP 2010: Healthy People 2010

HSCRC: Health Services Cost Review Commission

MAP: Maryland Asthma Plan

MAC: Maryland Asthma Coalition

MACP: Maryland Asthma Control Program

MDHMH: Maryland Department of Health and Mental Hygiene

NAEPP: National Asthma Education and Prevention Program

NHLBI: National Heart, Lung and Blood Institute

NIH: National Institutes of Health

Glossary

Asthma Action/Management Plan: A list of specific instructions completed by a health care professional for persons with asthma to follow. The plan includes a normal schedule for asthma medicines, as well as what to do if peak flow readings or asthma symptoms become worse than usual. These plans are split into zones (red, green, and yellow).

Asthma Call Back Survey: The BRFSS Adult and Child Call-back Surveys converts the National Asthma Survey to a call-back survey administered as part of BRFSS. It first became available in 2005.

Asthma Friendly Policy: A policy that promotes communities where people with asthma are quickly and accurately diagnosed, receive appropriate treatment, and are safe from physical and social environmental risks that exacerbate asthma.

Asthma Trigger: Anything that causes asthma symptoms to worsen in a given person. Different things are triggers for different people. Common triggers include exercise, cigarette smoke, pollen, dust, cold air, and aspirin/NSAIDs. Upper respiratory infections are perhaps the most common trigger for asthma symptoms.

Best Practices: A best practice is a technique or methodology that, through experience and research, has proven to reliably lead to a desired result. In health care, best practices are used to deliver high quality care that promotes the best outcomes.

Certified Asthma Educator: A licensed or credentialed health care professional or an individual providing asthma education, counseling or coordination services with a minimum of 1,000 hours experience in these activities who has been certified by the National Asthma Education Certification Board (www.naecb.org).

Chronic Disease: A disease that is long-lasting or recurrent.

Disparity: A chain of events signified by a difference in environment, access to, utilization of, and quality of care; health status; or a particular health outcome that deserves scrutiny.

Environmental Tobacco Smoke: Smoke that comes from the burning of a tobacco product, and smoke that is exhaled by smokers. Inhaling environmental tobacco smoke is called involuntary or passive smoking.

Healthy People 2010: Sponsored by the U.S. Department of Health and Human Services, the Healthy People 2010 initiative is a comprehensive set of disease prevention and health promotion objectives for the nation to achieve over the first decade of the new century. Created by scientists both inside and outside of government, it identifies a wide range of public health priorities and specific, measurable objectives. It can be used by many different people, states, communities, professional organizations, and others to help them develop programs to improve health.

Medicaid: A program in the United States jointly funded by the states and the federal government that reimburses hospitals and physicians for providing care to qualifying people who cannot finance their own medical expenses.

NAEPP Guidelines Implementation Panel Report: This report represents the NAEPP's ongoing effort to keep recommendations for clinical practice up to date and based upon a systematic review of the best available scientific evidence.

Open Airways: A school-based asthma management program for schoolchildren, aged 8-11, who have been diagnosed with asthma.

Glossary cont.

Public Health Infrastructure: The resources needed to deliver essential public health services to every community, including: the people who work in the field of public health; information and communication systems used to collect and disseminate accurate data; and public health organizations at the State and local levels in the front lines of public health.

Surveillance: Surveillance is the ongoing systematic collection, analysis, interpretation, and timely dissemination of health data. The purpose of a surveillance system is to monitor trends in the disease and its management in order to prevent or better control the disease within the population.

Work-related Asthma: Work-related asthma is asthma caused by exposures at work. It can also be existing asthma made worse by exposures at work.

Resources for this glossary include:

American Lung Association: <http://www.lungusa.org>

Asthma in Michigan 2010:

A Blueprint for Action: http://www.getastmahelp.com/AIM_Strategic_Plan6%2706.pdf

American Medical Association, Asthma Information Center:

<http://www.amaassn.org/special/asthma/support/glossary/glossary.htm>

CDC: <http://www.cdc.gov/asthma/questions.htm>

Healthy People 2010: <http://www.healthypeople.gov>

National Cancer Institute: <http://www.cancer.gov>

National Heart, Lung, and Blood Institute: <http://www.nhlbi.nih.gov/guidelines/asthma>

Teutsch SM and Churchill RE. Principles and Practice of Public Health Surveillance. New York, NY: Oxford University Press, 1994.

University of Chicago, Asthma Center: <http://asthma.bsd.uchicago.edu/AboutAsthma/AAGlossary.html>

Contributing Organizations

Abell Foundation <http://www.abell.org/>

Advocates for Children and Youth <http://www.acy.org/>

AFT Healthcare—Maryland Local 5197

Allegany College of Maryland <http://www.ac.cc.md.us/>

American Lung Association of the Atlantic Coast <http://www.marylandlung.org/>

Amerigroup Community Care Maryland <http://www.amerigroupcorp.com/Pages/Home.aspx>

Asthma and Allergy Foundation of America, Maryland/Greater DC Chapter <http://www.aafa-md.org/>

Baltimore City Health Department, Healthy Homes Division <http://www.baltimorehealth.org/>

Baltimore City Health Department, School Health <http://www.baltimorehealth.org/schoolhealth.html>

Baltimore City Public Schools <http://www.bcps.k12.md.us/>

Calvert County Public Schools <http://www.calvertnet.k12.md.us/>

Caring Connections

Charles County Health Department <http://www.charlescountyhealth.org/>

Chemical Sensitivity Disorders Association
http://www.greenpeople.org/listing/Chemical_Sensitivity_19355.cfm

Cherry Hill Family Health Center <http://www.fhcb.org/Locations.aspx>

Coalition to End Childhood Lead Poisoning <http://www.lead-safe.org>

Coppin State University, School of Nursing <http://www.coppin.edu/Nursing/>

Eastern Shore Asthma Coalition

Department of Health and Mental Hygiene, Center for Health Promotion, Education and Tobacco Use Prevention
<http://www.fha.state.md.us/ohpetup/>

Department of Health and Mental Hygiene, Center for Maternal and Child Health
<http://www.fha.state.md.us/>

Department of Health and Mental Hygiene, Division of Healthy Kids
<http://www.dhmf.state.md.us/epsdt/healthykids/index.html>

Contributing Organizations *cont.*

Department of Health and Mental Hygiene, Environmental Health Coordination Program
<http://eh.dhmh.md.gov/>

Department of Health and Mental Hygiene, Office of Chronic Disease Prevention
<http://www.fha.state.md.us/cdp/>

Department of Health and Mental Hygiene, Office for Genetics and Children with Special Health Care Needs
<http://www.fha.state.md.us/genetics/>

Department of Health and Mental Hygiene, Office of Health Policy and Planning
<http://www.fha.state.md.us/ohpp/>

Department of Health and Mental Hygiene, Office of Minority Health and Health Disparities
<http://dhmh.maryland.gov/hd/>

Department of Health and Mental Hygiene, Office of Planning, Development, and Finance
<http://dhmh.maryland.gov/html/hcfinan.htm>

Garrett County Asthma Coalition

Garrett County Health Department <http://www.garretthealth.org/>

Glaxo Smith Kline <http://www.gsk.com/>

Greater Baltimore Asthma Alliance

Howard County Health Department
http://www.co.ho.md.us/Health/HealthMain/Health_Homepage.htm

Holy Cross Hospital <http://www.holycrosshealth.org/>

Johns Hopkins Center for Childhood Asthma in the Urban Environment

Johns Hopkins Children's Center <http://www.hopkinschildrens.org/>

Johns Hopkins Health Care <http://www.hopkinsmedicine.org/business/healthcare.html>

Johns Hopkins University, School of Medicine <http://www.hopkinsmedicine.org/>

Maryland Department of the Environment <http://www.mde.state.md.us/>

Maryland Physicians Care <http://www.marylandphysicianscare.com/>

Maryland State Department of Education, Head Start State Collaboration
<http://www.marylandpublicschools.org/msde>

Contributing Organizations *cont.*

Maryland State Department of Education, Office of Child Care

<http://www.marylandpublicschools.org/msde>

Maryland State Department of Education, School Facilities

<http://www.marylandpublicschools.org/msde>

Maryland State Department of Education, Student Services Branch

<http://www.marylandpublicschools.org/msde>

Medicaid Matters! Maryland <http://www.medicaidmattersmd.org/>

MedStar Family Choice <http://www.medstarfamilychoice.net/>

Mid-Atlantic Association of Community Health Centers <http://www.machc.com/>

Montgomery County Department of Health and Human Services, Early Childhood Services

<http://www.montgomerycountymd.gov/hhstmpl.asp?url=/content/hhs/cyf/ECC/index.asp>

Montgomery County Department of Health and Human Services, Latino Health Initiative

<http://lhiinfo.org>

National Center for Healthy Housing <http://www.nchh.org/>

Prince George's County Public Schools <http://www1.pgcps.org/>

PTA Council of Howard County <http://www.ptachc.org/>

Social Solutions International, Inc. <http://www.socialsolutions.biz/cms/index.php>

University of Maryland Hospital for Children <http://www.umm.edu/pediatrics/>

University of Maryland Hospital for Children, Breathmobile <http://www.umm.edu/breathmobile/>

University of Maryland Medical Center <http://www.umm.edu/>

University of Maryland, School of Medicine <http://medschool.umaryland.edu/>

University of Maryland, School of Pharmacy <http://www2.pharmacy.umaryland.edu/>

Uniformed Services University Center for Health Disparities <http://www.usuchd.org/HDAbout.asp>

Washington County Health Department <http://www.washhealth.org/>

Wicomico County Health Department <http://www.wicomicohealth.org/>

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