

Asthma Interventions and Cost Consequences — Synthesis of Research Findings

OVERVIEW

Currently 15 million Americans have asthma, including 9 million children younger than 18 (12.5% of all children in this age group).^{1,2} Problems associated with asthma are continuing to grow; nationally between 1980 and 1995, the prevalence of asthma and asthma related emergency room visits increased 74% and 36% respectively.³ Recommendations for treating asthma include both drug therapy and removing allergens from the environment, but adherence to these guidelines can be challenging. Both families and providers often need additional education and support to fully manage childhood asthma.^{4, 5, 6}

EFFECTIVE INTERVENTIONS

Proper management of asthma through disease management programs has been shown to decrease hospitalizations, emergency room visits, and increase symptom free days.^{7, 8, 9} School based health clinics are another strategy for improving asthma outcomes. These clinics are often the only source of healthcare for many children, and have been shown to decrease asthma-related community physician visits and use of asthma rescue medications.¹⁰ Interagency programs improving the living environments of children by reducing household triggers also positively impact asthma outcomes. These programs can increase symptom free days, decrease days missed from school, and decrease use of urgent care clinics.^{11, 12}

ECONOMIC IMPACT

In addition to experience of poor health, asthma also imposes a significant economic burden on families and agencies caring for these children. A recent estimate found the total direct and indirect annual cost of asthma for children aged 5-17 was \$1,098 per child, or \$2.8 billion nationally. Of these costs, \$919 million (\$364 per child) were indirect costs from parent's lost productivity at work, and \$1.5 billion (\$600 per child) were from direct medical expenditures (all costs inflation adjusted to 2006).¹³ When comparing the costs of treating children with and without asthma, medical expenditures for children with asthma were 2.4 times higher than those without this condition. The type of service children with asthma use varies depending on insurance type. Children with publicly funded insurance, such as Medicaid, are more likely to visit the emergency room than those with private insurance. Emergency room visits usually result from uncontrolled asthma, or an unclear asthma management plan.^{14, 15}

ROLE OF MCH PROGRAMS

One crucial function state MCH programs play is coordinating financial resources, community members, and experts in the field to work together on health issues affecting women and children. By providing the infrastructure and staff for community wide asthma coalitions, MCH programs lay the groundwork for collaborative community efforts. The Asthma Health Outcomes Project, a national study evaluating the effectiveness of over 100 asthma programs, found that programs closely tied to the community and programs collaborating with other agencies were more effective than those without community ties or collaborations.¹ These are the types of programs and interventions MCH departments around the country are supporting.

STATE ACTIVITIES:

Examples of these activities include:

- Conducting asthma training seminars at public health clinics (CT)
- Forming collaborative task forces with other agencies and experts in the field to more successfully address the problem (CT, MD)
- Educating school nurses and providing teachers with training materials on asthma management (NJ)

¹ Asthma Health Outcomes Project Preliminary Field Report. 2006.

http://www.asthma.umich.edu/media/ahop_autogen/AHOP_Preliminary_Field_Report_5.1.06.pdf

² Centers for Disease Control and Prevention. QuickStats. MMWR April 29, 2005; 54(16):412.

³ Centers for Disease Control and Prevention. Surveillance for Asthma – United State, 1980-1999. MMWR March 29, 2002; 51(SS01):1-13.

⁴ Piccoro LT, Potoski M, Talbert JC, Doherty DE. Asthma prevalence, cost, and adherence with expert guidelines on the utilization of health care services and costs in a state Medicaid population. *Health Serv Res.* 2001 Jun;36(2):357-71.

⁵ Guidelines for the diagnosis and management of asthma: Expert Panel report 2. Bethesda, MD.: National Heart, Lung, and Blood Institute, 1997:42-9. (DHHS publication no. (PHS) 97-4051A.)

⁶ Finkelstein JA, Fuhlbrigge A, Lozano P, Grant EN, Shulruff R, Arduino KE, Weiss KB. Parent-reported environmental exposures and environmental control measures for children with asthma. *Arch Pediatr Adolesc Med.* 2002 Mar;156(3):258-64.

⁷ Kelly CS, Morrow AL, Shults J, Nakas N, Strobe GL, Adelman RD. Outcomes evaluation of a comprehensive intervention program for asthmatic children enrolled in medicaid. *Pediatrics.* 2000 May;105(5):1029-35.

⁸ Greineder DK, Loane KC, Parks P. A randomized controlled trial of a pediatric asthma outreach program. *J Allergy Clin Immunol.* 1999 Mar;103(3 Pt 1):436-40.

⁹ Sullivan SD, Weiss KB, Lynn H, Mitchell H, Kattan M, Gergen PJ, Evans R; National Cooperative Inner-City Asthma Study (NCICAS) Investigators. The cost-effectiveness of an inner-city asthma intervention for children. *J Allergy Clin Immunol.* 2002 Oct;110(4):576-81.

¹⁰ Webber MP, Hoxie AM, Odlum M, Oruwariye T, Lo Y, Appel D. Impact of asthma intervention in two elementary school-based health centers in the Bronx, New York City. *Pediatr Pulmonol.* 2005 Dec;40(6):487-93.

¹¹ Morgan WJ, Crain EF, Gruchalla RS, O'Connor GT, Kattan M, Evans R 3rd, Stout J, Malindzak G, Smartt E, Plaut M, Walter M, Vaughn B, Mitchell H; Inner-City Asthma Study Group. Results of a home-based environmental intervention among urban children with asthma. *N Engl J Med.* 2004 Sep 9;351(11):1068-80.

¹² Krieger JW, Takaro TK, Song L, Weaver M. The Seattle-King County Healthy Homes Project: a randomized, controlled trial of a community health worker intervention to decrease exposure to indoor asthma triggers. *Am J Public Health.* 2005 Apr;95(4):652-9.

¹³ Wang LY, Zhong Y, Wheeler L. Direct and indirect costs of asthma in school-age children. *Prev Chronic Dis.* 2005 Jan;2(1):A11.

¹⁴ Lozano P, Sullivan SD, Smith DH, Weiss KB. The economic burden of asthma in US children: estimates from the National Medical Expenditure Survey. *J Allergy Clin Immunol.* 1999 Nov;104(5):957-63.

¹⁵ Ortega AN, Belanger KD, Paltiel AD, Horwitz SM, Bracken MB, Leaderer BP. Use of health services by insurance status among children with asthma. *Med Care.* 2001 Oct;39(10):1065-74.