



A Strategic Plan for Addressing Asthma in Minnesota

Recommendations of the Minnesota Asthma Steering Committee

Updated - May 2007



**Minnesota Department of Health
Chronic Disease and Environmental Epidemiology
85 E. 7th Place, Ste. 400
P.O. Box 64882
St. Paul, MN 55164-0882**

<http://www.health.state.mn.us/asthma/>

A Strategic Plan for Addressing Asthma in Minnesota - 2007

TABLE OF CONTENTS

<u>Executive Summary</u>	3
<u>Acronyms</u>	7
<u>Introduction</u>	
Asthma: A Major Public Health Problem	8
<u>Overview of Asthma – Diagnosis and Treatment</u>	
Definition of Asthma	10
Summary of NIH/NAEPP Asthma Guidelines	11
Causes of Asthma	12
.	
<u>Asthma in Minnesota</u>	
Epidemiology	15
Current Efforts to Address Asthma in Minnesota	20
<u>Work Group Summary Reports</u>	
Data and Surveillance	22
Environment	24
Work-Related Asthma	24
Individual/Family/Community	26
Health Professional Education	29
<u>Goals, Objectives, and Strategies</u>	
GOAL #1 – Data and Surveillance	34
GOAL #2 – Environment	36
GOAL #3 – Work-Related Asthma	40
GOAL #4 – Self Management	44
GOAL #5 – Communities	45
GOAL #6 – Health Professionals	48
GOAL #7 – Systems Change	51
<u>Conclusion</u>	53
<u>Appendices</u>	
A. Minnesota Asthma Steering Committee Membership	54
B. Technical Work Groups Memberships	56
C. Glossary	63
D. Asthma Partners Websites	66

Executive Summary

Asthma is a common, chronic disorder of the airways that is complex and characterized by variable and recurring symptoms, airflow obstruction, bronchial hyperresponsiveness, and an underlying inflammation of the lining of the airways. It is characterized by various triggers, gradations of severity, and evolving treatment options. Asthma symptoms can be triggered by exposure to allergens or irritants, viral respiratory infections or exercise. For reasons not fully understood, asthma rates in the U.S. have risen rapidly for the past two decades. Asthma is now one of the most common chronic diseases in the U.S., with asthma symptoms experienced by 1 in 12 Americans each year. Asthma is associated with missed school days, missed workdays, disrupted sleep, and symptoms that interfere with physical activity. It can be fatal. Asthma is more prevalent in low-income communities. It accounts for numerous emergency room visits and a total of over \$6 billion in annual health care spending.

As illustrated below, asthma is a serious public health problem in Minnesota:

- 1 in 9 Minnesota adults report having asthma at some time in their lives; 8.4% currently have asthma
- 1 in 15 Minnesota children currently have asthma
- Asthma costs \$208.6 million in hospitalizations, emergency department visits, office visits and medication and \$155 million in indirect costs of lost school and work days in Minnesota in 2003
- Asthma disproportionately impacts women, children, and the poor

Nevertheless, some indicators of asthma's impact in Minnesota have moved in a positive direction in recent years. Asthma hospitalization rates decreased between 1998 and 2005, with the greatest decreases among school children and young adults. Asthma mortality rates have decreased dramatically since 1999, with the greatest decreases among Minnesotans age 65 and older.

The public health community and asthma experts have limited information about the exact causes of asthma or how to prevent it. This limited information brings additional challenges for public health and the medical community in providing high quality care and culturally appropriate education, information, and peer/family support to individuals with asthma from diverse communities. The health and medical community does have access to evidence based disease-management strategies. The National Asthma Education Prevention Program (NAEPP) of the National, Heart, Lung, and Blood Institute (NHLBI), created asthma guidelines to provide health professionals with evidence based information to get asthma under control and greatly improve the quality of life for individuals with the disease.

Recognizing asthma as an important public health issue, the Commissioner of Health in 2001 convened the Commissioner's Asthma Advisory Work Group to provide guidance and direction in developing a 5-year statewide strategic plan to address the increasing health and economic burden of asthma in Minnesota. The Commissioner's Asthma Advisory Work Group was asked to:

- Assess current asthma activities both nationally and in Minnesota

- Identify gaps, trends, and local and infrastructure needs
- Develop a plan of action for the next five years that establishes priorities, sets out clear, measurable short term and long term objectives, and recommends strategies for meeting these objectives, including the roles of various asthma partners

The Commissioner's Asthma Advisory Work Group established the following working groups:

- Data and Surveillance
- Individual/Family/Community Concerns
- Health Professional and Provider Education
- Environment

With input from these groups, the plan was completed in 2002, and the Minnesota Department of Health (MDH) was awarded a 5-year grant from the Centers for Disease Control and Prevention to assist in the plan's implementation.

In 2006 the four work groups were reconstituted under the Minnesota Asthma Steering Committee which was charged with revising and updating the original plan. These groups met between October 2006 and May 2007. The Steering Committee also reviewed the work of the special Work-Related Asthma Advisory work group that had met during 2005 and 2006. They revised the plan using the following Vision Statement:

Minnesotans with asthma will have healthy environments and will be able to enjoy life not limited by their asthma because their asthma is appropriately managed and well controlled.

This document includes revisions, with information on data and program activities since 2002. It also presents new recommendations to address the health and economic burden of asthma in Minnesota for 2007 through 2012.

Recommendations:

The five work groups developed several goals and objectives. These were reviewed by the Steering Committee and consolidated into seven goals, each with its own objectives and strategies. The key recommendations are summarized below. The Minnesota Asthma Steering Committee believes these must be acted upon if Minnesota is to continue making significant strides in improving the lives of individuals with asthma and their families.

GOAL #1 – Data and Surveillance: Maintain and expand the current statewide asthma surveillance system toward a comprehensive system that meets the needs of diverse stakeholders through increased data utility and greater communication and collaboration with data users. Objectives towards this goal include monitoring trends in asthma prevalence, in asthma-related health care utilization, in asthma mortality, in asthma control, and in asthma management. Other objectives address determining the costs of asthma care, identifying disparities in asthma among subpopulations, and developing partnerships to share data and identify data needs. An ultimate objective is to use this data to respond to inquiries and to inform policy makers, local public health, and others.

GOAL #2 - Environment: Increase awareness and understanding of asthma environmental triggers and decrease exposure to asthma environmental triggers for people with asthma.

A key objective involves determining target audiences and effective educational materials, and identifying materials to reach various groups. Another objective seeks to increase the number of communities with smoke-free laws, ordinances, and policies. Two other objectives address preventing and reducing exposure to indoor environmental triggers, and preventing and reducing exposure to outdoor environmental triggers.

GOAL #3 – Work-Related Asthma: Increase awareness about work-related asthma (WRA), tailor interventions to address WRA, and reduce exposure to asthmagens. The objectives reflect the work of the Work-Related Asthma Advisory group that met in 2005-06. They include implementing work place control measures by promoting the use of existing resources to identify asthmagens; providing WRA information for health and safety staff who serve Minnesota businesses and workers; providing health care providers with WRA information; and developing tools for workers, employers, and others to identify asthma related to or aggravated by the work environment. A key objective entails creating a State Profile of WRA risk factors using existing data, and another involves promoting data searches and/or needs assessments on WRA by a range of organizations. Two other objectives address developing model policies for reporting WRA to the state, and developing model partnerships to facilitate innovative interventions. Other objectives call for promoting existing product substitution programs; incorporating WRA educational materials into existing education programs, such as occupational training and clinical training; and promoting organization policy changes.

GOAL #4 - Self Management: Ensure individuals with asthma, their families, and other caregivers are well-informed and engaged in appropriate asthma self-management, especially among low-income populations in Minnesota. A key objective involves increasing knowledge about appropriate asthma management by strategies such as developing a patient script with questions for providers, incorporating key messages into information for individuals with asthma, and addressing cultural, ethnic, and literacy factors affecting the understanding of asthma self-management education. Another objective involves increasing successful asthma self-management by promoting smoking cessation programs and encouraging flu shots.

GOAL #5 – Communities: Create communities with comprehensive, systematic, sustainable, culturally responsive approaches to asthma education through partnerships, collaboratives, coalitions, and communication. Objectives include increasing the number of:

- individuals reached through community education
- schools that provide appropriate asthma support
- care providers participating in asthma education programs
- local public health agencies engaging in asthma activities.

Strategies include collaborating with smoking cessation groups, continuing to offer the “Managing Asthma in Minnesota Schools” trainings, targeting providers such as foster care and day care, and developing a public health toolkit drawing from the Washington County “Catching Our Breath” initiative. Other objectives promote a continuum of asthma care by improving communication among professionals, parents, schools, and others; and another expands emergency preparedness education to include respiratory care needs during a disaster.

GOAL #6 - Health Professionals: Utilizing the NAEPP asthma guidelines and best practice methods, ensure that all Health Care Professionals (HCPs) who treat people with asthma assist patients to achieve optimal asthma control, and through self-management education, to effectively manage their asthma. Objectives include increasing appropriate prescribing of inhaled corticosteroids/controller medications and increasing the distribution of asthma action plans. Other objectives emphasize HCPs using the NAEPP guidelines to step up or step down the prescribed therapeutic intensity, encouraging institutions that train HCPs to incorporate the NAEPP guidelines into their asthma curriculum, and championing Certified Asthma Educators by calling for an increase in their numbers.

GOAL #7 – Systems Change: Ensure that health systems and their partners will use best practices (i.e., NAEPP Guidelines) through coordination of systems processes, information sharing, and reasonable reimbursement for optimal asthma care. The first objective addresses disseminating best practice standardized asthma pathways at the individual and community level through local public health. A second objective highlights a chronic care continuum model to ensure coordination of asthma care between clinical professionals and others. A third objective promotes coverage and adequate reimbursement of individual and group asthma education.

To reduce asthma's burden, the public, individuals with asthma, their families, caregivers, health systems, health care providers, schools, employers, childcare providers, community groups and others must all work together in a coordinated approach. No single element of a well-coordinated and comprehensive approach can stand by itself. To combat asthma we must increase community awareness and undertake actions to decrease allergens and irritants inside and outside homes, workplaces, schools, and businesses. Public awareness of asthma's burdens can help ensure that individuals with asthma have the resources needed to manage their disease. Education for individuals with asthma and their families should begin at the time of diagnosis and be integrated into every step of care. Health care providers must obtain the skills necessary to accurately diagnose and treat this complex disease and partner with their patients to provide them with the education and tools they need to manage their condition.

Acronyms

<p>AAP – Asthma Action Plan AE-C – Certified Asthma Educator ALAMN – American Lung Association of Minnesota AQI – Air Quality Index BRFSS – Behavioral Risk Factor Surveillance System CAACP – Controlling Asthma in American Cities Project CDC – Centers for Disease Control and Prevention COPD – Chronic Obstructive Pulmonary Disease C & TC – Child and teen check-ups CUPES - Community University Partnership in Education and Services DHHS – U.S. Department of Health and Human Services DHS – Minnesota Department of Human Services ECHO – Emergency and Community Health Outreach ED/ER – Emergency Department / Emergency Room EHR – Electronic health (or medical) record EMT – Emergency Medical Technician EPA – U.S. Environmental Protection Agency EPR – Expert Panel Report FQHC – Federally Qualified Health Center HCMC – Hennepin County Medical Center HCP – Health care professional HEDIS – Health Plan Employer Data and Information Set HLAI – Healthy Learners Asthma Initiative HUD – U.S. Department of Housing and Urban Development IAAP – Interactive Asthma Action Plan ICS – Inhaled corticosteroid ICSI – Institute for Clinical Systems Improvement LPH – Local Public Health Agencies LPHA – Local Public Health Association LSN – Licensed School Nurse MAC – Minnesota Asthma Coalition MAMS – Managing Asthma in Minnesota Schools</p>	<p>MCSHN – Minnesota Children with Special Health Needs MDE – Minnesota Department of Education MDH – Minnesota Department of Health MHA – Minnesota Hospital Association MMWR – Morbidity and Mortality Weekly Report MN OSHA – Minnesota Occupational Safety and Health MNSCU – Minnesota State Colleges and Universities MNTAP – Minnesota Technical Assistance Program MPHSA – Minnesota Public Health Association MPhA – Minnesota Pharmacists Association NAAQS – National Ambient Air Quality Standards NAEPP – National Asthma Education and Prevention Program NHLBI – National Heart, Lung, and Blood Institute NIH – National Institutes of Health NIOSH – National Institute for Occupational Safety and Health NP – Nurse Practitioner OSHA – U.S. Occupational Safety and Health Administration PA – Physician Assistant PACE - Physicians Asthma Care Education PHS- Pediatric Home Service RETA – Reducing Environmental Triggers of Asthma RRT – Registered Respiratory Therapist SNOM – School Nurse Organization of Minnesota UC – Urgent Care UMN SPH – University of Minnesota School of Public Health WIC- Women, Infants, and Children WRA – Work-related asthma</p>
---	---

Introduction

Asthma: A Major Public Health Problem

Asthma is a chronic inflammatory disease of the airways characterized by intermittent recurrent episodes of wheezing, breathlessness, chest tightness, and cough. People who have asthma experience episodes of barely being able to breathe. Some people with asthma end up in the hospital or emergency room; some even die from it.

The economic cost of asthma is high: in 2004, the United States spent \$16.1 billion on asthma. This figure includes \$4.6 billion in lost productivity. It doesn't include the emotional cost of having a disease that, if not properly treated, can limit activity and interfere with daily living.

As is detailed later in this plan, asthma has increased dramatically in the past 30 years. This increase is apparent in deaths from asthma, in hospitalizations with asthma, and in the proportion of people who have asthma. This increase is not limited to the United States; many other industrialized nations report a similar increase.

Our current understanding of asthma is that it is a multi-factorial disease that is associated with familial, infectious, allergenic, socioeconomic, psychosocial, and environmental factors. How these factors interact to cause asthma is not known. However, we know that asthma morbidity and mortality are largely preventable. With improved patient education regarding the factors associated with asthma, with appropriate medical management, and with public policies that support people with asthma, the impact of asthma can be greatly ameliorated and people with asthma can lead healthy normal lives. This can only be accomplished through a combination of coordinated public and private efforts.

Asthma is no longer considered just a clinical issue. The increase in asthma, and the fact that we have substantial information about how to control the disease but no information about how to prevent it, leads us to the inevitable conclusion that asthma is a public health problem of significant magnitude.

Minnesota has been fortunate to have a wealth of stakeholders from the health and medical community that are focused on the health and well being of individuals and families that live with asthma. Many of these institutions, organizations, and agencies have developed initiatives around asthma and have been able to show measurable outcomes with these programs. Various managed care organizations have instituted case management programs for people with asthma. The Healthy Learners Asthma Initiative (a community-wide collaboration between the Minneapolis and St. Paul public schools and health care delivery and public health systems); the Controlling Asthma in American Cities Project; the asthma trainings for Minnesota school personnel; the EPA-supported environmental interventions for childhood asthma project; and the asthma training for coaches are all examples of successful efforts undertaken in recent years. On a statewide and regional level, the American Lung Association of Minnesota (ALAMN) and MDH have been working for the last eight years to build the structure of the Minnesota Asthma Coalition through nine regional coalitions throughout Minnesota. In 2006 Washington County Public Health and Environment launched a county-wide, multi-faceted asthma initiative.

Although Minnesota has been very active in addressing the issue of asthma, much work remains. Many clinicians, health care professionals, public health officials, and other agencies and organizations have been working in relative isolation from each other. A statewide dialogue on the issues confronting Minnesota in responding to the asthma challenge has begun, but further work is needed for a common set of strategies for addressing asthma priorities. To sustain the good work that has been done and to build momentum for addressing the issues that have not been resolved, Minnesota is continuing its statewide coordinated planning effort to address asthma which is focused, realistic, and based on good science.

In October 2001, the Commissioner of Health brought together a broad array of public and private representatives with clinical care, education, environmental, housing, data, government and public policy, and public health expertise to begin discussions on how Minnesota could develop a coordinated statewide effort to reduce the impact of asthma. Participants included agencies and organizations that hadn't had a voice before in statewide asthma discussions. The working groups and advisory group tackled different aspects of the asthma problem and in 2002 developed a plan which has now been revised and updated.

Revision and updating of the 2002 plan began in late 2006, again with four work groups and the Minnesota Asthma Steering Committee. It also included the work of the special Work-Related Asthma Advisory work group that had met during 2005 and 2006 (see Appendices A and B for membership of these groups). The work groups proposed goals, objectives, and strategies that were reviewed and integrated by the Minnesota Asthma Steering Committee.

This revised strategic plan is intended to provide direction and strategic program approaches for public health officials, health care professionals, public policy experts, and other members of the education, health and medical community in addressing the asthma burden in Minnesota. The Steering Committee and work group members believe that Minnesota can continue to see successful results through a coordinated multi-disciplinary approach in providing high quality care for individuals with asthma. No single institution or organization can solve the problem of asthma alone. But by working together, in a systems approach, we believe that we can decrease the economic and emotional burden that currently affects people with asthma and the entire community.

An Overview of Asthma - Diagnosis and Treatment

Definition of Asthma:

Asthma is a common chronic disease of children and adults. Nationally, more than 1 in 14 Americans report having asthma and as many as 1 in 8 have had asthma at some point during their lifetime. Each year the number of children, teens, and adults diagnosed with asthma increases. Asthma is associated with missed school days, missed workdays, disrupted sleep, and symptoms that interfere with play and sports.

Asthma is a complex, chronic disease characterized by airway inflammation leading to narrowing of the airways (airway obstruction), airway hyperresponsiveness, acute bronchoconstriction and mucus hypersecretion. It is characterized by various triggers, gradations of severity, and evolving treatment options. Exacerbations can be triggered by exposure to allergens or irritants, respiratory infections and exercise. We know little about the exact causes of asthma or the prevention of asthma. However, we do know how to control the symptoms and inflammation of asthma. Asthma is not currently curable, but it is treatable.

It is imperative that individuals with asthma and their families have total access to culturally appropriate primary and specialty asthma care, culturally appropriate education services, and the necessary medications and devices for effective asthma self-management. More often than not, many individuals and their families confront barriers to access quality care and educational services due to a number of social and economic issues. For other individuals, they may have access to care, but lack the coordination of care that is necessary for daily management of asthma. Improved partnerships and new strategic approaches between government agencies and health plans are vital to improve both access to and coordination of a complete circle of asthma care that will continue to reduce asthma morbidity and mortality.

Public health officials and other asthma experts still have a lot to learn about how asthma impacts Minnesotans and about the opportunities and barriers to improving asthma outcomes and coordinated asthma care delivery within our state. Anyone can develop asthma, although it is most studied in people under age 50. There is a higher chance of developing asthma if you have family members with asthma, but environmental factors certainly aggravate or, in selected situations, potentially cause asthma.

Diagnosing asthma remains a challenge, especially in young children (0-5) and the elderly. The symptoms are variable and, depending on environmental triggers and baseline health risks, may be severe and even can be fatal. Uncontrolled asthma may include wheezing, cough, shortness of breath, or chest tightness. Symptom control does not always correlate with disease control, so objective monitoring of airway obstruction with or without inflammation is important. Likewise, reduced peak flow readings or abnormal spirometry results may be due to conditions other than asthma.

Once diagnosed, it is important for the individual/family to develop a partnership with their health care providers/educators to establish an asthma control strategy that will allow the individual/family to:

- Understand basics about asthma pathophysiology
- Increase awareness of an individual's specific triggers (internal and environmental) and what preventive/avoidance steps to take to minimize exposure to them
- Use the most cost-effective medications to keep asthma under control (adjusted for severity)
- Obtain a written action plan that allows the individual/family (and any others that provide care, e.g., daycare provider) to learn and develop the skills to best manage asthma when it is out of control

Summary of National Institutes of Health Asthma Guidelines:

To assist health care professionals in bridging the gap between current knowledge and practice, the National Asthma Education and Prevention Program (NAEPP) of the National Heart, Lung and Blood Institute (NHLBI), previously convened three Expert Panels to prepare guidelines for the diagnosis and management of asthma. Published in 1991, the Expert Panel Report: Guidelines for the Diagnosis and Management of Asthma (EPR 1991) organized the recommendations for the treatment of asthma around four components of effective asthma management.

Four Components of Effective Asthma Management

- Use of objective measures of lung function to assess the severity of asthma and to monitor the course of therapy.
- Environmental control measures to avoid or eliminate factors that precipitate asthma symptoms or exacerbations.
- Patient education that fosters a partnership among the patient, his or her family, and clinicians.
- Comprehensive pharmacologic therapy for long-term management designed to reverse and prevent the airway inflammation characteristic of asthma as well as pharmacologic therapy to manage asthma symptoms.

**Excerpt from Draft - Expert Panel Report III: Guidelines for the Diagnosis and Management of Asthma*

These four principles formed the foundation for the development of the subsequent NAEPP reports and for the current draft: Guidelines for the Diagnosis and Management of Asthma (EPR – 3) to be released in 2007.¹ This report presents basic recommendations for the diagnosis and management of asthma that will help clinicians and patients make appropriate decisions about asthma care.

Key differences from previous NAEPP versions include but are not limited to:

- Key elements of assessment and monitoring are refined to include the separate, but related concepts of severity, control and responsiveness to treatment. Classifying severity is emphasized for initiating therapy; assessing control is emphasized for monitoring and adjusting therapy
- Asthma severity and control are now defined in terms of two domains:
 - Impairment
 - Risk

- The distinction between the domains of impairment and risk for assessing severity and control emphasizes the need to separately consider asthma’s effects on quality of life and functional capacity on an ongoing basis and the risks it presents for adverse events in the future such as exacerbations and progressive loss of pulmonary function
- Emphasis on the many potential points of care and sites available to provide asthma education, including patient self-management education outside the usual office setting

The complete version of the most recent NHLBI guidelines is available on the web at: <http://www.nhlbi.nih.gov/guidelines/index.htm>

Causes of Asthma:

The primary causes of asthma, and particularly the reasons for the increase in asthma, remain largely unknown. This lack of knowledge is critical: without it, the primary prevention of asthma cannot be undertaken. Funding and coordination of identifying primary causes of asthma is a federal responsibility primarily of the National Institutes of Health. At the state level, emphasis must continue to be placed on assuring public understanding, proper identification, prevention and treatment of those who have asthma.

In considering the causes of asthma, it is useful to distinguish between primary causes, i.e., those that lead to onset of new disease; and factors that exacerbate asthmatic symptoms in those that have asthma. Distinguishing these two may not always be easy. For example, if studies show that people living near congested roadways have a higher prevalence of asthma as indicated by a questionnaire, it could be that some exposure associated with the roadway (e.g., particulate levels) is actually causing new cases of asthma. Alternatively the exposure could be causing an increase in asthma symptoms and thus an increase in the likelihood that people report symptoms on a questionnaire.

The Surgeon General and the Institute of Medicine evaluated the relationship between exposure to environmental factors and asthma. The expert panels comprehensively reviewed the scientific evidence and categorized evidence for each exposure as sufficient, suggestive (“limited”), or insufficient, for both primary causes and factors leading to asthma exacerbation.

The Surgeon General report, *The Health Consequences of Involuntary Exposure to Tobacco Smoke*,² discussed a variety of health effects including asthma. Major conclusions from the Surgeon General’s Report include:

- “The evidence is sufficient to infer a causal relationship between parental smoking and ever having asthma among children of school age”
- “The evidence is suggestive but not sufficient to infer a causal relationship between secondhand smoke exposure from parental smoking and the onset of childhood asthma”
- “The evidence is suggestive but not sufficient to infer a causal relationship between secondhand smoke exposure and adult-onset asthma”
- For adults “The evidence is suggestive but not sufficient to infer a causal relationship between secondhand smoke exposure and a worsening of asthma control”

Reports from the Institute of Medicine in 2000 and 2004 reviewed available evidence regarding the relationship between environmental exposures and asthma in *Clearing the Air: Asthma and Indoor Air Exposures*³ and in *Damp Indoor Spaces and Health*.⁴ The 2000 IOM panel provided the following comments regarding the development of asthma. “Saying that a particular agent may be associated with the development of asthma does not mean it is the sole factor determining whether an individual will manifest the illness. Most scientists believe that some individuals have a prior, underlying predisposition that permits the evolution of clinical asthma. The development of this predisposition to asthma is dependent upon a complex – and at presently poorly understood – combination of factors, which are partially inherited and partially acquired later in life.”

The 2000 report considered the evidence for 27 environmental “exposures” (including biologic, infectious, and chemical agents, as well as generic exposures such as non-residential environments). The IOM panel comprehensively reviewed the scientific evidence and categorized evidence for each exposure as sufficient, suggestive (“limited”), or insufficient, for both primary causes and factors leading to asthma exacerbation. The IOM committee concluded “there is sufficient evidence of a causal relationship between exposure to house dust mite allergen and the development of asthma in susceptible children” and “there is sufficient evidence to conclude there is an association between ETS exposure and the development of asthma in younger children.”

For environmental factors leading to asthma exacerbation, the IOM committee found sufficient evidence for several factors, including house dust mites, cockroaches, rodents, cat dander, fungi, environmental tobacco smoke, high ozone levels, and rhinovirus infections in young children. It also found suggestive evidence for dogs, birds, formaldehyde, fragrances, particulate matter, indoor home dampness, certain non-residential environments, and infections with respiratory syncytial virus, chlamydia, and mycoplasma.

Damp Indoor Spaces and Health found sufficient evidence of an association between asthma symptoms in sensitized asthmatic persons and exposure to damp indoor environments. A similar association was found between the presence of mold or other agents in damp indoor environments and asthma symptoms in sensitized people with asthma. The association was not as strong between the development of asthma and exposure to damp indoor environments (limited or suggestive evidence of an association) or the presence of mold or other agents in damp indoor environments (insufficient evidence to determine whether an association exists).

Although these comprehensive reports are very useful in summarizing what we know about environmental exposures and asthma, they do not shed new light on causes for the apparent increase in asthma that was noted previously. There is no evidence that any of these factors have increased substantially in the last 20 years, and in some cases there is evidence that exposures have been reduced. While the cause for the increase is currently the subject of scientific investigation and debate, there are several theories that are worth discussing.

One theory receiving prominent attention is the “hygiene hypothesis.” According to this hypothesis, when our immune system lacks practice fighting bacteria and viruses, perhaps from an overly sanitary lifestyle, it may overreact – for example with an allergic reaction – to harmless substances like pollen. Thus one potential explanation for the increase in asthma is that

childhood infections, particularly early childhood infections, have decreased as our standard of living has increased.

Studies from formerly East and West Germany appear to support this hypothesis. Shortly after reunification, surveys in the two areas showed that East German children, who lived in a much more polluted outdoor environment, were more likely to have bronchitis and other infections; while West German children, with their cleaner environment, were more likely to have asthma and allergies. However, as conditions have improved in former East Germany, asthma and allergy rates have also risen.

On the other hand, it is not clear how this hypothesis would explain the higher prevalence of asthma in some minority populations. Studies consistently show that asthma prevalence is higher in African American populations than in both Hispanic and non-Hispanic white groups. Studies with children in daycare, where infection rates are known to be higher, have also been inconsistent, although it may be the timing of the daycare exposure that is crucial for development of asthma. At this point in time, the “hygiene hypothesis” should probably be regarded as a promising theory that needs additional clarification.

Another theory that has received widespread attention is that outdoor air pollution is responsible for increasing asthma prevalence. While certain pollutants, particularly ozone and particulate matter, have been demonstrated to exacerbate asthma as measured by an increase in hospitalizations on days that the levels are high, the question of whether outdoor pollutants cause asthma is still under investigation. In most cities in the United States, pollutants that are subject to the National Ambient Air Quality Standards have decreased over the years and air quality has improved. In addition, a 1990 study in Olmsted County showed that asthma rates had increased significantly over the past 20 years even though this county in southeast Minnesota is regarded as having relatively clean air. Another area of concern for outdoor air pollution is diesel exhaust. Recent evidence suggests that diesel exhaust from vehicles idling outside of schools may make asthma worse in school children.

Nonetheless, some have argued that while total particulate levels have decreased, fine particulates, which have not been measured until recently, may be increasing. Fine particulates are those less than 2.5 microns in diameter and are the respirable fraction of total particulates. While most scientists do not believe that particulates are responsible for the significant increase in asthma that has been seen in the past 20 years, their role deserves further investigation in asthma and other associated diseases such as emphysema and Chronic Obstructive Pulmonary Disease (COPD).

¹ National Institutes of Health (NIH), National Heart Lung & Blood Institute (NHLBI), National Asthma Education Prevention Program (NAEPP), *Guidelines for the Diagnosis and Management of Asthma* (EPR 2 1997, NIH Publication No. 97-4051, EPR3 **Draft** 2007 update): <http://www.nhlbi.nih.gov/guidelines/index.htm>

² Department of Health and Human Services. *The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General*. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2006.

³ Institute of Medicine. *Clearing the Air: Asthma and Indoor Air Exposures*, Washington, DC, Institute of Medicine, National Academy Press, 2000.

⁴ Institute of Medicine. *Damp Indoor Spaces and Health*, Washington, DC, Institute of Medicine, National Academy Press, 2004.

Asthma in Minnesota

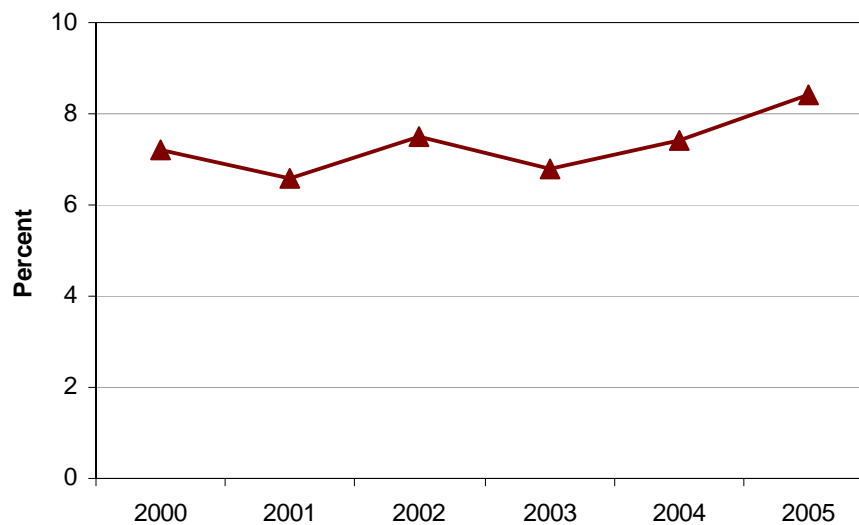
Epidemiology

As part of the CDC grant, the MDH has been collecting and analyzing available asthma data for the past seven years. Although the picture of asthma remains incomplete, much has been learned from this effort. A complete report, “Asthma in Minnesota,” was distributed in late 2005 and can be found at <http://www.health.state.mn.us/asthma/Research.html>. This section summarizes the most recent data regarding the burden of asthma in Minnesota.

Adults with Asthma

- An estimated 11.8% of Minnesotans age 18 and older report having ever been told by a doctor they had asthma. Approximately 8.4% of Minnesotans currently suffer from the disease. That translates to an estimated 460,000 Minnesota adults who have a history of asthma and an estimated 320,000 who currently have asthma¹
- The percentage of Minnesota adults with asthma (8.4%) is slightly higher than the national average (8.0%)¹
- The percentage of adults reporting that they currently have asthma has been increasing over the few years, ranging from a low of 6.6% in 2001 to a high of 8.4% in 2005.¹ See Figure 1. Increasing prevalence could be due to greater awareness leading to increased diagnosis, as well as the development of new cases.
- More than half (54%) of adults with asthma report having an asthma attack in the past year.¹ Asthma attacks or episodes are an indication of lack of asthma control
- Women are more likely than men to report having asthma (10.6% versus 6.1%)¹
- Adults living in the Twin Cities metropolitan area are more likely to report having asthma than adults in Greater Minnesota (10.3% vs. 6.6%)¹

Figure 1. Percentage of Minnesota Adults with Current Asthma, 2000-2005



Source: Minnesota Behavioral Risk Factor Surveillance System

Children with Asthma

- An estimated 6.6% of Minnesota children ages 0-17 are reported to have asthma, which is equivalent to 1 out of every 15 children, or 80,000 children statewide¹
- Asthma prevalence among children in Minnesota (6.6%) is lower than the national average (8.1%)¹
- 3.6% of all Minnesota children (45,000) have had an asthma attack or episode in the past year¹
- Asthma prevalence is higher among students in Minneapolis public schools than in St. Paul public schools¹
- Two surveys of students in Greater Minnesota show that many Minnesota children are wheezing but have not been diagnosed with asthma¹²

Quality of Life

- 20.8% of Minnesota adults with asthma reported one or more days in the past year in which their activities were limited due to asthma¹
- 19.5% of families with children who have asthma reported being greatly or moderately affected by their child's health condition²

Asthma Management

- 56.6% of Minnesota adults with asthma report having had at least one routine checkup for asthma in the past year¹
- People with asthma are more likely than those without asthma to receive an annual flu shot (41.5% vs. 19.1%)¹
- People with asthma are also more likely than those without asthma to have ever received the pneumonia vaccine (46.9% vs. 31.4%)¹

Obesity and Asthma

- Adults with asthma are more likely than those without asthma to be obese (30.6% vs. 22.3%)¹

Smoking and Asthma

- Adults with asthma are more likely to be current smokers than those without asthma (24.3% vs. 19.8%).¹ Smoking can trigger asthma symptoms and secondhand smoke is known to exacerbate asthma and can cause asthma symptoms to develop in young children¹
- In a study of rural high school students in Minnesota, those with asthma were significantly more likely than those who did not have asthma to report living in a household where someone smokes (37% versus 31%)⁵

Asthma Hospitalizations

- Asthma hospitalization rates are highest in boys under age 5. Rates are higher for boys than girls until the late teenage years at which point the rates reverse and are higher for women than men¹
- Asthma hospitalization rates are highest among residents of the Twin Cities metropolitan area and northeastern Minnesota, with the central region close behind⁷

- Overall, asthma hospitalization rates decreased between 1998 and 2005, with the greatest decreases among school children and young adults⁷
- Between 1998 and 2005, there were significant decreases in asthma hospitalization rates among residents of Minneapolis and St. Paul, most notably among children⁷

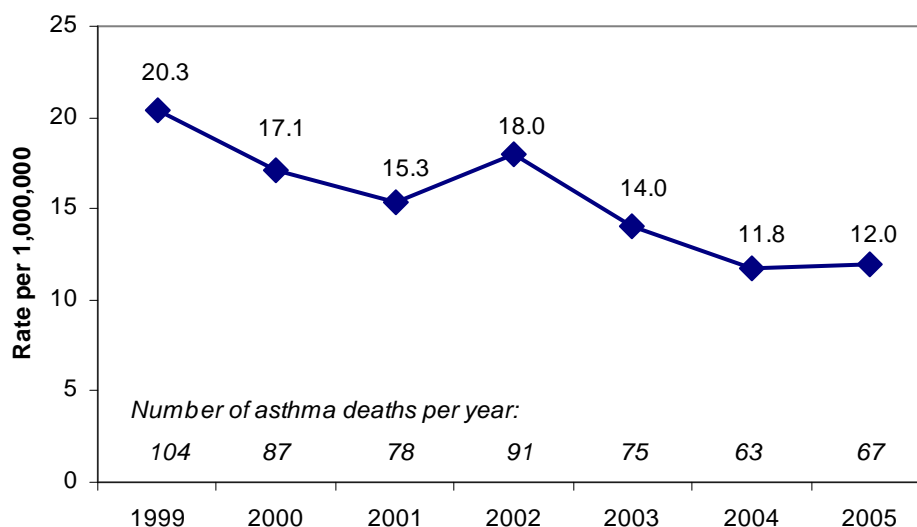
Asthma Emergency Department Visits

- 11% of Minnesota adults with asthma visited an emergency department or urgent care at least once in the past year because of their asthma¹
- Across Minnesota, there were more than 16,000 emergency department visits for asthma in 2005⁷
- Rates of asthma-related emergency department visits are higher among boys up until the teenage years, after which rates are consistently higher among women⁷

Asthma Mortality

- In 2005 there were 67 deaths from asthma in Minnesota (compared with 104 in 1999); 66% occurred among persons aged 65 and older; of these, 86% were in women.¹ See Figure 2.
- Deaths from asthma are rare among young people in Minnesota. Between 1999 and 2005, there were 23 asthma deaths among those under age 20⁸
- The highest asthma mortality rates are in the northeast region of Minnesota⁸
- Preliminary findings from a study of asthma deaths among older Minnesotans indicate that many deaths for which asthma was listed as the underlying cause of death may actually be due to other causes, often chronic obstructive pulmonary disease.
- Asthma mortality rates have decreased dramatically since 1999, with the greatest decreases in the 65 and older age group.⁸ It is unclear the extent to which changes in coding asthma deaths on death certificates could be contributing to this decline.

Figure 2. Asthma Mortality Rates, Minnesota, 1999-2005



Source: Minnesota Center for Health Statistics

Missed School Days Due to Asthma

Of the 9.2% of rural Minnesota high school students with asthma, 6.5% reported missing two or more days of school and 8.0% reported missing two or more days of organized sports in the past month due to asthma.⁵ Of the 8.4% of Minnesota middle school students with asthma, 24% reported missing one or more days of school in the past year and 36% reported ever missing recess, sports or after school activities due to asthma symptoms.⁴

Asthma Costs

The total cost of asthma hospitalizations in Minnesota in 2004 was \$4.8 million for children and \$12.0 million for adults. The average cost of an asthma hospitalization for children was \$2,788 and for adults was \$4,677. It has been estimated that in Minnesota asthma cost \$208.6 million in hospitalizations, emergency department visits, office visits and medication and \$155 million in indirect costs of lost school and work days in 2003.

Progress Toward Healthy People 2010 Goals

The following tables show Minnesota's current status on the Healthy People 2010 goals related to asthma.

Table 1. Asthma Mortality Rates* for Minnesota and U.S. and Healthy People 2010 Goals

Age Group	Minnesota, 2003-2005		U.S. 1999	Healthy People
	Number	Rate*	Baseline	2010 Goal*
0 to 4	2	2.0 [#]	1.7	1.0
5 to 14	3	1.5 [#]	3.1	1.0
15 to 34	13	3.0 [#]	5.6	2.0
35 to 64	43	7.0	15.5	9.0
≥ 65	144	77.9	69.5	60.0

*Rate per 1,000,000

[#]Rates based on fewer than 20 deaths per age group

Source: Minnesota Center for Health Statistics, National Vital Statistics System-Mortality (NVSS-M), CDC, NCHS

Table 2. Asthma Hospitalizations Rates* for Minnesota and U.S. and Healthy People 2010 Goals

Age Group	Minnesota, 1999	Minnesota, 2005	U.S. baseline, 1998	U.S., 2002	Healthy People 2010 Goal
0 to 4	28.0	24.5	45.6	59.0	25.0
5 to 64	7.5 [†]	6.2 [†]	12.5 [†]	12.4 [†]	7.7 [†]
≤65	14.3 [†]	16.0 [†]	17.7 [†]	22.4 [†]	11.0 [†]

*Rate per 10,000 residents

[†]Age-adjusted to the year 2000 standard population

Sources: Minnesota Hospital Association, National Hospital Discharge Survey (NHDS), CDC, NCHS

Table 3. Asthma Hospitalizations Rates* for Minneapolis, St. Paul, Twin Cities Metro Area and Greater Minnesota, and Healthy People 2010 Goals

Age Group	Minneapolis, 2005	St. Paul, 2005	Twin Cities Metro, 2005	Greater Minnesota, 2005	Healthy People 2010 Goal
0 to 4	61.3	39.1	27.5	24.5	25.0
5 to 64	16.5	11.7	7.2	6.2	7.7 [†]
≤65	34.3	22.4	15.8	14.8	11.0 [†]

*Rate per 10,000 residents

[†]Age-adjusted to the year 2000 standard population

Sources: Minnesota Hospital Association, National Hospital Discharge Survey (NHDS), CDC, NCHS

Summary

Overall, Minnesota’s asthma rates are generally lower than national rates; however, within certain subgroups of the population, there are areas of concern. More than half of Minnesotans with asthma report having had an asthma attack in the past year—an indication that their asthma is not completely under control. Asthma prevalence among adults is higher in the Minneapolis-St. Paul metropolitan area than the rest of the state. Rates of asthma hospitalizations and ED visits are also high in the Twin Cities metropolitan area, with the highest rates among boys under 5. The good news is that since the late 1990s asthma hospitalization rates in Minneapolis and St. Paul have been decreasing, especially among children. Asthma mortality rates have declined dramatically between 1999 and 2005, with the greatest decreases in the 65 and older population.

¹ Minnesota Behavioral Risk Factor Surveillance System

² National Survey of Children’s Health

³ Minneapolis Public Schools, St. Paul Public Schools

⁴ Minnesota Middle School Asthma Survey

⁵ MDH, Rural High School Survey

⁶ Institute of Medicine. Clearing the Air: Asthma and Indoor Exposures, 2000

⁷ Minnesota Hospital Association

⁸ Minnesota Center for Health Statistics

Current Efforts to Address Asthma in Minnesota

Minnesota has many committed individuals, agencies, and organizations working on helping individuals and families to gain the knowledge and skills necessary to control and manage their asthma on a daily basis. Many of these efforts and initiatives include state government activities, the Minnesota Asthma Coalition (9 regional coalitions), school districts, local public health departments, hospitals and managed care organizations, community-based clinics, academic institutions, and non-profit health organizations, including the American Lung Association of Minnesota. Listed below are some of the activities or programs that have occurred since 2002 or are currently underway.

Table 4. Minnesota Asthma Milestones since 2002

Foundations of Asthma Activities	Environment	Self-Management Resources and Access to Care	Community Action	Health Professionals
Federal funding obtained to support asthma activities; state program staffed	School walkthrough protocol developed and utilized in 17 school districts	IAAP developed both to aid providers and to encourage written asthma action plans for people with asthma	Statewide smoke-free initiative approved by Legislature and signed by Governor (May 2007)	Setting the PACE in Minnesota trainings created and implemented by ALAMN
Surveillance system expands to capture data on asthma prevalence, asthma control, mortality, emergency department visits, and hospitalizations	EPA funded Pediatric Environmental Intervention project that significantly reduces missed school days, urgent care visits, oral corticosteroid use, and improved the quality of life	ALA MN sponsored summer camp experiences for over 200 children with asthma each year at Camp Super kids and Camp Super tots	Controlling Asthma in American Cities Project (CAACP) undertakes several initiatives including education in EDs, development of child care curriculum, trainings with clinics and parent forums in Minneapolis and St. Paul	“Managing Asthma in MN Schools” developed by MDH and presented at more than 30 trainings to over 900 school personnel throughout MN
Number of regional coalitions in MN Asthma Coalition (MAC) expands to 9 with all staffed; MAC website created; membership reaches over 1,000	Work-related asthma advisory group, convened by MDH, prepares report with 11 recommendations	HCMC developed video “ED Asthma Education Program” in 3 languages for ED viewing with take-home asthma information packet at HCMC and Minneapolis Children’s	Healthy Learners Asthma Initiative (HLAI) program in Minneapolis and St. Paul public schools as part of CAACP and St. Francis Public Schools in collaboration with ALAMN and Metro MAC	Coaches Asthma Clipboard “Winning with Asthma” developed by MDH in collaboration with Utah Dept. of Health and MN Steps
Asthma Clearinghouse developed at ALAMN	17 communities and counties adopt smoke-free ordinances; statewide smoke-free bill is adopted	Video "Breathing a Word: Indian Stories of Asthma" developed with Indian youth, families, graduate learners and faculty in CUPES	ECHO asthma pieces produced in 6 languages and aired on programs directed especially at communities of color	Preparatory course for certified asthma educators (AE-C) exam offered twice a year for 5 years by ALAMN

Asthma mortality in older residents reviewed; middle and high school prevalence surveys administered by MDH	Advisory group developing action advisories for high outdoor air quality readings	MDH Asthma Website created with extensive self-management information and resource links	Day care curriculum is developed by CAACP with many providers trained throughout Minnesota by MAC	Minnesota has 108 AE-Cs, the most per capita of any state in the country
Beta-tested EPA/CDC software for linking air quality data with asthma morbidity data	Collaboration with MN OSHA on sprayed truck bed liners to reduce isocyanates exposure (known asthmagen)	Web-based and CD program developed for Head Start providers and parents	MDH presentation of basic asthma management to paraprofessionals at Annual Paraprofessional Conference	MDH presentation on asthma management to Dept. of Corrections health staff
“Breathing Space” (respiratory disease newsletter) started by MDH as vehicle to share asthma news	895 school personnel and others signed up to receive electronic notices of an Air Quality Alert	“Catching Our Breath” initiative in Washington Co. organized by public health agency	Asthma awareness walks held in non-metro communities and Minneapolis	Asthma rotation created for pharmacy students at University of MN

Work Group Summary Reports

In 2006 the Minnesota Asthma Steering Committee re-established four technical work groups similar to those which had developed the first strategic plan:

- Data and Surveillance
- Environment
- Individual/Family/Community
- Health Professionals Education

It also reviewed the work of the special Work-Related Asthma Advisory work group that had met during 2005 and 2006.

These technical work groups were created to assess current efforts underway in Minnesota, identify problems and gaps, and then provide recommendations for each priority/issue area. The following presents the summary reports from each of the four technical work groups, as well as the Work-Related Asthma Advisory work group.

I. Data and Surveillance Work Group Summary:

The Data and Surveillance work group was charged with reviewing asthma surveillance data and making recommendations to improve data collection, address gaps in the data, and utilize data to support program activities, evaluation practices, and policy development. The work group considered CDC requirements for asthma surveillance, as well as the needs of data users, in coming up with recommendations for maintaining and expanding asthma surveillance.

The MDH Asthma Program uses all available sources of data to put together a picture of the burden of asthma in Minnesota. We currently track asthma prevalence, hospitalizations, emergency department visits, asthma management, symptoms, and mortality.

Asthma surveillance data is used by a wide variety of stakeholders: local public health agencies request asthma data on a regular basis for use in grant-writing, setting priorities and targeting interventions; the Children's Defense Fund of Minnesota includes asthma hospitalization rates for children in its annual Kids Count Data Book; and asthma hospitalization data has also been used to beta-test software being developed by the CDC and EPA that will allow states to examine links between air quality data and health data. Asthma data is also being used in environmental impact analyses conducted by the Minnesota Pollution Control Agency (MPCA). The Data and Surveillance work group met four times between November 2006 and February 2007. The group was made up of researchers and other representatives from state agencies, the University of Minnesota, a tribal epidemiology center, county public health agency, community organization, school district, medical center, and health plan, as well as the American Lung Association.

Issues specific to work group: gaps, activities, changes since 2002

Since 2002, asthma surveillance has expanded to include most of the data elements required by the CDC. In that time, we have learned more about the strengths and limitations of the data, increased the completeness of the hospitalization/emergency department data to include two major hospitals that had previously not been included in the database, and added more years of data to track trends over time.

A major gap identified in the 2002 state plan was the lack of asthma data on children. Since that time, we have conducted asthma surveys among middle school students, as well as surveys of school nurses to assess the presence of asthma action plans in school health offices. In addition, we have added a question to the Minnesota Student Survey, a survey of students in 6th, 9th and 12th grade in all school districts that takes place every three years.

A second concern identified in the 2002 state plan was the validity of asthma as a cause of death recorded on death certificates of older persons. Asthma rates among older Minnesotans are higher than the national average, however it was thought that some of this excess might be due to asthma being incorrectly coded as the underlying cause of death. To address this concern, we studied deaths among Minnesota residents age 55 and older for whom asthma was listed as the underlying cause of death. We interviewed their next-of-kin (NOK) and with NOK permission obtained medical records, all in an attempt to verify the cause of death. Preliminary results from this study indicate that only a small number of these deaths were probably due to asthma. The results from this study will be available by Summer 2007.

In 2005, Minnesota participated in the National Asthma Survey, along with Michigan and Oregon. The National Asthma Survey runs in tandem with the BRFSS survey. Respondents to the BRFSS survey who indicated that they had ever been diagnosed with asthma were asked to participate in a follow-up interview that included detailed questions on medication use, symptoms, environment, work-related asthma and asthma management. Respondents indicating that they had a child who had ever been diagnosed with asthma were asked to participate in a similar interview about their child's asthma.

Key discussion topics

The data work group identified several key areas to focus on in terms of maintaining and expanding asthma surveillance:

- tracking asthma medication use
- measuring race/ethnicity in the asthma data
- determining costs of asthma care
- linking asthma and environment measures.

There was discussion about how to best track asthma medication use and the fact that tracking asthma prescriptions does not necessarily equate to tracking medication use. The group also discussed the pros and cons of using the HEDIS measure for asthma (appropriate medications for people with asthma) in asthma surveillance and proposed that evaluation of measures to track appropriate medication use be an ongoing strategy.

The work group talked about ways to identify subpopulations that are experiencing increased asthma morbidity within the limitations of the available data, and how best to measure race/ethnicity and country of origin. The group also indicated that determining costs of asthma care and asthma and the environment were priorities. Work on many of these areas will continue within an ongoing asthma data advisory committee. The objectives and strategies from this work group are incorporated under the Data and Surveillance goal.

II. Environment Work Group Summary:

The Environment work group was charged with updating the 2002 State Plan by re-establishing goals that address environmental issues affecting asthma, developing short-term and long-term objectives, and outlining strategies for achieving these objectives. The environment, both indoor and outdoor, plays an important role in the exacerbation of asthma symptoms in people who already have asthma. See “Causes of Asthma” on page 12 for more information.

The Environment work group met four times between November 2006 and March 2007. The membership included representatives from federal, state, and local agencies; school districts; non-profit agencies; the University of Minnesota; and the private sector.

The first meeting began with a review of the work group’s charge and the current state of knowledge about the role of various environmental agents in causing or exacerbating existing asthma. The remainder of this meeting was spent reviewing the environment goals from the 2002 Minnesota State Asthma Plan and similar goals from other state asthma plans, and in drafting new environmental goals for Minnesota.

The second and third meetings focused on objectives and strategies. The members decided to recommend separate objectives for indoor asthma triggers and outdoor asthma triggers because the strategies and partners may be significantly different. During the fourth meeting, work group members finalized the strategies, added potential partners and supporting organizations, and recommended their priorities for strategies.

The Environment work group recognized information on asthma prevalence in Minnesota is available, and that evidence-based educational materials and strategies for reducing exposure to environmental asthma triggers already exist. Evidence-based programs from other states should be evaluated and modified to address Minnesota specific issues and needs including tribal nations and racial and ethnic populations, and state specific environmental triggers.

The work group’s highest priorities for action include:

- Creating a state profile that identifies target audiences and needed activities
- Increase the number of communities with smoke-free laws, ordinances and policies
- Establishing a committee of experts to evaluate existing, replicable and evidence-based programs, policies, strategies and best practices
- Developing a list of recommended actions to improve Minnesota specific educational materials and methods
- Recommending actions that decrease exposure to environmental asthma triggers in Minnesota

The objectives and strategies from this work group are incorporated under the Environment goal.

III. Work-Related Asthma (WRA) Advisory Work Group Summary:

The WRA Advisory work group was charged with assessing the issues, determining priorities, and making recommendations to deal with WRA including strategies to support asthma self-management and minimize exposures in the work environment.

According to the National Institute of Occupational Safety and Health, “WRA is asthma that is caused or made worse by exposures in the workplace.”¹ According to the CDC, “WRA includes new-onset asthma caused by workplace exposure to sensitizers or irritants and preexisting asthma exacerbated by workplace exposures.”² The CDC Morbidity and Mortality Weekly Report on WRA published in 1999 states that WRA encompasses two major categories of asthma that are described below. “These guidelines are not intended as the sole criteria for establishing clinical diagnoses; additional clinical, exposure, and laboratory data might be needed to establish a diagnosis of WRA”²

WRA can be divided into two general categories:

- Work-Aggravated Asthma - preexisting asthma exacerbated by workplace exposures
- New-Onset Asthma - asthma that develops after exposure to sensitizers or irritants in the workplace.

For purposes of this document, WRA encompasses both of the above.

According to the American Thoracic Society, “15% is a reasonable estimate of the occupational contribution to the population burden of adult asthma.”³ In one out of every six adults with asthma, their asthma is made worse by workplace exposures or develops after exposure to agents in the workplace.

In 2005, the CDC recommended that Minnesota incorporate work-related asthma into the existing state plan in order to have a complete and comprehensive asthma program. MDH staff convened and facilitated an external advisory work group called the Work-Related Asthma (WRA) Advisory work group, consisting of 17 members and including union representatives, physicians, nurses, industrial hygienists, the University of Minnesota, the private sector and state agencies. The work group came together for six meetings between September 2005 and October 2006 to discuss WRA in Minnesota.

The priorities identified by the WRA work group were:

- Develop and promote tools for community organizers, workers, employers, unions and others to identify asthma related to or aggravated by the work environment
- Create a State Profile of risk factors for WRA using existing data to guide strategic plan activities
- Promote use of existing resources to identify asthmagens in order to implement control measures in the work place, and
- Develop model partnerships to facilitate innovative interventions

The objectives and strategies from this work group are incorporated under the Work-Related Asthma goal.

¹ Department of Health and Human Services (DHHS), National Institute for Occupational Safety and Health (NIOSH). Worker Health Chartbook, Publication No. 2004-146: 2004. Retrieved from: <http://www.cdc.gov/niosh>

² Centers for Disease Control and Prevention (CDC). Morbidity and Mortality Weekly Report Surveillance of Work-Related Asthma in Selected U.S. States Using Surveillance Guidelines for State Health Departments – California, Massachusetts, Michigan, and New Jersey, 1993-1995; MMWR 48 (No. SS-3) 1999. Retrieved from: <http://www.cdc.gov/mmwr/preview/mmwrhtml/ss4803a1.htm>

³ American Thoracic Society. American Thoracic Society Statement: Occupational Contribution to the Burden of Airway Disease. Am J Respir Crit Care Med 2003; 167: 787-797.

IV. Individual/Family/Community Work Group Summary:

The Individual, Family and Community work group was charged with developing new or revised goals, objectives, and strategies pertaining to improving asthma awareness and management within and among individuals, families, and communities. The work group explored individual, community, and systems level, population-based interventions.

The work group met four times between November 2006 and March 2007. The membership included representatives from philanthropy, local public health, state government, MAC coordinators, health care, the University of Minnesota Schools of Nursing and Public Health, community agencies, the School Nurse Organization of Minnesota, the private sector, and health plans. Individuals were from urban and rural communities. They represented agencies that served individuals across the lifespan, and many members had asthma themselves and/or had family members with asthma.

The work group began by reviewing the accomplishments and data trends since the first state plan. They agreed that much has been accomplished over the past five years, yet much more can be done. They also reaffirmed that the following things must come together for an individual's asthma to be adequately controlled:

- The individual or his/her healthcare provider must recognize that they have asthma
- The individual must have access to and financing for appropriate healthcare, including medications, and for education on self-management; and an environment free of asthma triggers
- Interventions at the individual, family, and community level are necessary to adequately control asthma

At the first meeting participants identified what they believed were the most important needs or gaps related to asthma awareness and management within and among individuals, families and communities. At the following meetings, based on the gaps identified, the group formulated goals, objectives, and strategies that would address these gaps. Potential supporting organizations were suggested, and members encouraged MDH to have measurable objectives in the state plan or in their annual work plan.

During the same time period, a group of MDH employees called "INHALE" was meeting to give input to the planning process. These employees work with external partners in areas that contribute to improving the lives of people with asthma. Their comments were brought to the Individual, Family, Community work group and thus are incorporated into this summary.

The following summarizes key discussions on each gap:

Gap: Policies and law

The discussion focused on creating healthy and safe environments for people with asthma in three main areas. The work group recognized the importance of both state and local initiatives to increase the number of Minnesota communities with smoke-free laws, ordinances and policies, and they expressed support for several current initiatives such as smoke-free parks and housing. They discussed increasing the availability and awareness among the public and insurers of

health, property, and car insurance incentives offered to non-smokers. A third area of discussion focused on increasing awareness of resources about housing issues related to asthma among both housing organizations and asthma partners. These ideas are included in the goals related to the environment.

Gap: Individual, family, caregiver and provider responsibility

The work group recognized that individuals with asthma, their families, and other caregivers need to be engaged, well informed, and active in appropriate asthma care, or self-management or both. Discussion focused on the individual, the importance of family involvement, and the need for other caregivers to be informed, with these issues best addressed in relation to the community. The group recognized that individuals need access to key messages based on the NIH/NAEPP guidelines. Such messages should address asthma self-management including environmental asthma triggers and the importance of asthma action plans, with consideration for cultural, ethnic, and literacy factors that could affect patient understanding. Educational resources (materials and programs) containing these Minnesota core messages would be disseminated to individuals with asthma, their families, and caregivers. It was also suggested that a patient “script” with questions to ask health providers be developed. The group also reaffirmed the need for educating providers, including pharmacists with consistent key messages.

Other opportunities for individuals to successfully manage their asthma were also discussed, such as promoting existing asthma disease management programs. The work group also recommended increasing accessibility to smoking cessation programs, and activities that encourage individuals with asthma to get yearly flu vaccinations.

The group recognized that asthma surveillance data should be used to identify and then target those groups of individuals disproportionately affected by asthma. They suggested a focus on low-income Minnesotans.

Gap: Asthma Education Systems and Community Awareness

Communities need a comprehensive, systematic, sustainable approach to asthma education that supports universal awareness of asthma signs and symptoms, triggers and self-management. The group recognized that:

- Partnerships, collaboratives, coalitions, and communication play a major role in accomplishing this goal
- A state-level, multi-disciplinary group of the partners currently involved in the state plan update is needed to provide advice and guidance and to participate in implementing the revised state plan
- Support is needed to strengthen the MAC as a statewide organization to assist with implementing many of the objectives in Minnesota communities

Both the work group and INHALE recommended that the MDH asthma program continue to work with other programs within MDH and other state agencies. They specifically discussed identifying or creating information on asthma and genomics, including family history, as well as collaborating with maternal and child health programs and other chronic disease programs.

Regarding the health disparities experienced by tribal populations and racial and ethnic groups, the work group said that these groups must be deliberately considered and addressed in program planning and implementation. They also recognized the importance of reaching those individuals who are hard to reach, underserved and low-income. Concern was also expressed that in rural areas, there is a lack of medical specialists and people qualified to provide asthma education.

The work group discussed a wide variety of strategies to reach more individuals through community awareness and education programs, and they recognized the need for asthma resources across the lifespan. Many of the suggested activities and programs could be presented in local communities by MAC coalition members. Strategies were discussed to educate more caregivers of children and adults with asthma, to help schools provide appropriate support for individuals with asthma, and to educate staff in care provider settings (e.g., foster care, crisis nurseries, senior day centers, camps, licensed child care facilities, out-of-school time programs) about asthma self-management and environmental triggers of asthma. They suggested continuing to offer the “Managing Asthma in Minnesota Schools” training, including information on mental health and asthma.

The group called for the necessary collaboration between asthma partners, particularly the MAC, and smoke-free community groups in addressing secondhand smoke and asthma. They thought it was very important to promote to businesses model policies for conducting meetings and conferences in smoke-free cities or counties, not just smoke-free facilities.

In order to help local public health agencies play key roles in raising community awareness about asthma and implementing other state plan activities, a local public health toolkit will be developed and promoted. This toolkit will be based on Washington County Public Health and Environment’s 2006 countywide asthma initiative. Local public health agencies will be encouraged to take an active role in providing asthma self-management including incorporating interventions to reduce environmental asthma triggers into home visits.

How to best meet the needs of individuals with asthma during emergency situations was also discussed. Assuring the availability of needed medical care and medications was of concern.

Gap: Care Resources and Coordination

The work group discussed the need for health professionals to utilize best practices (i.e., NAEPP Guidelines and evidence-based research), for improved coordination of patient care, and for improved access by people with asthma to needed medical and health education services. The Chronic Care Model was discussed as a framework for caring for people with asthma because it is patient and family centered, and it recognizes the importance of collaboration between the health system and community, especially schools. (Figure 3, Page 32) The work group also suggested developing a comprehensive performance measure for optimal asthma care based on the NAEPP guidelines. They recognized the importance of working with health plans to further implement best practices of asthma care and education and deferred to the “Health Professional Education” work group on issues related to professional education.

The increased use of electronic health records was discussed in the context of improving knowledge sharing and information management among health professionals who care for people with asthma such as health care providers, public health staff, and school nurses.

Because many local public health agencies in Minnesota use the Omaha system for documentation and information management, the group supported the development of individual and community level asthma pathways for the Omaha system based on NAEPP guidelines.

The Omaha System is a research-based, comprehensive and standardized taxonomy designed to enhance practice, documentation, and information management. It provides a structure to document client needs and strengths, describe multidisciplinary practitioner interventions, and measure client outcome. The Omaha System allows software systems to incorporate practice standards in the form of intervention pathways, thus disseminating best practices to all users. Because many local public health agencies utilize software based on the Omaha System, incorporating asthma intervention pathways within the software systems will support the agencies in adopting asthma intervention strategies.

Much time was devoted to discussing ways to promote coverage and adequate reimbursement of appropriate individual and group asthma education, smoking cessation programs, and home-based programs that address asthma self-management including environmental asthma triggers. Support was expressed for reimbursement for services that are delivered in clinic, community and home-based settings or through disease management programs, by certified asthma educators and others who provide education and case management. They expressed a need for health payors to be educated about the cost effectiveness of evidenced-based home intervention programs for improving asthma self-management and reducing asthma triggers through the provision of education and product interventions.

The objectives and strategies from this work group were primarily incorporated under the Environment goal, the Self Management goal, the Community goal, and the Systems Change goal.

V. Health Professional Education Work Group Summary:

The Health Professional Education work group met four times from December 2006 through February 2007. Work group members included physicians, nurse practitioners, respiratory therapists, licensed school nurses (LSN), an emergency department registered nurse, a pharmacist, pharmaceutical company representatives, and a representative from the health plans.

The work group was asked to assess the current status of issues, determine priorities, and recommend specific goals, objectives, and strategies to address issues that impact the health professional's ability to assess, diagnose, treat, and educate people to manage their asthma appropriately. The work group focused on the educational needs of all health care professionals which include but are not limited to physicians, nurses, nurse practitioners and clinicians, physician assistants, pharmacists, and respiratory therapists.

The following issues were discussed during work group meetings:

Asthma Guidelines

The revision of the NIH/NAEPP (*National Institutes of Health/National Asthma Education Prevention Program*) Asthma Guidelines is almost complete. While a number of different national and statewide guidelines are available, with most based on the NAEPP guidelines, there are enough variations between guidelines to create confusion and inconsistency of practice patterns. In this plan, for consistency, “best practice of care” is defined to mean care that follows the NIH/NAEPP Asthma Guidelines.

Previous NIH/NAEPP asthma guidelines focused on the initial severity assessment but the newly revised guidelines shift the focus toward assessing control with each clinic appointment. Shifting the practitioner’s focus to frequent re-assessment of the patient’s control level will require health professionals to rethink how they assess, prescribe, and provide education to their patients and their caregivers.

Competing Priorities & Patient Education

There are definitely variations in asthma care provided to patients. Some differences occur across specialties such as pulmonary, asthma and allergy, family and pediatric practice. Some of the variation is due to the providers’ knowledge of the guidelines and of optimal asthma care. Some of the variation is due to the clinic or work site, e.g., limits or restrictions on appointment length, the training of clinic support staff, or availability of spirometry testing within the clinic. *Competing priorities in the clinical setting diminish the clinician’s ability to focus, with asthma being only one of many disease conditions.* A primary care practitioner’s schedule often allots insufficient time to assess, test, treat, and educate on proper asthma self-management. The variation in asthma care and the reasons for the variation are complex and necessitate a multifaceted approach.

Many clinic systems/offices do not use an integrated, coordinated team approach to caring for and educating asthma patients and their families/caregivers. Work group physicians voiced their perceptions that they generally are alone in the responsibility of providing patient and caregiver asthma education. Because patient education should begin at the time of diagnosis and be integrated into every step of medical care, nurses, pharmacists, respiratory therapists, and other health care professionals should be available to support and expand patient education using a *team approach*.

Patient education is an integral part of asthma. At every possible opportunity, patients should be informed about the basic facts of asthma, the role of medications, environmental control factors, and how to manage asthma exacerbations. In addition, patients should be instructed in the skills necessary for self-monitoring (e.g., inhalers and peak flow meters) and taught strategies for controlling exposure to environmental irritants and allergens. Asthma action plans (AAP) are strongly recommended as tools to assist patients with asthma, yet they are not routinely provided to other caregivers (schools, daycare, coaches, etc.) nor are all clinicians convinced they are effective. The 1997 NAEPP and 2007 updated guidelines both recommend the use of AAPs.

Interactive Asthma Action Plan

Clinicians need access to tools and information that can assist them with assessment and treatment plan selection. The work group identified a need for customized, easy-to-use NAEPP Asthma Guidelines tools that are accessible in the exam room. These tools include clinician prompting programs that could be developed and integrated into the EHR (Electronic Health Record) and would most likely rely on one guideline that is generally accepted by all levels of practice and across regional and state borders. The MDH Interactive Asthma Action Plan (IAAP), developed four years ago is a computerized program/tool that assists the clinician to determine the patient's severity level and treatment plan. Work group members suggested the IAAP be updated, modified and integrated into electronic health record (EHR) systems currently being used by major hospital and clinic systems. Multiple organizations are currently using the IAAP or are adapting it for use in their state/systems.

Work group members stated that a government mandate would be the most likely way to compel all clinicians to comply with many aspects of care, including distribution of AAPs to school health offices, and to provide appropriate medication instructions.

Certified Asthma Educators (AE-C)

Minnesota has an inadequate number of Certified Asthma Educators (AE-C) statewide, even though, with 108, this state has the most AE-C per capita of any state in the country. Those providing asthma education are not always certified asthma educators (AE-C), creating concerns of consistency and information accuracy.

The cost of taking the AE-C course and the AE-C certification test are prohibitive for many health professionals, and most health care institutions do not reimburse their employees for these costs. There currently is no reimbursement linked to asthma educator certification, and most employers and many health professionals do not see the value of employing a certified asthma educator.

Reimbursement for asthma education is inadequate and complex depending upon the payor. Efforts to seek reasonable reimbursement have not been particularly effective. Some health plans are offering reimbursement for asthma education but the programs are not utilized to their full capacity. Work group members stated that successful and reasonable reimbursement for providing asthma education tied to the AE-C certification would encourage clinical offices to hire appropriate health professionals for the task of providing patient education to all patients, their families, and other caregivers.

Communication, Collaboration, & Coordinated Care

Lack of communication and information exchange between emergency departments, urgent care, primary care practitioners, specialty physicians, pharmacists, and hospital systems create an ineffective approach to providing continuity of quality care. Depending on the clinical system and available communication ties to other offices and care levels, many clinicians don't know when their patients are seen in the emergency department (ED), urgent care (UC) or other health clinics. Without this information, a clinician is unable to chronicle their patient's asthma exacerbations and to establish, step up, or step down a patient's treatment plan. With this in

mind, work group members supported establishing communication pathways in which visits to the emergency or urgent care center are automatically sent to the primary care practitioner.

Referrals to asthma specialists (pulmonologists or allergists) require a collaborative communication effort between the primary care practitioner, the specialist, and the patient and/or caregiver. This type of partnership requires a two way exchange of information with all parties involved -- clinician, patient/caregiver, educator, etc. -- sharing records and treatment plans.

A clear, consistent, compelling message with associated support and education from health plans is lacking. Many health plans and other payors have developed comprehensive asthma management programs. Some of these are still active but concepts and delivery of case management, clinician education, and associated tools may not be well known or utilized to full capacity by primary care providers or the patient themselves.

Programs that utilize quality measurement/performance with financial incentives for clinicians became a frequent topic of discussion. This will require a collaborative effort between payors, practitioners, patients/caregivers and the community. See Figure 3, The Chronic Care Model, with possible strategies listed in the systems change section of this plan.

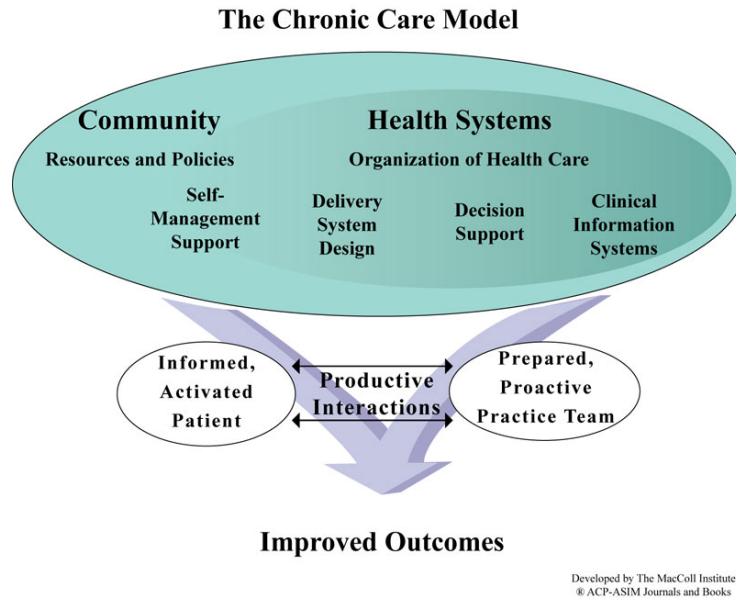
Professional Education Curriculum

Secondary institutions that educate the various health care professionals are lacking a curriculum focus specific to the guidelines. Physician residents and other health student professionals may learn their asthma management skills from individuals whose knowledge of asthma management is outdated or based on personal preference rather than evidence based best practice.

Work group members felt, in collaboration with key decision makers from secondary institutions, the development of a curriculum template specific to asthma based on the NAEPP guidelines would provide a good start toward integrating comprehensive asthma management education into secondary institutions' curricula. Utilizing the Chronic Care Model concept and NAEPP guidelines as a baseline, this specially developed curriculum would expand the repertoire of knowledge and skills using a "patient-centered" concept. In addition to asthma basics, content would need to include teaching self-management and educational techniques, and determining the learning readiness of patients and/or their caregivers. Curricula would need to provide methods for eliciting asthma patients' understanding of their illness, strategies for identifying and bridging different styles of communication, skills for assessing decision-making priorities, and the role of family/caregiver.

The objectives and strategies from this work group were primarily incorporated under the Community goal, the Health Professionals goal, and the Systems Change goal.

Figure 3:¹



¹ Improving Chronic Illness Care – Chronic care model diagram. www.improvingchroniccare.org

Goals, Objectives, and Strategies

GOAL #1 – Data and Surveillance: Maintain and expand the current statewide asthma surveillance system toward a comprehensive system that meets the needs of diverse stakeholders through increased data utility and greater communication and collaboration with data users.

Data and Surveillance strategies will be undertaken by MDH except where partners are indicated.

Objective A: Monitor trends in asthma prevalence among Minnesota residents.

1. Track asthma prevalence using surveys such as Behavioral Risk Factor Surveillance System (BRFSS) survey, Minnesota Student Survey and Youth Tobacco Survey.
2. Analyze asthma prevalence in subpopulations, such as Medicaid enrollees and immigrant groups, and by race/ethnicity.

Partner: *MN Department of Human Services (DHS)*

Objective B: Monitor trends in asthma-related health care utilization among Minnesota residents.

1. Analyze asthma-related hospitalization and emergency department data.
2. Develop methods to identify repeat asthma-related emergency department visits in hospital discharge data.
3. Evaluate completeness of the emergency department data.

Objective C: Monitor trends in asthma mortality among Minnesota residents.

1. Analyze death records for which the underlying cause of death was asthma.
2. Disseminate recommendations of the 2007 asthma mortality review and incorporate into data interpretation.

Objective D: Monitor trends in asthma control among Minnesotans with asthma.

1. Track indicators such as activity limitations and sleep disturbances among Minnesotans with asthma using surveys.
2. Develop a model method for tracking rates of school absenteeism among students with asthma.

3. Develop model method for clinics or health plans to track unscheduled clinician visits for asthma.

Partner: *Olmsted Medical Center*

Objective E: Monitor trends in asthma management among Minnesotans with asthma.

1. Evaluate methods for tracking asthma medication prescriptions/use, particularly for controller and quick reliever medications.

Partners: *Health plans, DHS, Pharmacy benefit managers (PBMs), MN Community Measurement Project*

2. Track presence/use of asthma action plans in schools using school nurse/health office survey, as well as in the general population.

Partner: *SNOM*

3. Track use of spacers and holding chambers.

Objective F: Determine costs of asthma care.

1. Calculate costs of asthma-related hospitalizations and emergency department visits.

Objective G: Identify disparities in asthma among subpopulations.

1. Determine best methods and needs-based definitions for identifying race/ethnicity and country of origin in asthma outcome measures.

Partners: *MN health disparities organizations, DHS, HealthPartners*

2. Determine the impact of asthma and other comorbid conditions (e.g., COPD) on Minnesota's senior population.

Partner: *ALAMN (MN COPD Coalition)*

Objective H: Develop partnerships to share data and identify data needs.

1. Convene an asthma data advisory committee.
2. Collaborate with surrounding states and states with Environmental Public Health Tracking grants.
3. Collaborate with state environmental agency to include asthma surveillance data in environmental impact analysis and planning.

Partner: *Minnesota Pollution Control Agency (MPCA)*

4. Develop and pilot linkages with environmental data (e.g., air or other).

Objective I: Use asthma surveillance data to inform and respond to policymakers, local public health, state agencies and the general public.

1. Develop protocols for use of data to respond to community concerns.
2. Provide public education regarding available data through surveillance report, fact sheets, MDH web site, presentations, newsletter and other formats.

GOAL #2 - Environment: Increase awareness and understanding of asthma environmental triggers and decrease exposure to asthma environmental triggers for people with asthma.

Objective A: Increase awareness and understanding by determining target audiences and evaluating the effectiveness of educational materials.

1. Create a “state profile” to establish educational and intervention priorities.
2. Convene a state organized committee to review information in the state profile (Strategy #1); evaluate existing, replicable and evidence-based programs, policies, strategies and “best practices.” Develop a coordinated Minnesota asthma education and outreach plan that includes a final list of actions to be implemented and indicators to be evaluated.
3. Determine target audiences that will maximize the impact of increased understanding of environmental triggers (focused outreach) based upon Strategies 1 and 2.
4. Sponsor at least 5 meetings/forums with lead partners, supporting organizations and representatives of target audiences to solicit comments on recommended actions including the development of culturally appropriate methods and materials.
5. Identify champions for target audiences.
6. Develop/adapt and communicate evidence based asthma information for target audiences.
7. Engage health plans in discussions about the importance of increasing awareness of environmental triggers.
8. Develop a list of existing mechanisms to communicate culturally appropriate information to target audiences in Minnesota. Promote information to address cultural and/or language disparities; translate into appropriate formats.
9. Revise the MDH web site to incorporate updated information and links to resources about indoor and outdoor environmental asthma triggers and Minnesota asthma activities.

10. Identify potential funding organizations & policymakers.

Potential Partners: *MN OSHA, Health Plans, MDE, ALAMN, Public housing agencies, MN Environmental Health Association, MPCA, MN Dept of Agriculture, Local public health, Pediatric Home Service (PHS), Indian Health Service, Children's Defense Fund, MN Kids Network, Social Service agencies, Federal agencies: EPA/CDC/HUD, University of MN, MN State Colleges & Universities, National Oceanic & Atmospheric Administration, Pollen information organizations, Media, Tribal governments, Local Public Health Association, Minnesota Medical Association, MAC, Child Care Association or representatives, School Association or representatives, National/federal research organizations (NIEHS), Health care professionals, Institute for Agriculture & Trade Policy, MDH Programs*

Objective B: Increase the number of Minnesota communities with smoke-free laws, ordinances and policies.

1. Educate legislators on the importance of passing laws to improve indoor and outdoor air quality for individuals with asthma as well as the general public.
2. Promote initiatives that support tobacco-free environments such as youth recreation facilities, community parks and other grounds, and housing.
3. Increase the availability and awareness of health, property and car insurance incentives offered to non-smokers.

Potential Partners: *Tobacco prevention & control representatives, ALAMN, Association of Non Smokers Rights MN, ClearWay MN, MN Smoke-Free Coalition, Tobacco Law Center, MDH Tobacco program and grantees, Local Public Health*

Objective C: Prevent and reduce exposure to indoor environmental triggers.

1. Convene a state organized committee to review information in the state profile (Objective A, Strategy #1); evaluate existing, replicable and evidence-based programs, policies, strategies and "best practices."
2. Develop a coordinated Minnesota plan for reducing exposure to environmental triggers of asthma that includes a final list of actions to be implemented and indicators to be evaluated.
3. Promote the Department of Agriculture program that reduces exposure to pesticides by controlling pests using Integrated Pest Management.

<p>Integrated Pest Management is an environmentally sensitive approach to managing pest problems that takes advantage of all suitable pest management options. It uses a balanced combination of tactics (cultural, mechanical, biological, chemical) to prevent pests or reduce pests to a tolerable level; pesticides are used</p>
--

judiciously to minimize health and environmental risks.

4. Develop new or adapt existing approaches that emphasize the importance of behavior change for certain triggers and activities such as pets and smoking.
5. Replicate existing home intervention strategies (EACH & RETA projects) and identify products that reduce allergens and irritants, including structural modifications as needed.

The City of Minneapolis & St. Paul Ramsey County intervention project (EACH) and the MDH intervention project (RETA) provided asthma education and environmental interventions in the homes of children with poorly managed asthma. EACH and RETA demonstrated statistically significant improvements in several key indicators including hospitalizations, ED visits, missed school days and quality of life indicators.

6. Develop or adapt similar intervention strategies (similar to Strategy #5) but for schools, child care facilities, work-related asthma and new home construction.
7. Improve building practices that impact environmental asthma triggers by working with the state energy codes program and the U of MN Cold Climate Housing Program.
8. Identify and encourage partnerships that implement hierarchy of controls for products used in homes, schools, service industry, health care organizations and other locations.
9. Increase awareness of resources about housing issues related to asthma through partnerships with housing officials, tenant & landlord organizations and MAC regional coalitions and other asthma partners.
10. Identify potential funding organizations to provide resources to implement strategies.

Potential Partners: *ALAMN Health House, MN Dept of Agriculture, Federal agencies (HUD, EPA), UMN School of Public Health (SPH) and Cold Climate Housing Program, Minnesota Interagency Pollution Prevention Advisory Team, School association or representatives, Child Care association or representatives, MDE, MN OSHA, Public housing agencies, Faith-based organizations, MAC, Community Clinics such as Smiley's Clinic, ALAMN, Blue Cross Foundation – Communities for Healthy Air, Tribal governments, Disease Management Organizations, Local Public Health, Greater MN Housing Fund, MN Tenants Union, MN Building Codes & Standards Division, Local housing and building code officials,*

Community Action Programs, City planners, MN Dept of Commerce, Center for Global Design, MDH programs

Objective D: Prevent and reduce exposure to outdoor environmental triggers.

1. Convene a state organized committee to review information in the state profile (Objective A, Strategy #1); evaluate existing, replicable and evidence-based programs, policies, strategies and “best practices.” (Same as Objective C, Strategy #1).
2. Increase the number of people receiving the Air Pollution Alerts (based upon Air Quality Index).

The Air Quality Index (AQI) tells us when the air is unhealthy to breathe. An AQI of 101 to 150 is “unhealthy for sensitive groups,” meaning older adults, children and people with preexisting heart and lung conditions. Ozone and fine particles are the air pollutants of concern in Minnesota.

3. Educate and encourage the media to provide information on outdoor environmental asthma triggers.
4. Develop new or adapt existing approaches that emphasize the importance of behavior change for certain triggers and activities such as wood smoke, outdoor boilers and recreational fires.
5. Increase the availability of funding diesel retrofits for school buses and other vehicles.
6. Increase the number of schools and government agencies with “no idling” policies through enforcement of the current state law for school buses and better education on the importance of “no idling” policies.
7. Partner with the Pollution Control Agency & Clean Air Minnesota to identify priorities, collaborate on projects especially transportation. See Data and Surveillance Goal, Objective I.
8. Expand public transportation options (especially light rail), encourage transit use and carpooling among the general public and encourage use of E-85 fuel and E-85 vehicles.

Potential Partners: *MPCA, Clean Air Minnesota, Local Public Health agencies, Met Council, City planners, MnDOT, Schools (diesel retrofits; idling), Community clinics, Tribal governments, Environmental organizations e.g., MN Center for Environmental Advocacy, MN Sustainable Communities Network, Coaches, Team sport organizers, Community centers, MAC, Public transportation, Community Clinics such as Smiley’s Clinic, Community Action Programs, Wind energy, UMN SPH, MDH programs*

GOAL #3 – Work-Related Asthma: Increase awareness about work-related asthma (WRA), tailor interventions to address WRA, and reduce exposure to asthmagens.

Objective A: Promote use of existing resources to identify asthmagens in order to implement control measures in the work place.

1. Identify existing informational resources on asthmagens.
2. Promote these resources and their use to business owners, employers, and health and safety staff especially for small business such as salons, auto body shops, paint shops and other at-risk settings identified in State Profile (Objective E).

Potential Partners: *Minnesota state government agencies, Federal government agencies, Unions, Local chapters of occupational health & safety organizations, Minnesota health plans, Minnesota hospitals and clinics, Academic institutions and programs, Health, environment and safety consulting organizations, Minnesota Safety Council.*

Objective B: Develop and provide learning opportunities on WRA for health and safety staff who serve Minnesota businesses and workers.

1. Develop a training program that encourages documentation of WRA and appropriate follow-up.
2. Improve existing educational materials to supplement the training program.
3. Provide seminars for health and safety staff.

Potential Partners: *Minnesota health plans, Minnesota hospitals and clinics, Local chapters of occupational health & safety organizations, Academic institutions and programs, Continuing education, certification, and licensing organizations, Minnesota state government agencies, Unions, Business associations, Non-profit/Private health and safety organizations.*

Objective C: Develop and provide learning opportunities on WRA for health care providers including emergency department staff, nurse practitioners, physician assistants, community health clinics and others.

1. Incorporate WRA into the emergency physician conference through Hennepin County Medical Center or Regions Hospital.
2. Incorporate WRA into the one-day conference for family practice residents/primary care providers.
3. Develop or modify an existing tool for assessing WRA that addresses cultural and/or language disparities.

4. Submit WRA articles to publications for Minnesota health care providers.
5. Provide seminars for medical students, occupational nurses, and/or occupational medicine.
6. Present WRA at hospital grand rounds.

Potential Partners: *Minnesota health plans, Minnesota hospitals and clinics, Local chapters of occupational health & safety organizations, Academic institutions and programs, Continuing education, certification, and licensing organizations, Minnesota state government agencies, Minnesota health care provider associations.*

Objective D: Develop and promote tools for community organizers, workers, employers, unions and others to identify asthma related to or aggravated by the work environment.

1. Develop a tool for identifying WRA including how to distinguish it from other types of adult asthma.
2. Develop a self-assessment tool for identifying WRA.
3. Identify community organizers, workers, employers, unions and others who encounter WRA.
4. Promote tools to identified audiences who encounter WRA.

Potential Partners: *Minnesota state government agencies, Unions, Minnesota health care provider associations, Minnesota health plans, Minnesota hospitals and clinics, Migrant farm worker organizations*

Objective E: Create a State Profile of risk factors for WRA using existing data to guide strategic plan activities.

1. Include existing data on the incidence of WRA, such as workers' compensation claims.
2. Gather existing work place exposure data from Minnesota OSHA.
3. Gather information on WRA activities and data from other states and determine if they are applicable to Minnesota.
4. Identify occupations or industries where asthmagens may be found.
5. Generate a list of asthmagens used in Minnesota and a list of existing substitution programs.

6. Summarize 1 through 5 into a State Profile.

Potential Partners: *Minnesota health plans, Minnesota hospitals and clinics, Academic institutions and programs, Minnesota state government agencies, Unions*

Objective F: Promote data searches and/or needs assessments on WRA by other organizations including health plans, workers' compensation insurers, unions, post-secondary schools, and government agencies.

1. Work with health plans and workers' compensation insurers to search their records for WRA cases.
2. Work with unions to search their records for WRA cases or conduct a needs assessment of their members.
3. Survey occupational health care providers to obtain WRA trends.

Potential Partners: *Minnesota health plans, Minnesota hospitals and clinics, Academic institutions and programs, Minnesota state government agencies, Unions, Minnesota health care provider associations*

Objective G: Develop model policies for reporting WRA to the State.

1. Review policies and regulations for reporting WRA in other states.
2. Encourage addition of WRA as a reportable disease in Minnesota.

Partners: *All WRA partners.*

Objective H: Develop model partnerships to facilitate innovative interventions.

1. Support Minnesota OSHA Consultation Alliances with industries or businesses to implement hierarchy of controls.
2. Identify and encourage potential partners among businesses, agricultural industry, unions, environmental groups, nonprofit organizations, and others to reduce asthmagens mentioned in the State Profile incorporating the hierarchy of controls used by schools, service industry, health care organizations and others.
3. Identify and encourage partnerships that implement hierarchy of controls for cleaning products used by schools, service industry, health care organizations and others.

Potential Partners: *Minnesota state government agencies, Federal government agencies, Unions, Local chapters of occupational health & safety organizations, Minnesota hospitals and clinics, Academic institutions and programs including Minnesota Technical Assistance Project (MNTAP), Manufacturers of cleaning*

products, Local & national agricultural trade associations, Environmental groups, Non-profit/private health organizations

Objective I: Promote existing product substitution programs.

1. Talk to manufacturers about existing environmentally preferable products and national certification to encourage production of environmentally preferable products.
2. Promote substitution programs identified in State Profile (Objective E) and model profile strategies.
3. Promote model contract language for organizations to purchase and use environmentally preferable products.

Potential Partners: *Minnesota state government agencies, Academic institutions and programs including MNTAP, Unions, Environmental groups, Manufacturers of cleaning products*

Objective J: Incorporate WRA educational materials, prevention messages and assessment tools into existing education programs.

1. Incorporate WRA into Minnesota State Colleges & Universities (MNSCU) courses for occupations and industries where asthmagens may be found.
2. Incorporate WRA into UMN SPH courses.
3. Incorporate WRA into certification, continuing education and continuing licensure courses.
4. Incorporate WRA into trainings provided by unions to their members.
5. Incorporate WRA into medical school, nursing, & pharmacy curricula.

Potential Partners: *Local chapters of occupational health & safety organizations, Academic institutions and programs, Minnesota health care provider associations, Minnesota health professional schools & training programs, Continuing education, certification, and licensing organizations*

Objective K: Promote organizational policy changes.

1. Support adoption of policies to utilize tools to identify WRA in businesses and industries identified in State Profile (Objective E).
2. Notification and hazard communication of asthmagen use/application by workers at multi-employer work sites.

3. Promote development of new environmentally preferable products by manufacturers.
4. Promote model contract language for purchasing and use of environmentally preferable products.

Potential Partners: *Minnesota state government agencies, Minnesota health care provider associations, Unions*

GOAL # 4 - Self Management: Ensure individuals with asthma, their families, and other caregivers* are well-informed and engaged in appropriate asthma self-management, especially among low-income populations in Minnesota. * Caregivers are non-family members who care for individuals with asthma such as day care providers, school staff, etc.

Objective A: Increase knowledge of core messages about appropriate asthma management based on NAEPP guidelines.

1. Develop a patient script with specific questions patients or their families should ask their health care providers and describing the information they should bring with them to their asthma visit.
2. Determine and “brand” MN Core Asthma Messages that are based on NAEPP guidelines, address asthma self-management including environmental asthma triggers, and the importance of asthma action plans.
3. Identify and address cultural, ethnic and literacy factors that affect the delivery and understanding of asthma self-management education in content development and dissemination.
4. Identify or develop, evaluate, and disseminate asthma educational resources (materials and programs) containing MN core messages, to individuals with asthma, their families, and caregivers.

Potential Partners: *Pediatric Home Service, Health Disparities Collaborative, ALAMN, Local Public Health, U of M Academic Health Center, MAC, Children’s Hospital and Clinics, School districts, MDH-Office of Minority and Multicultural Health*

Objective B: Increase the opportunities for individuals to successfully manage their asthma.

1. Promote awareness and use of existing asthma disease management programs available through Minnesota medical insurance plans.
2. Promote coverage by payors, including health plans, of smoking cessation programs and promote to members.

3. Increase consumer demand for effective smoking cessation services by publicizing no-cost access and priority referral to quitlines for smokers and including in clinical and community pathways and in MN core messages.
4. Encourage individuals with asthma and their families to get yearly flu vaccinations.

Potential Partners: *ALAMN (CAACP), Minnesota Council on Health Plans, ICSI, Employers Associations, Local Public Health, Health payors, MDH- Immunization Section*

GOAL #5 – Communities: Create communities with comprehensive, systematic, sustainable, culturally responsive approaches to asthma education through partnerships, collaboratives, coalitions, and communication.

Objective A: Increase the number of individuals reached through community awareness and education.

1. Conduct a social marketing asthma campaign in news markets throughout Minnesota by collaborating with the MAC, EPA, and Ad Council.
2. Convene a work group to review and evaluate existing educational materials and dissemination mechanisms, and to develop an implementation plan that considers cultural, ethnic, age, income and literacy factors that affect the delivery and understanding of asthma educational information.
3. Promote materials and their use across the lifespan, in locations most appropriate for the targeted age such as health care settings, homes, schools, workplaces, libraries, community-based organizations including unions, employer groups, health care coalitions, senior centers and teen centers.
4. Target resources to tribal nations and racial and ethnic populations identified by asthma surveillance data as disproportionately affected by asthma.
5. Promote asthma awareness, activities, events, community resources and other learning opportunities in the MAC regions for people with asthma, their caregivers and the public during each year (e.g., world asthma awareness month).
6. Ensure that asthma partners, including the MAC, provide education in collaboration with smoke-free community groups on the relationship between smoking and asthma.
7. Promote and spotlight model policies for conducting business conferences and meetings in smoke-free cities and counties.

Potential Partners: *ALAMN, DHS, Media outlets, EPA, Ad Council, Community education, ECHO, UMN School of Nursing, MAC, Public libraries, Washington*

County Public Health and Environment, MN Steps, LPHA, Girl Scouts/Boy Scouts, Faith-based organizations, Service organizations, Smoke-Free Coalitions, Asthma Camps, Tribal nations, community-based non-profit organizations, SMOM, MDH chronic disease programs

Objective B: Increase the number of schools that provide appropriate support for individuals with asthma.

1. Continue to offer “Managing Asthma in Minnesota Schools” training or program update throughout Minnesota and promote the corresponding on-line training resources.
2. Compile a list of interventions that would assist schools to become asthma-friendly (e.g., train-the-trainer program for school walkthroughs) and implement as appropriate.
3. Increase the number of school nurses in Minnesota by requiring every school district to employ one full time licensed school nurse for every 750 students in the district.
4. Distribute information to school coaches on the on-line Coach’s Asthma Clipboard program at www.WinningWithAsthma.org.
5. Support inclusion of asthma in school wellness policies and develop appropriate materials.

Potential Partners: *SNOM, MDE, School districts, Community Education*

Objective C: Increase the number of care providers who have participated in asthma education programs.

1. Convene a work group to identify most appropriate delivery mechanisms and content of asthma education to legal unlicensed and licensed care providers (e.g., foster care, crisis nurseries, day care centers, adult care centers, camps).
2. Provide in-person training, facilitated by regional MAC coalitions, to legal unlicensed or licensed care providers at least two times a year using information identified by above work group.
3. Identify or develop and disseminate asthma education programs for out-of-school time providers, especially those who work with adolescents.

Potential Partners: *Child care consultants, Youth Community Connections, Adult day care agencies, Youth development programs, AARP, ALAMN, MVNA-child care consultants, DHS- Licensure, Minnesota Child Care Resources & Referral Network, MDH - Divisions of Environmental Health and Health Promotion and Chronic Disease, Minneapolis Urban League*

Objective D: Increase the number of local public health agencies engaging in asthma activities

1. Complete and promote the local public health toolkit based on the Washington County asthma initiative.

The “Catching Our Breath” asthma initiative in Washington County is a multi-faceted public awareness and action campaign targeted to the general public, coaches, health care providers and people with asthma. It is also providing resources to families and health care providers to raise awareness and improve asthma management.

2. Assist local public health agencies in using the toolkit to develop multi-faceted community-based initiatives.
3. Train local public health agencies on how to incorporate asthma self-management and interventions to reduce environmental asthma triggers into home visits.
4. Encourage local public health agencies to actively participate in regional asthma coalitions (MAC).

Potential Partners: *PHS, MDH-MCASHN and PHN district consultants and MCH staff, Local Public Health, Washington County Public Health and Environment, MAC*

Objective E: Increase communication among health professionals, parents, guardians, schools and other caregivers to promote a continuum of care for people with asthma.

1. Form a multi-disciplinary, statewide group that provides advice and guidance on the implementation of the state asthma plan.
2. Continue and strengthen the Minnesota Asthma Coalition.
3. Establish an inter-departmental state agency asthma work group comprised of key stateholders and meet quarterly.
4. Partner with MDH programs to integrate asthma related services including education, awareness, data collection and reporting, and improving care coordination and case management.

Potential Partners: *FQHCs, Health Disparities Collaboratives, Neighborhood Health Care Network, MN Academy of Pediatrics, MDH –Family & Community Health, Health Promotion, C & TC, WIC, MCASHN, Informatics, Genomics and other chronic disease programs, DHS, MDE, Office of Public Safety, DOER, Admin, Dept of Labor and Industry, MAC, ALAMN*

Objective F: Improve and expand emergency preparedness education for patients/caregivers/care providers/ and consultants, focusing on respiratory care needs during a disaster.

1. Develop and distribute, primarily through the web, a sample individual/family/school emergency preparedness planning kit for individuals with asthma.
2. Provide guidance to public health preparedness coordinators in each local public health agency on use of kit and distribution of above information in collaboration with MDH Public Health Preparedness Consultants.
3. Develop and maintain lists of local and regional pharmacies, including those in clinics and hospitals, willing to donate medications.
4. Develop and maintain regional lists of medical equipment companies or others willing to assist respiratory disease patients in accessing portable equipment (i.e., compressor-nebulizer units, generators, oxygen tanks) and transportation to enable provision of emergency care.
5. Create a list of asthma medications and supplies that could be needed by people with asthma and other respiratory illnesses.
6. Provide information about where individuals with asthma can obtain care in an emergency.
7. Provide information about how physicians and other medical personnel can be mobilized for delivery of emergency asthma care.

Potential Partners: *MDH Office of Emergency Preparedness, MDH Public Health Preparedness consultants, Minnesota Emergency Readiness and Training (MERET) CPHEO, MAC, MDE, ALAMN*

GOAL #6 - Health Professionals: Utilizing the NAEPP asthma guidelines and best practice methods, ensure that all Health Care Professionals (HCPs) who treat people with asthma assist patients to achieve optimal asthma control, and through self-management education, to effectively manage their asthma.

Objective A: Increase the appropriate prescribing of inhaled corticosteroids (ICS)/ controller medications.

1. Determine best method(s) to communicate new guidelines, updates and critical steps to providers, with a focus on Pediatricians, Internal Medicine, Family Practice, Nurse Practitioners, and Physician Assistants (PAs). (*Health plans, private practice groups, professional organizations, clinic systems to determine best methods*).

2. Form an advisory group to determine what key messages from the NAEPP guidelines need to be delivered to HCPs. Identify or develop a user friendly tool (quick and easy) for HCPs to use in the exam room. Distribute this tool to HCPs who care for people who have asthma.

Potential Partners: *MN Medical Association, MN Nurses Association, MN Academy of Family Physicians, American Academy of Pediatrics-MN Chapter, MN Council of Health Plans, ICSI, MN Society for Respiratory Care, American Thoracic Society, SNOM, MN NAPNAP, Health Plans, ALAMN, MAC*

3. Pharmacists will identify the overuse of prescriptions of albuterol (and other rescue medication) and refer the patient back to the prescribing provider for follow-up.
4. Pharmacists will provide one on one education to people with asthma (or parents/caregivers) and provide supporting written educational materials.
5. Pharmacies will post educational notices by inhaled epinephrine encouraging those purchasing this non-prescription medication to discuss appropriate asthma care with the pharmacist.

Potential Partners: *MN Pharmacists Association, PBMs, Chain Pharmacies*

Objective B: Significantly increase providers' use and distribution of asthma action plans.

1. Modify the Interactive Asthma Action Plan (IAAP) to work with EHR computerized systems creating a prompt for notes and reassessment of measures of control. Engage EHR stakeholders to assist in development, funding and incorporation of ONE prompting program by all.
2. Educate providers on how to complete AAPs appropriately.
3. Encourage providers to complete and share AAPs with schools, daycare centers, etc.

Potential Partners: *HIMSS (Healthcare Information & Mgmt Systems Society –MN chapter), Hennepin County Medical Center, ALAMN, MN Academy of Family Physicians, American Academy of Pediatrics-MN Chapter, ICSI, MN Academy of Physician Assistants, MDH E-Health Advisory Committee*

Objective C: HCPs will utilize the NAEPP guidelines to re-assess the control level and educational and treatment needs of their asthma patients and step up or step down the prescribed therapeutic intensity.

1. Form an advisory group to identify and evaluate comprehensive, evidence based programs (e.g., “Easy Breathing” or “Asthma Days” that would work with Minnesota’s health care systems.

2. Identify and (if needed) develop accredited online continuing educational programs for all HCPs and identify an appropriate organization to host these programs on an internet website.
3. Ensure that institutions will use these programs to educate physicians, nurses, PAs, pharmacists, respiratory therapists, and EMTs on how to utilize the NAEPP guidelines and the importance of regular asthma reassessment.

Potential Partners: *HIMSS (Healthcare Information & Mgmt Systems Society –MN chapter), ALAMN, MN Academy of Family Physicians, American Academy of Pediatrics-MN Chapter, ICSI, MN Academy of Physicians Assistants, Minnesota Medical Association (MMA), Minnesota Nurses Association (MNA), Minnesota Health Plans*

Objective D: All MN secondary institutions that educate/ train HCPs will incorporate the NAEPP guidelines into their respiratory disease / asthma curriculum by 2012.

1. Identify key decision makers to contact in order to make changes to curriculum at secondary educational institutions (Universities, Technical colleges, Community colleges etc).
2. Create an advisory group to locate or develop curriculum friendly materials of the NAEPP Asthma Guidelines to be incorporated into curricula of universities, etc.

Potential Partners: *Accreditation Council for Graduate Med Educ. (ACGME), University of MN, MMA, MNA, MN NAPNAP, Pediatricians, Family Physicians*

3. Incorporate into the Public Health Nursing curriculum opportunities for students to learn comprehensive asthma.

Potential Partners: *MPHA, UMN School of Nursing, Other MN nursing programs*

Objective E: Make institutions aware of the value of Certified Asthma Educators (AE-C) and the AE-C course, promote it to health professional students, and increase the number of Certified Asthma Educators in MN.

1. Create materials that describe the benefits of becoming an AE-C and distribute to secondary institutions. Include verbal discussion with institutional decision makers regarding the need for certified asthma educators.
2. Support the continued offering of Certified Asthma Educator preparatory courses across the state, with at least 75 participating each year.
3. Identify funding sources that may offer scholarships to take the AE-C course and certification testing.

4. Encourage reimbursement by employers for the cost of taking the course and exam.

Potential Partners: *ALAMN, MAC, All MN Health Plans, All MN Health Professional Organizations, Neighborhood Health Care Network*

GOAL #7 – Systems Change: Ensure that health systems and their partners will use best practices (i.e., NAEPP guidelines) through coordination of systems processes, information sharing, and reasonable reimbursement for optimal asthma care.

Objective A: Create and disseminate best practice standardized asthma pathways at the individual and community level.

1. Develop individual and community level asthma pathways based on best practices and NAEPP guidelines, using standardized language such as the Omaha system.
2. Promote use of software systems (e.g., CareFacts, CHAMP, PH DOC) that incorporate Omaha System pathways at local public health agencies to document and track public health department asthma interventions.
3. Promote the development of communication pathways between school and community based health providers to facilitate coordinated care for asthma.
4. Collaborate with MN-Public Health Information Network to improve use of information and information systems.

Potential Partners: *Washington County Public Health and Environment, MDE, HLAI, HIMSS (MN Chapter), MN-PHIN*

Objective B: Locate and distribute a chronic care continuum model that ensures comprehensive coordination of care for people who have asthma.

1. Convene an advisory group to develop or modify a comprehensive performance measure of optimal care for asthma based on NAEPP guidelines that includes outcome-based incentives (such as pay for performance) and identify supporting structural systems.
2. Support the roll of and identify Asthma Champions in the health professional community.
3. Work with health systems to further implement best practices of asthma care (i.e., NAEPP guidelines) in a collaborative manner.
4. Work towards information sharing, possibly via electronic health records, between clinical professionals who care for children with asthma and school nurses, staff of C & TC, WIC, MCSHN, LPH, and MDE.

Potential Partners: *Local Public Health, MN E-Health Initiative Advisory Committee, DHS, Health plans, MN Community Measurement Project, Data Intelligence, Inc., ALAMN, ICSI, Asthma Champions, Clinic systems, SNOM*

Objective C: Promote coverage and adequate reimbursement of appropriate individual and group asthma education and smoking cessation programs by all health payors.

1. Convene a work group to develop a plan for promoting reimbursement of services that are delivered in clinic, community and home-based settings and through disease management programs.
2. Educate home care, local public health, clinic, and school personnel on how to obtain reimbursement for education activities conducted by Certified Asthma Educators and others providing asthma education and case management.
3. Disseminate information about health payors that cover smoking cessation programs.
4. Develop policy and funding recommendations for home-based intervention programs that are evidence-based and addresses asthma self-management including environmental asthma triggers specific to the individual with asthma.
5. Make available to health payors the policy and funding recommendations developed.
6. Encourage reimbursement for asthma education provided by Certified Asthma Educators.

Potential Partners: *Health Plans, Health insurance brokers, Consultants for self-insured medical plans, ICSI, Employer associations, Pediatric Home Service, ALAMN, EPA, Local Public Health, Minneapolis Urban League*

Conclusion

Asthma is a major public health problem, both nationally and in Minnesota. Untreated or inadequately treated, it results in excess hospitalizations, elevated rates of school and work absenteeism, lost productivity, disability, and increased health care costs. Because it is treatable and manageable, successful public health education and prevention efforts could reap large returns in cost savings, productivity gains, and improved quality of life for individuals with asthma and their families. In 2002 the state plan concluded as follows:

“The Commissioner's Asthma Advisory Work Group encourages the Minnesota Department of Health and its partners in asthma to move forward with the recommendations in this plan with a sense of urgency. Implementing and evaluating these recommendations will significantly reduce medical emergencies and enhance the lives of people with asthma. We urge the MDH to seek implementation funding for this plan from the federal government, the state legislature, and private sources in order to implement these recommendations, and we look forward to continuing as active partners in working with the MDH to implement this plan and monitor intervention activities.”

In 2007 we echo these thoughts and again advocate that this revised plan move forward with a sense of urgency. And, once again, we look forward to continuing as active partners in working with the MDH to implement this plan and monitor intervention activities.

APPENDIX A
2007 Minnesota Asthma Steering Committee

Chair:

Don Uden, Pharm D, Associate Dean for Student Services, Professor, University of Minnesota College of Pharmacy, and Chair, Minnesota Asthma Coalition

Members:

Kristen Benson, MD, MS, Pediatrics, Park Nicollet Clinic

Gail M. Brottman, MD, Director, Pediatric Pulmonary Medicine, Hennepin County Medical Center

Janny Brust, MPH, Director, Medical Policy and Community Health, Minnesota Council of Health Plans

Mitchell Davis Jr., Director, Office of Minority and Multicultural Health, Minnesota Department of Health

Penny Gottier Fena, Senior Vice President, Mission Services, American Lung Association of the Upper Midwest

John Finnegan, Jr., PhD, Dean, University of Minnesota School of Public Health

Ann Garwick, PhD, University of Minnesota School of Nursing

Patrick B. Herson, MD, MS, FAAFP, Medical Director, BlueCross BlueShield of Minnesota

Linda Higgins, Senator, Minnesota State Senate

Cynthia Hiltz, RN, LSN, MS, NCSN, President, School Nurse Organization of Minnesota

Gary Johnson, RRT, Minnesota Society of Respiratory Care

Deb Loy, MN Steps State School Coordinator, Minnesota Department of Education

Karen Monsen, PhD, RN, Program Manager, Washington County Public Health and Environment

Mee Lee Chan Nelson, MD, Minnesota Allergy Society

Kathy Tingelstad, State Representative, Minnesota House of Representatives

Bill Toscano, PhD, Professor and Head, Division of Environmental Health Sciences, University of Minnesota School of Public Health

Mary Winnett, MD, MPH, State Chronic Disease Epidemiologist, Minnesota Department of Health

Barbara Yawn, MD, MSc, Olmsted Medical Center

Minnesota Department of Health Asthma Program Staff:

Janet Keysser, MA, MBA, Asthma Program Manager

Wendy Brunner, MS, Epidemiologist, Senior

Erica L. Fishman, MSW, MPH, Asthma Program Coordinator

Laura Oatman, MS, Environmental Research Scientist

Susan K. Ross, RN, BSHA, AE-C, Clinical Advisor, Senior

Janis Smith, Office and Administrative Specialist, Senior

Consultant:

Kelly Albright Raatz, KAR Consulting

APPENDIX B

Data and Surveillance Work Group Membership:

Members:

Michelle Brasure, MSPH, PhD, Center for Health Promotion, Minnesota Department of Health

Merritt Callahan, MA, Medica

Angie Carlson, RPh, PhD, Data Intelligence Consultants, LLC

Kevan Edwards, MA, Health Economic Program, Minnesota Department of Health

Lisa Herschberger, MS, MPH, Minnesota Pollution Control Agency

Allison La Pointe, MPH, Great Lakes Inter-Tribal Council, Inc.

Jean T. Larson, MS, PHN, Minnesota Children with Special Health Needs, Minnesota Department of Health

Allan Malkis, Northway Community Trust

Jean Moon, Pharm D, AE-C, TTS, Pharmaceutical Care & Health Systems, University of Minnesota College of Pharmacy

Berit Peterson, RN, MPH, LSN, Edina Public Schools

Debra Stenseth, Minnesota Department of Human Services

Sheldon Swaney, BA, Hennepin County Human Services & Public Health Department

Kristi Van Riper, MPH, CHES, American Lung Association of Minnesota

Barbara Yawn, MD, MSc, Olmsted Medical Center

MDH Staff:

Wendy Brunner, MS, Epidemiologist, Senior

Jean Johnson, MS, PhD, Epidemiologist, Principal

Environment Work Group Membership:

Chair:

William J. Angell, Professor and Director, Indoor Air Project, University of Minnesota

Members:

Phil Allmon, Minnesota Department of Education

Sheila Batka, U.S. Environmental Protection Agency Region 5

Dana Dickson, MIS, CIH, CSP, Unisys Corporation

Bill Droessler, Clean Air Minnesota

Collie Graddick, Minnesota Department of Agriculture

Tammy John, South Washington County School District

Steve Klossner, Advanced Certified Thermography

Chris LeClair, Washington County Public Health & Environment

Barbara Lehn, RRT, AE-C, Pediatric Home Service

Rick Nelson, Alexandria School District

Joan Nephew, Institute for Environmental Assessment

Kathy Norlien, Minnesota Department of Health, Indoor Air Program

Eliza Schell, City of Minneapolis Regulatory Services

Chuck Stroebel, Minnesota Department of Health, Health Risk Assessment Program

Mark Sulzbach, Minnesota Pollution Control Agency

Ellie Watkins, Association of Non Smokers-Minnesota

Judy Wothke, South East Minnesota Regional Asthma Coalition

Jim Yannarely, St. Paul Ramsey County Health Department

MDH Staff:

Laura Oatman, MS, Environmental Research Scientist

Individual/Family/Community Work Group Membership:

Chair:

Karen Monsen, PhD, RN, Washington County Public Health and Environment

Members:

Karin Alaniz, PhD, RN, University of Minnesota School of Nursing

Elaine M. Anderson, PreferredOne

Joey Cottew, YMCA Camp Ihduhapi

Alison Fradenburgh, AE-C, South Central Minnesota Asthma Coalition

Nicki Groves, MD, Stillwater Medical Group

Lisa Hagen, RN, MSN, CNS, Hennepin County Medical Center

Michelle Hahn, RN, BSN, PHN, Healthy Child Care Minnesota

Jill Heins Nesvold, MS, American Lung Association of Minnesota

Paul Iverson, BS, RPh, Iverson Corner Drug & Northwest Asthma Coalition

Kay Kufahl, RRT, AE-C, Pediatric Home Service

Lillian Levine, RN, LSN, School Nurse Organization of Minnesota

Ruth Ellen Luehr, RN, MS, FNASN, Minnesota Department of Education- Safe & Healthy Learners

Michael McGrail, MD, MPH, Associate Director Primary Care, HealthPartners

Makeda Norris, Minneapolis Urban League

Luanne Nyberg, MPH, Hennepin County Human Services and Public Health Department

Joän Patterson, PhD, University of Minnesota School of Public Health

Mary Pohl, MD, Minnesota Department of Human Services

Amy Roggenbuck, BA, Southwest Regional Asthma Coalition

Donna Sherlock, Beverly Foundation and Fingerhut Family Foundation

Janice Sieger, RN, MPH, FNP, Minnesota Department of Health, Tobacco Cessation Specialist

Cheryl Smoot, RN, PHN, MPH, Minnesota Department of Health, School Health Consultant

Pat Tommet, RN, PhD, CNP, Minnesota Department of Health, Office of Emergency Preparedness

Bill Wheeler, MD, Children's Respiratory & Critical Care Specialists

MDH Staff:

Erica L. Fishman, MSW, MPH, Asthma Program Coordinator

Health Professional Education Work Group Membership:

Chair:

Denise Herrmann, RN, LSN, CNP, AE-C, St. Paul Public Schools

Members:

Sofia Ali, MD, MPH, American Lung Association of Minnesota

Lori Anderson, RT, Astra Zeneca

Beth Baker, MD, MPH, Occupational & Environmental Medicine, HealthPartners

Dory Baker, RN, CNP, AE-C., Children's Hospitals & Clinics of Minnesota

Barry Bershaw, MD, Medical Director, Quality & Information Systems, Fairview Lakeville Clinic

Allyson Brotherson, MD, MS, Program Director, Dept. of Family and Community Medicine, Hennepin County Medical Center

Hannelor A. Brucker, MD, Southdale Allergy & Asthma Clinic

Steven S. Colliton, Regional Account Manager, Schering - Plough

Vicki Engmark, RT, Hennepin County Medical Center

Deborah Haider, BSBM, AE-C, CRT, GlaxoSmithKline

Doreen Hanson, PHN, Douglas County Public Health

Peter Harper, MD, MPH, Family Practice, Smiley's Clinic

Jackie Heying, RN, CNP, Mayo Clinic

Mary Bielski Heiman, RN, LSN, MS, Nursing Services Manager, Minneapolis Public Schools

Brenda Guyer, MD, Allergy and Asthma Specialist, Park Nicollet Medical Center

Ken Joslyn, MD, Medical Director, Quality & Population Health, Medica

Linda L. Lindeke, PhD, RN, CNP, Associate Professor, University of Minnesota School of Nursing

Megan M. Mahoney, MD, Assistant Director, Duluth Family Medicine Residency Program

Jeff Rubins, MD, Pulmonologist, Veteran's Affairs Medical Center

John Ryan, RT, Merck Pharmaceuticals

Don Uden, Pharm D, Associate Dean for Student Services, Professor, University of Minnesota
College of Pharmacy

Christopher Williams, MD, Pediatrician, Park Nicollet Clinic

MDH Staff:

Susan K. Ross, RN, BSHA, AE-C, Clinical Advisor, Senior

Work-Related Asthma Work Group Membership:

Members:

David Abrams, CIH, ARS Environmental Health, Inc.

Beth Baker, MD, MPH, Regions Hospital Occupational & Environmental Medicine

Lisa Brosseau, ScD, CIH, University of Minnesota School of Public Health

Wendy Brunner, MS, Minnesota Department of Health, Asthma Program

Dana Dickson, MIS, CIH, CSP, Unisys Corporation

Barbara Gibson, MD, MPH, 3M Company

Susan Graca, RN, BSN, The Valspar Corporation

Ian Greaves, MD, University of Minnesota School of Public Health

Clayton Handt, MIS, Minnesota Department of Labor and Industry, Minnesota OSHA

Jean Johnson, MS, PhD, Minnesota Department of Health, Chronic Disease and Environmental Epidemiology

Richard Johnston, Minnesota Finishing Trades

Steve Kirkhorn, MD, MPH, FACOEM, National Farm Medicine Center

James Kubisiak, MS, CIH, Minnesota Department of Employee Relations, Safety & Industrial Hygiene Unit

William Lohman, MD, Minnesota Department of Labor and Industry

Dave Mlakar, Steelworkers Union

Elizabeth Shogren, RN, Minnesota Nurses Association

Allan Williams, MPH, PhD, Minnesota Department of Health, Chronic Disease and Environmental Epidemiology

MDH Staff:

Subha Chandar, MPH, Prevention Specialist from the CDC Public Health Prevention Service

Laura Oatman, MS, Environmental Research Scientist

APPENDIX C - Glossary

The words or phrases listed below are defined as they are used in the state plan.

Allergens – Substances that set off an allergic reaction such as pollen, dust mites, animal dander, and some medications.

Asthma action plan – A document that outlines the treatment approach for an individual asthma patient; developed in consultation with the health care provider, family members and caregivers. Effective action plans help patients control their asthma and live healthy active lives.

Asthma attack – Also called exacerbation or episode, an asthma attack occurs when the muscles surrounding an asthmatic's airway are constricting causing difficulty breathing.

Asthma self-management – Provided with the necessary information, tools, resources, therapeutic regimen, and asthma care plan, the ability for an individual to exercise their knowledge of their condition and acquired skills to effectively monitor, make decisions, and implement appropriate measures regarding their asthma care, including when to seek further medical attention.

Asthmagens – Agents in the workplace that may trigger or worsen asthma symptoms. These include triggers, sensitizers, or irritants.

Certified asthma educator (AE-C) – A certified asthma educator is a credentialed health care professional who has expertise and skills to educate patients about their asthma. This expertise and skills are verified through a national certification exam that became available in October 2002. Only after successful completion of this national certification exam can a health care professional call themselves a "certified asthma educator."

Environmental tobacco smoke (ETS) – A mixture of smoke from the burning end of a cigarette, pipe, or cigar and smoke exhaled by the smoker (also secondhand smoke (SHS) or passive smoking).

Environmentally preferable products – Products that have a lesser or reduced effect on human health and the environment when compared to competing products that serve the same purpose.

Health and safety staff – Any staff person who is responsible for developing and implementing health & safety programs.

Health care professional (HCP) – Licensed and highly trained medical professions such as physicians, certified nurse practitioners, pharmacists, physician assistants and nurses. Provide medical services in the areas of prevention, treatment, and management of illness.

Health plans – Health maintenance organizations, preferred provider organizations, community integrated service networks, insured plans and other plans that cover health care services.

Hierarchy of controls – An approach used to determine feasible and effective exposure control solutions. A common representation of the hierarchy is: elimination, substitution, engineering controls, administrative controls, and personal protective equipment. Control methods at the top (elimination) are potentially more effective and protective than those at the bottom (personal protective equipment) and should be used first whenever possible.

Inhaled Corticosteroid (ICS) – the most potent and effective inhaled anti-inflammatory agent currently available. Inhaled form is used as a controller medicine for the long-term control of asthma.

Irritants – Inhaled substances in the environment such as diesel exhaust, perfume, ETS and tobacco smoke that may cause an asthma exacerbation (attack).

Licensed School Nurse (LSN) – a registered nurse with public health certification and licensure by the Minnesota Board of Teaching to practice professional school nursing.

Model Partnership – A relationship between two organizations identified by the WRA Advisory work group to serve as a demonstration of an innovative approach to address WRA for future interventions.

NAEPP – National Asthma Education Prevention Program is a program within the NIH (National Institutes of Health) under the NHLBI (National Heart Lung & Blood Institute). The NAEPP convened 3 separate expert panels from across the United States to review evidence based programs and make specific recommendations for asthma guidelines. The result is “Guidelines for the Diagnosis and Management of Asthma”, currently being revised for release in 2007.

New-Onset Asthma - Asthma that develops after exposure to sensitizers or irritants in the workplace.

OSHA Consultation Alliances – Minnesota OSHA Workplace Safety Consultation Program provides consultation services to help employers prevent accidents and diseases through several employer-assistance programs. OSHA Consultation establishes partnerships with organizations committed to workplace safety and health to prevent injuries and illnesses in the workplace. Workplace Safety Consultation and its allies work together to reach out to, educate, and lead Minnesota employers and their employees in improving and advancing workplace safety and health.

Physician Asthma Care Education (PACE) – A multifaceted training program to improve physician awareness, attitudes, ability, and application of communication and therapeutic skills for asthma.

Potential Partners – Organizations identified by the work groups that should be involved in the implementation of the strategic plan for addressing asthma throughout the state.

Rescue medication – Typically albuterol or pirbuterol, this medication is inhaled when a person with asthma is having an asthma exacerbation (attack). The medication relaxes the muscles surrounding the airways.

Respiratory Therapist - RT, RRT, CRT - are specialists in airway management, mechanical ventilation, blood acid/base balance, and critical care medicine. RTs work closely with other medical disciplines.

State Profile for Environment – A document reviewing information on Minnesota asthma surveillance data, reviewing exposure research on environmental triggers in Minnesota, and evaluating outreach and intervention activities conducted in other states to specifically address risk factors and triggers associated with Minnesota’s environment to guide strategic plan activities (see Goal #2, Objective A).

State Profile for Work-Related Asthma – A document reviewing information on business, industry, and agriculture and worker health in Minnesota specifically addressing risk factors and asthmagens associated with work-related asthma to guide strategic plan activities (see Goal #3, Objective E).

Trigger – A substance or environmental condition that causes asthma symptoms or allergy symptoms to appear.

Twin Cities metropolitan area – Includes the 7 counties of Anoka, Carver, Hennepin, Ramsey, Scott and Washington.

Wheezing – A high pitch whistling noise in the chest.

Work-Aggravated Asthma - Preexisting asthma exacerbated by workplace exposures.

Work-related asthma – Asthma that develops after exposure to sensitizers or irritants in the workplace (new-onset asthma) or aggravated (work-aggravated asthma) by exposures in the workplace.

APPENDIX D

Asthma Partner and Resource Websites

Organization	Website
Accreditation Council for Graduate Medical Education (ACGME)	http://www.acgme.org/acWebsite/home/home.asp
American Academy of Allergy Asthma & Immunology	http://www.aaaai.org/
American Academy of Pediatrics – MN Chapter	http://www.mnaap.org/
American College of Allergy, Asthma & Immunology	http://www.acaai.org/
American College of Emergency Physicians	http://www.acep.org/webportal
American College of Physicians	http://www.acponline.org/
American Heart Association	http://www.americanheart.org
American Lung Association of MN (ALAMN)	http://www.alamn.org
American Thoracic Society; Managing asthma guidelines.	http://www.thoracic.org
Apria Healthcare - Regional Clinical Association of Minnesota Counties (AMC)	http://www.apria.com
Association of Non Smokers-MN	http://www.mncounties.org/
Association of Occupational & Environmental Clinics	http://www.ansrmn.org/
Astra Zeneca	http://www.aoec.org/aoeccode.htm
BlueCross BlueShield of MN	http://www.astrazeneca-us.com
Building Owners & Managers Association - St. Paul	http://www.bluecrossmn.com
Buyers Health Care Action Group	http://www.bomastpaul.org
Centers for Medicare and Medicaid Services	http://www.bhcag.com/
Children’s Hospitals and Clinics of Minnesota	http://www.cms.hhs.gov/
City of Minneapolis	http://www.childrensmn.org
Clean Air MN	http://www.ci.minneapolis.mn.us/
Controlling Asthma in American Cities	http://www.mn-ei.org/air/index.html
Douglas County Public Health	http://www.alamn.org/americancities/
Duluth Family Medicine Residency Program	http://www.co.douglas.mn.us/public_health.htm
Early Childhood Family Education	http://www.dfprp.org/dgmec.htm
GlaxoSmithKline	http://www1.minn.net/~ecfe/index.html
Great Lakes Inter-Tribal Council, Inc.	http://us.gsk.com/
	http://www.glitc.org/

HealthPartners	http://www.healthpartners.com
Healthy Child Care Minnesota	http://www.healthychildcare.org
Hennepin County Human Services & Public Health Dept.	http://wwwa.co.hennepin.mn.us
Hennepin County Medical Center (HCMC)	http://www.hcmc.org
Institute for Clinical Systems Improvement	http://www.icsi.org
Institute for Environmental Assessment	http://www.ieainstitute.com
Local Public Health Association (LPHA)	http://www.mncounties2.org/lpha/
Mayo Clinic	http://www.mayoclinic.com/
Medica Health Plan	http://www.medica.com
Merck Pharmaceuticals	http://www.merck.com/
Metropolitan Council	http://www.metrocouncil.org/
Metropolitan Health Plan	http://www.mhp4life.org/
Minneapolis Public Schools	http://www.mpls.k12.mn.us/
Minneapolis Urban League	http://www.mul.org/
MN Academy of Family Physicians	http://www.mafp.org/
MN Academy of Physician Assistants	http://www.mnacadpa.org
MN Association of School Administrators (MASA)	http://www.mnasa.org/
MN Asthma Coalition	http://www.mnasthma.org
MN Center for Cross Cultural Health (CCCH)	http://www.crosshealth.com/
MN Chapter of National Assoc. of Ped. Nurse Practitioners	http://www.mnapnap.org/
MN Child Care Resource & Referral	http://www.mnchildcare.org/
MN Children's Health Environmental Coalition	http://www.kidsforsavingearth.org/mnchec/
MN Coaches Association	http://www.minnesotacoaches.org/
MN Community Action Partnership	http://www.mncaa.org/
MN Council of Health Plans	http://www.mnhealthplans.org/healthplans/
MN Department of Agriculture (MDA)	http://www.mda.state.mn.us
MN Department of Commerce	http://www.commerce.state.mn.us
MN Department of Education (MDE)	http://children.state.mn.us/mde/index.html
MN Department of Health (MDH)	http://www.health.state.mn.us
MN Department of Health - Asthma Program	http://www.health.state.mn.us/asthma/
MN Department of Health -Center for Health Promotion	http://www.health.state.mn.us/divs/hpcd/chp/
MN Department of Health -Community & Family Health	http://www.health.state.mn.us/divs/fh/mch/familyplanning/
MN Department of Health -Division of Environmental Health	http://www.health.state.mn.us/divs/eh/index.html
MN Department of Health -Health Policy & Systems Compliance (HPSC)	http://www.health.state.mn.us/divs/hpsc/hpsc.html

MN Department of Health -MN Children with Special Health Needs	http://www.health.state.mn.us/divs/fh/mcshn/mcshn.html
MN Department of Health -Tobacco Prevention & Control	http://www.health.state.mn.us/divs/hpcd/tpc/tpc.html
MN Department of Human Services (DHS)	http://www.dhs.state.mn.us
MN Department of Labor & Industry- Building Codes	http://www.doli.state.mn.us/buildingcodes.html
MN Department of Labor & Industry- MN OSHA	http://www.doli.state.mn.us/mnosha.html
MN Department of Transportation (MNDOT)	http://www.dot.state.mn.us/
MN E-Health Initiative	http://www.health.state.mn.us/e-health/
MN Head Start Association	http://mnheadstart.org/
MN Hospital Association	http://www.mnhospitals.org/
MN Action for Healthy Kids	http://www.actionforhealthykids.org/state_profile.php?state=MN
MN Licensed Practical Nurse Association (MLPNA)	http://www.mlpna.com/index.htm
MN Medical Association (MMA)	http://www.mmaonline.net/
MN Multi Housing Agency (MHA)	http://www.mmha.com/
MN Nurses Association	http://www.mnnurses.org/
MN Pharmacists Association	http://www.mpha.org/
MN Pollution Control Agency	http://www.pca.state.mn.us
MN Public Health Association	http://www.mpha.net/
MN Safety Council	http://www.minnesotasafetycouncil.org/
MN School Boards Association (MSBA)	http://www.mnmsba.org/public/main.cfm
MN Smoke-Free Coalition	http://www.smokefreecoalition.org/
MN Society of Health-System Pharmacists	http://www.mnshp.org/
MN Society of Respiratory Care (MSRC)	http://msrcnet.com/
MN State Colleges and Universities	http://www.mnscu.edu/
MN Visiting Nurse Agency	http://www.mvna.org
National Association of Home Builders (NAHB)	http://www.nahb.org/
National Association of the Remodeling Industry	http://www.nari.org/
National Institutes of Health	http://www.nih.gov/
National Sanitation Foundation	http://nsf.org/
Occupational & Environmental Medicine	http://oem.bmj.com/
Olmsted Medical Center	http://www.olmmed.org/
OSHA-Occupational Safety & Health Administration	http://www.osha.gov/
Park Nicollet Health Services	http://www.parknicollet.com/
Pediatric Home Service	http://www.pediatrichomeservice.com/
PreferredOne	http://www.preferredone.com

Realtors Association of Minnesota	http://www.mnrealtor.com/
Rebuild America	http://www.eere.energy.gov/buildings/program_areas/rebuild.html
Schering Plough Managed Markets	http://www.schering-plough.com
School Nurse Organization of MN (SNOM)	http://www.minnesotaschoolnurses.org/
Steps to a HealthierUS	http://www.stepstohealthiermn.org/
St. Paul Public Schools	http://www.stpaul.k12.mn.us
St. Paul-Ramsey County Public Health	http://www.co.ramsey.mn.us/ph
UCare MN	http://www.ucare.org/
United States Centers for Disease Control and Prevention	http://www.cdc.gov/health/asthma.htm
University of MN Cold Climate Housing	http://www.extension.umn.edu/HousingTech/
University of MN College of Pharmacy	http://www.pharmacy.umn.edu
University of MN Extension Service	http://www.extension.umn.edu/
University of MN Hospitals and Clinics	http://www.ahc.umn.edu/centers/home.html
University of MN School of Medicine	http://www.med.umn.edu/
University of MN School of Nursing	http://www.nursing.umn.edu
University of MN School of Public Health	http://www.sph.umn.edu/
US Dept. of Housing & Urban Development	http://www.hud.gov/
US Environmental Protection Agency Indoor Environments	http://www.epa.gov/iaq
US Environmental Protection Agency Region 5	http://www.epa.gov/Region5/
Washington County Public Health & Environment	http://www.co.washington.mn.us/info_for_residents/public_health/

Development of this plan was supported by Grant/Cooperative Agreement #U59/CCU522470 from the Centers for Disease Control and Prevention (CDC). Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the CDC.