



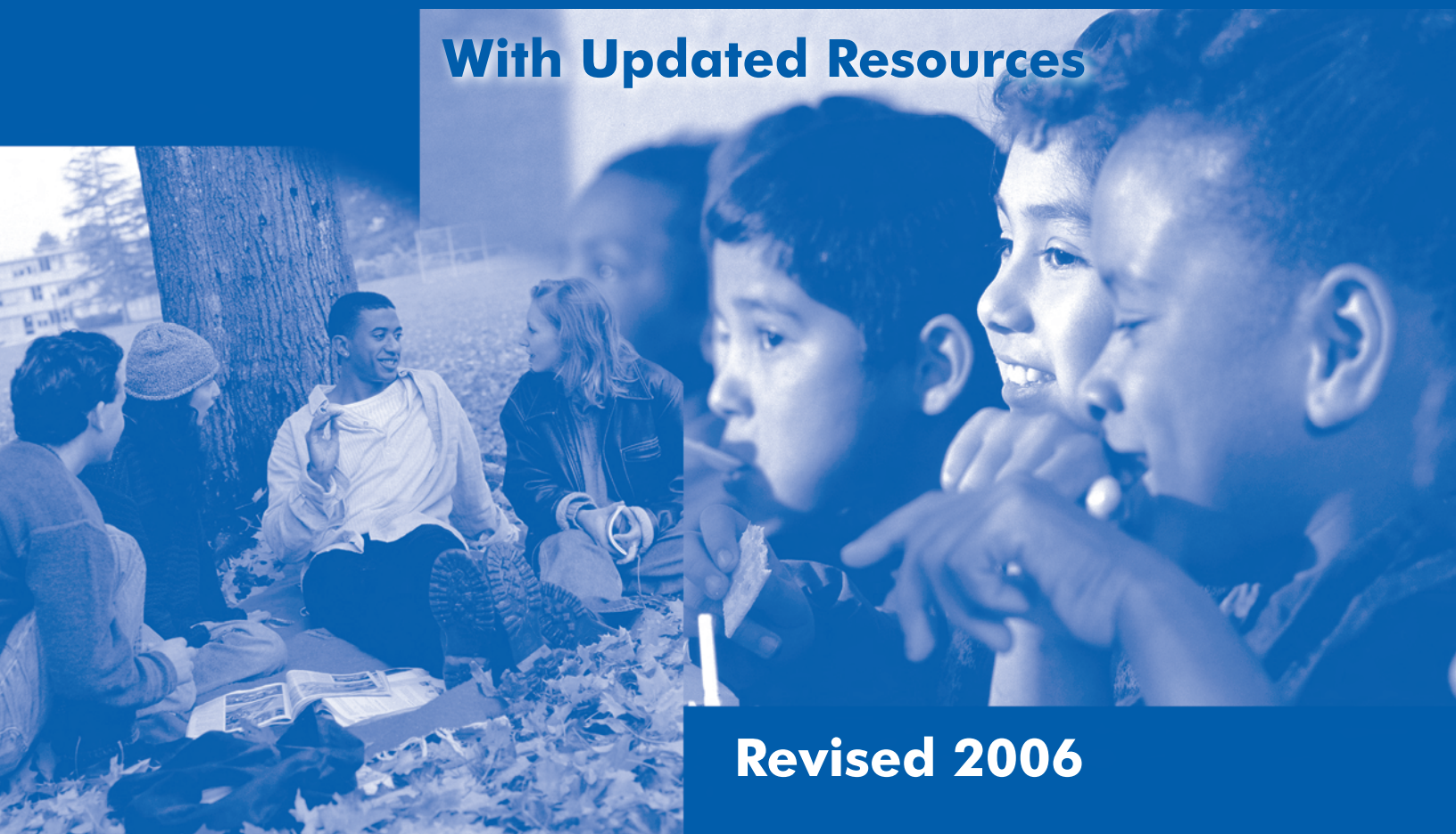
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Strategies for

Addressing Asthma

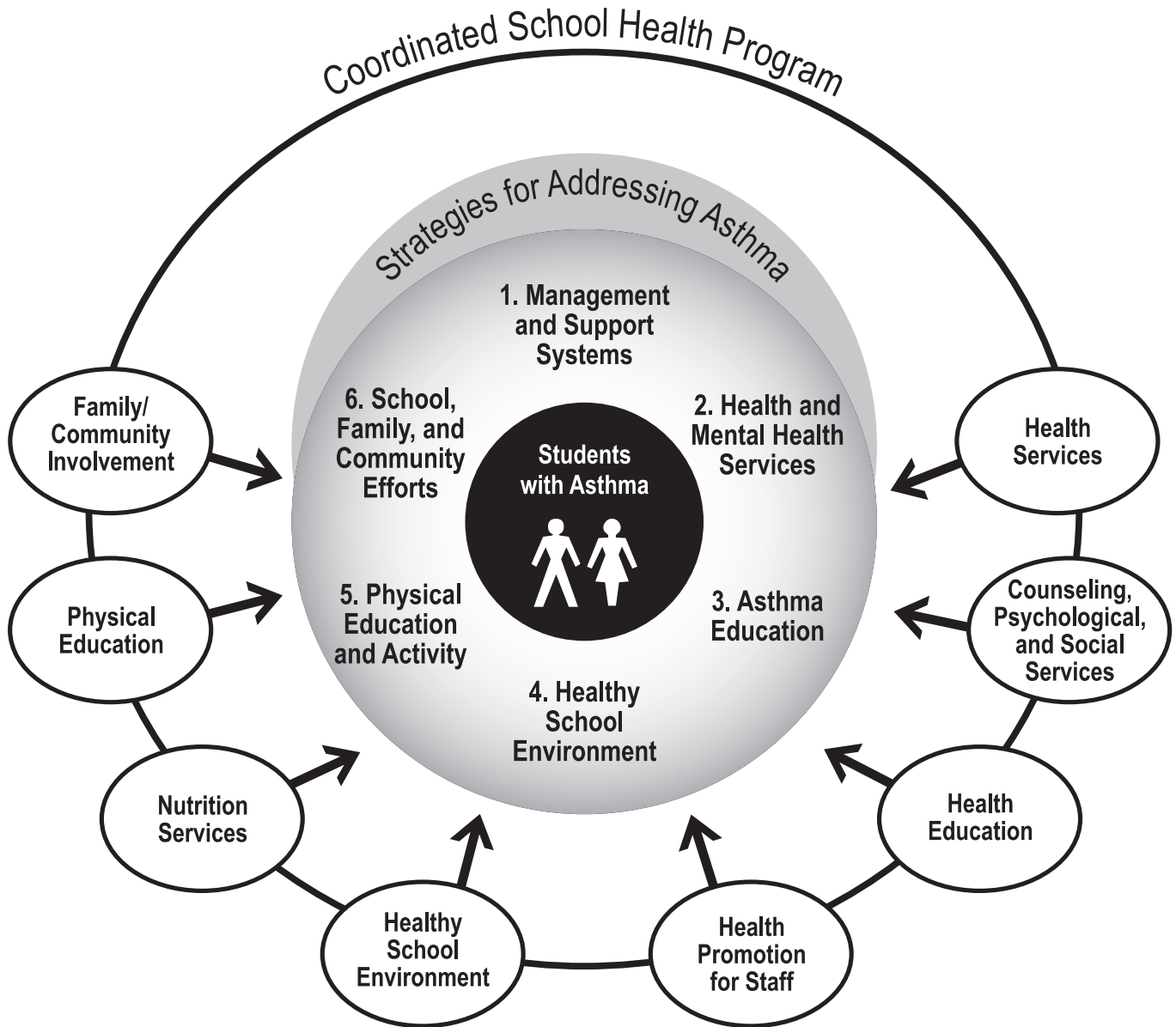
Within a Coordinated School Health Program

With Updated Resources



Revised 2006

Addressing Asthma Within a Coordinated School Health Program



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A healthy student is a student ready to learn. Asthma-friendly schools are those that make the effort to create safe and supportive learning environments for students with asthma. They have policies and procedures that allow students to successfully manage their asthma. Chances for success are better when the whole school community takes part—school administrators, teachers, and staff, as well as students and parents.

The Centers for Disease Control and Prevention (CDC) has identified six strategies for schools and districts to consider when addressing asthma within a coordinated school health program. These strategies can be effective whether your program is for the entire school district or just one school.

1. Establish **management and support systems** for asthma-friendly schools.
2. Provide appropriate school **health and mental health services** for students with asthma.
3. Provide **asthma education** and awareness programs for students and school staff.
4. Provide a safe and **healthy school environment** to reduce asthma triggers.
5. Provide safe, enjoyable **physical education and activity** opportunities for students with asthma.
6. Coordinate **school, family, and community efforts** to better manage asthma symptoms and reduce school absences among students with asthma.

Strategy Development

These strategies are based on six key elements of school-based education and intervention developed by expert panelists at the November 2000 national conference, “Asthma Prevention, Management, and Treatment: Community-Based Approaches

for the New Millennium,” sponsored by Kaiser Permanente and the American Lung Association.¹ Two National Asthma Education and Prevention Program (NAEPP) documents, *Resolution on Asthma Management at School*² and *How Asthma-Friendly is Your School?*³ were used to develop these school-focused elements. CDC’s school asthma strategies also incorporate the eight interactive components of the coordinated school health program, a model used by the CDC and many state education agencies and school districts.⁴ The figure on the facing page illustrates how the six strategies for addressing asthma fit within the eight components of a coordinated school health program.

Strategy Implementation

Implementation of the strategies will require a team effort that involves all school administrators, faculty, and staff, as well as students and parents. These strategies can be used to develop a plan for addressing asthma within a coordinated school health program. They complement NAEPP’s *Managing Asthma: A Guide for Schools*,⁵ which provides specific action steps for school staff members.

Every strategy is not appropriate or feasible for every school to implement. Schools and districts should determine which strategies have the highest priority on the basis of the needs of the school and available resources.

Schools and districts should, whenever possible, initially focus their asthma programs on students with poorly managed, moderate-to-severe persistent asthma as demonstrated by frequent school absences, school health office visits, emergency department visits, or hospitalizations. Low-income, minority populations and inner-city residents experience more emergency department visits, hospitalizations, and deaths due to asthma than the general population.^{6,7}

The Six Strategies

1. Establish management and support systems for asthma-friendly schools.

- Identify your school's or district's existing asthma needs, resources for meeting those needs, and potential barriers.
- Designate a person to coordinate asthma activities at the district and school levels. If your school or district has a health coordinator, determine if asthma coordination can be integrated into his or her activities.
- Share these strategies with the district health council and school health team if they exist. If you do not have a council or team, help create them. Ensure that school-based asthma management is addressed as a high priority.⁸
- Develop and implement written policies and procedures regarding asthma education and management. Promote asthma programs that are culturally and linguistically appropriate.^{9,10}
- Use or adapt existing school health records to identify all students with diagnosed asthma. Use health room and attendance records to track students with asthma. Focus particularly on students with poorly managed asthma as demonstrated by frequent school absences, school health office visits, emergency room visits, or hospitalizations. Avoid mass screening* and mass case detection† as methods for routine identification. These methods have not been shown to meet the World Health Organization's or American Academy of Pediatrics's criteria for population or school screening programs.¹¹⁻¹⁶
- Use 504 Plans or Individualized Education Plans (IEPs), as appropriate, especially for health services and physical activity modifications.
- Obtain administrative support and seek support from others in the school and community for addressing asthma within a coordinated school health program.
- Develop systems to promote ongoing communication among students, parents, teachers, school nurses, and health care providers to ensure that students' asthma is well-managed at school.
- Seek available federal, state, and private funding for school asthma programs.
- Evaluate asthma program strategies and policies annually. Use this information to improve programs.



2. Provide appropriate school health and mental health services for students with asthma.

- Obtain a written asthma action plan for all students with asthma. The plan should be developed by a primary care provider and be provided by parents. It should include individualized emergency protocol, medications, peak flow monitoring, environmental triggers, and emergency contact information.¹⁷⁻¹⁹ Share the plan with appropriate faculty and staff in accordance with the Family Educational Rights and Privacy Act (FERPA) guidelines or with parental permission.²⁰
- Ensure that at all times students have immediate access to medications, as prescribed by a physician and approved by parents. Specific options, such as allowing students to self-carry and self-administer medications, should be determined on a case-by-case basis with input from the physician, parent, and school.²¹
- Use standard emergency protocols for students in respiratory distress if they do not have their own asthma action plan.¹
- Ensure that case management‡ is provided for students with frequent school absences, school health office visits, emergency department visits, or hospitalizations due to asthma.²²
- Provide a full-time registered nurse all day, every day for each school.¹
- Ensure access to a consulting physician for each school.¹

* Screening for asthma (spirometry) can identify students who, in a test situation, exhibit signs and symptoms of asthma. These students may or may not truly have asthma.

† Case detection (symptom questionnaires) can identify students with asthma symptoms who may or may not have the disease. Only testing and evaluation by a health professional can confirm which students truly have asthma.

‡ Case management by a trained professional includes assessing needs and planning a continuum of care for students and families.

- Refer students without a primary care provider to child health insurance programs and providers.^{23,24}
- Provide and coordinate school-based counseling, psychological, and social services for students with asthma, as appropriate. Coordinate with community services.^{18,22,25}



3. Provide asthma education and awareness programs for students and school staff.

- Ensure that students with asthma receive education on asthma basics, asthma management, and emergency response. Encourage parents to participate in these programs.^{19,26-30}
- Provide school staff with education on asthma basics, asthma management, and emergency response as part of their professional development activities. Include classroom teachers, physical education teachers, coaches, secretaries, administrative assistants, principals, facility and maintenance staff, food service staff, and bus drivers.³¹⁻³⁵
- Integrate asthma awareness and lung health education lessons into health education curricula.³⁶
- Provide and/or support smoking prevention and cessation programs for students and staff.³⁷

4. Provide a safe and healthy school environment to reduce asthma triggers.

- Prohibit tobacco use at all times, on all school property (including all buildings, facilities, and school grounds), in any form of school transportation, and at school-sponsored events on and off school property (for example, field trips).³⁷⁻⁴¹
- Prevent indoor air quality problems by reducing or eliminating allergens and irritants, including tobacco smoke; dust and debris from construction and remodeling; dust mites, molds, warm-blooded animals, cockroaches, and other pests.⁴²⁻⁴⁵
- Use integrated pest management (IPM)[§] techniques to control pests.^{46,47}

5. Provide safe, enjoyable physical education and activity opportunities for students with asthma.

- Encourage full participation in physical activities when students are well.^{48,49}
- Provide modified activities as indicated by a student's asthma action plan, 504 Plan, and/or IEP, as appropriate.¹
- Ensure that students have access to preventive medications before activity and immediate access to emergency medications during activity.⁵⁰⁻⁵²

6. Coordinate school, family, and community efforts to better manage asthma symptoms and reduce school absences among students with asthma.

- Obtain written parental permission for school health staff and primary care providers to share student health information.⁵³
- Educate, support, and involve family members in efforts to reduce students' asthma symptoms and school absences.^{33,54}
- Work with local community programs. Coordinate school and community services, including community health care providers, community asthma programs and coalitions, community counselors, social workers, case managers, and before- and after-school programs. Encourage interested school staff to participate in community asthma coalitions.

§ IPM is a proactive approach to pest management that includes looking for signs of pests, controlling water and food sources, removing pest pathways and shelters, and safely using pest control products as needed.

Resources

Coordinated School Health Programs

- Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Adolescent and School Health, Atlanta, Georgia. Website located at www.cdc.gov/HealthyYouth
- Council of Chief State School Officers. *School health starter kit*. Washington, DC: Council of Chief State School Officers, 2003. Available at http://www.ccsso.org/Projects/school_health_project/project_publications/1803.cfm
- Education Development Center, Inc. *Talking about health is academic*. New York, New York: Teachers College Press, 2000.
- Education Development Center, Inc., Newton, Massachusetts. *Making health academic: creating coordinated school health program*. Website available at <http://www2.edc.org/MakingHealthAcademic>
- Fetro J. *Step by step to health-promoting schools*. Santa Cruz, California: ETR Associates, 1998.
- Marx E, Wooley SF, Northrop D, eds. *Health is academic: a guide to coordinated school health programs*. New York, New York: Teachers College Press, 1998.
- Tyson H. Special report: a load off the teachers' backs: coordinated school health programs. *Phi Delta Kappan* January 1999. Available at www.pdkintl.org/kappan/ktys9901.htm

Asthma

- Allies Against Asthma, University of Michigan, School of Public Health, Ann Arbor, Michigan. Resource bank. Website available at www.AsthmaResourceBank.net
- Allergy and Asthma Network Mothers of Asthmatics, Fairfax, Virginia. School house: Keeping healthy at school. Available at www.aanma.org/schoolhouse
- Centers for Disease Control and Prevention, National Center for Environmental Health, Atlanta, Georgia. Resources include:
 - *Asthma*. Website available at www.cdc.gov/asthma
 - *State asthma contacts and programs*. Available at <http://www.cdc.gov/asthma/contacts/default.htm>
- Asthma Initiative of Michigan, Lansing, Michigan. Website available at <http://www.getastmahelp.org>
- National Asthma Education and Prevention Program, National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, Maryland. Website available at www.nhlbi.nih.gov/about/naepp Resources include:
 - *How asthma-friendly is your school?* Available at www.nhlbi.nih.gov/health/public/lung/asthma/friendhi.htm
 - *Managing asthma: a guide for schools*. Available at www.nhlbi.nih.gov/health/prof/lung/asthma/asth_sch.htm
 - *Resolution on asthma management at school*. Available at www.nhlbi.nih.gov/health/public/lung/asthma/resolut.htm
- National Education Association Health Information Network, Washington, DC. *Asthma and schools*. Website available at www.asthmaandschools.org
- National Library of Medicine, Bethesda, Maryland. *Breath of life: an exhibition that examines the history of asthma, the experiences of people with asthma, and contemporary efforts to understand the disease*. Website available at www.nlm.nih.gov/hmd/breath/breathhome.html

Strategy 1: Management and Support

- American Academy of Pediatrics, Elk Grove Village, Illinois. *School health: train the trainers kit*. Available at www.schoolhealth.org/trnthtrn/trainmn.html
- American Cancer Society, Atlanta, Georgia. *Healthy schools, healthy kids*. Website for parents, schools, and communities available at www.schoolhealth.info/
- National Association of State Boards of Education. *Fit, healthy and ready to learn*. Alexandria, Virginia: National Association of State Boards of Education, 2000. Can be ordered at www.nasbe.org
- National School Boards Association, Alexandria, Virginia. *NSBA's school health programs*. Web page available at www.nsba.org/schoolhealth
- Family Policy Compliance Office, U.S. Department of Education. *Family Educational Rights and Privacy Act (FERPA) regulations*. Washington, DC: U.S. Department of Education, 2002. Available at www.ed.gov/policy/gen/reg/ferpa/

Strategy 2: Health and Mental Health

- Asthma and Allergy Foundation of America, Washington, DC. *Student asthma action card*. Available at www.aafa.org/pdfs/AsthmaActionCardStudent.pdf
- U.S. Department of Health and Human Services. Asthma objectives. *Healthy people 2010*. 2nd edition. Volume 2. Washington, DC: U.S. Government Printing Office, November 2000. Available at www.health.gov/healthypeople/Document/HTML/Volume2/24Respiratory.htm#_Toc489704831
- National Association of School Nurses, Castle Rock, Colorado. Resources include:
 - *Position statements*. Available at <http://www.nasn.org/Default.aspx?tabid=194>
 - *Issue briefs*. Available at <http://www.nasn.org/Default.aspx?tabid=195>

- National Assembly on School-Based Health Care, Washington, DC. Publications and order forms available at www.nasbhc.org/nasbhc_resources.htm
- National Asthma Education and Prevention Program. *Expert panel report 2: guidelines for the diagnosis and management of asthma*. Bethesda, Maryland: National Institutes of Health, National Heart, Lung, and Blood Institute, National Asthma Education and Prevention Program, 1997. Available at www.nhlbi.nih.gov/guidelines/asthma/asthgdln.htm

Strategy 3: Asthma Education

- American Lung Association, Washington, DC. *Open airways for schools, an education program for students with asthma*. Available at <http://www.lungusa.org/site/pp.asp?c=dvLUK9O0E&b=44142>
- Asthma and Allergy Foundation of America, Washington, DC. Asthma education programs and materials available at <http://www.aafa.org/display.cfm?id=4>
- Centers for Disease Control and Prevention, Atlanta, Georgia. Resources include:
 - *A speaker's kit for healthcare professionals*. Available at www.cdc.gov/asthma/speakit/default.htm
 - *Educational materials for parents, educators and youth group leaders*. Available at www.cdc.gov/tobacco/edumat.htm
- National Asthma Education and Prevention Program, Bethesda, Maryland. Website available at <http://www.nhlbi.nih.gov/about/naepp/index.htm>. Resources include:
 - *School asthma education slide set*. Available at http://hp2010.nhlbihin.net/naepp_slides/menu.htm
 - *Asthma awareness curriculum for the elementary classroom*. Bethesda, Maryland: National Institutes of Health, National Heart, Lung, and Blood Institute, National Asthma Education and Prevention Program, 1993. Available at <http://www.nhlbi.nih.gov/health/prof/lung/asthma/school/index.htm>
- National Asthma Educator Certification Board, New York, New York. Website available at www.naecb.org

Strategy 4: Healthy School Environment

- Institute of Medicine. *Clearing the air: asthma and indoor air exposures*. Washington, DC: National Academy Press, 2000. Available at www.nap.edu/books/0309064961/html
- IPM Technical Resource Center at Department of Entomology, Purdue University, West Lafayette, Indiana. *Integrated pest management for schools and childcare facilities*. Available at www.entm.purdue.edu/entomology/outreach/schoolipm
- President's Task Force on Environmental Health Risks and Safety Risks to Children. *Asthma and the environment: a strategy to protect children*. Washington, DC: President's Task Force on Environmental Health Risks and Safety Risks to Children, May 2000. Available at [http://yosemite.epa.gov/oehp/ochpweb.nsf/content/fin.htm/\\$file/fin.pdf](http://yosemite.epa.gov/oehp/ochpweb.nsf/content/fin.htm/$file/fin.pdf)
- University of Florida, Gainesville, Florida. *School IPM: integrated pest management in schools*. Web page located at <http://schoolipm.ifas.ufl.edu>
- Centers for Disease Control and Prevention, Atlanta, Georgia. Resources include:
 - *Guidelines for school health programs to prevent tobacco use and addiction*. Available at www.cdc.gov/HealthyYouth/tobacco/guidelines/index.htm
 - *School health index: a self-assessment and planning guide*. Available at www.cdc.gov/HealthyYouth/shi
- U.S. Environmental Protection Agency. Resources include:
 - *Indoor air quality: tools for schools*. December 2000. Available at www.epa.gov/iaq/schools/tools4s2.html or by calling 800-438-4318.
 - *Integrated pest management for schools: a how-to manual*. June 1999. Available at www.epa.gov/region09/toxic/pest/school
 - *Managing asthma in the school environment*. Available at www.epa.gov/iaq/schools/asthma/index.html
 - *Mold resources*. Available at www.epa.gov/iaq/pubs/moldresources.html/shi
 - *Mold remediation in schools and commercial buildings*. March 2001. Available at www.epa.gov/iaq/molds/mold_remediation.html

Strategy 5: Physical Education and Activity

- Block ME. *A teacher's guide to including students with disabilities in regular physical education*. Baltimore, Maryland: Paul H. Brookes Publishing, 2000.
- Centers for Disease Control and Prevention. *Guidelines for school and community programs to promote lifelong physical activity among young people*. Atlanta, Georgia: Centers for Disease Control and Prevention, 1997. Available at www.cdc.gov/HealthyYouth/physicalactivity/guidelines/
- National Asthma Education and Prevention Program. *Asthma and physical activity in the school*. Bethesda, Maryland: National Institutes of Health, National Heart, Lung, and Blood Institute, National Asthma Education and Prevention Program, 1993. Available at www.nhlbi.nih.gov/health/public/lung/asthma/phy_asth.htm

Strategy 6: Family and Community

- Allergy and Asthma Network Mothers of Asthmatics, Fairfax, Virginia. Resources include:
 - *Welcome to Breatherville, USA*. Community resources for parents of children with asthma available at www.aanma.org/breatherville.htm
 - Toll-free hotline with trained staff to answer questions about asthma, (800) 878-4403.
- American Academy of Allergy, Asthma, & Immunology, Milwaukee, Wisconsin. Resources about pediatric asthma available at www.aaaai.org/patients/allergic_conditions/pediatric_asthma.stm

References

1. Kaiser Permanente/American Lung Association National Partnership on Asthma. National asthma conference: asthma prevention, management, and treatment: community-based approaches for the new millennium. Washington, DC: Kaiser Permanente, American Lung Association, November 2000.
2. National Asthma Education and Prevention Program. Resolution on asthma management at school. Bethesda, Maryland: National Asthma Education and Prevention Program, National Heart, Lung, and Blood Institute, Updated November 2005. Available at www.nlm.nih.gov/health/public/lung/asthma/resolut.htm
3. National Asthma Education and Prevention Program. How asthma-friendly is your school? Bethesda, Maryland: National Asthma Education and Prevention Program, National Heart, Lung, and Blood Institute, 1997. Available at www.nlm.nih.gov/health/public/lung/asthma/friendhi.htm
4. Allensworth DD, Kolbe LJ. The comprehensive school health program: exploring an expanded concept. *J Sch Health* 1987;57(10): 409-12.
5. National Asthma Education and Prevention Program. Managing asthma: a guide for schools. Bethesda, Maryland: National Asthma Education and Prevention Program, National Heart, Lung, and Blood Institute, 2002.
6. Public Health Service. Action against asthma: a strategic plan for the Department of Health and Human Services. Washington, DC: U.S. Department of Health and Human Services, Public Health Service, May 2000. Available at www.aspe.hhs.gov/sp/asthma
7. Lieu TA, Lozano P, Finkelstein JA, Chi FW, Jensvold NG, Capra AM. Racial/ethnic variation in asthma status and management practices among children in managed Medicaid. *Pediatrics* 2002;109:857-65.
8. Coover L, Vega C, Persky V, Russell E, Blasé R, Wolf R. Collaborative model to enhance the functioning of the school child with asthma. *Chest* 1999;116(suppl 4):193S-5S.
9. American Association for Health Education. Cultural awareness and sensitivity: guidelines for health educators. Reston, Virginia: American Association for Health Education, 1994.
10. American Association for Health Education. Cultural awareness and sensitivity: resources for health educators. Reston, Virginia: American Association for Health Education, 1994.
11. Gerald LB, Redden D, Turner-Henson A, Feinstein R, Hemstreet MP, Hains C. A multi-stage asthma screening procedure for elementary school children. *J Asthma* 2002;39(1):2936.
12. Wilson JMG, Junger F. Principles and practice of screening for disease. Geneva, Switzerland: World Health Organization, 1968. Public health papers no. 34.
13. American Academy of Pediatrics, Committee on School Health. School health policy and practice: criteria for successful screening. Elk Grove Village, Illinois: American Academy of Pediatrics, 1993:89.
14. Yawn BP, Wollan P, Scanlon P, Kurland M. Are we ready for universal school-based asthma screening?: An outcomes evaluation. *Arch Pediatr Adolesc Med* 2002;156(12):1256-62.
15. Yawn BP, Wollan P, Scanlon PD, Kurland M. Outcome results of a school-based screening program for undertreated asthma. *Ann Allergy Asthma Immunol* 2003;90(5):508-15.
16. Boss LP, Wheeler LS, Williams PV, Bartholomew LK, Taggart VS, Redd SC. Population-based screening or case detection for asthma: Are we ready? *J Asthma* 2003;40(4):335-42.
17. Abramson MJ, Bailey MJ, Couper FJ, Drummer OH, Forbes AB, McNeil JJ. Are asthma medications and management related to deaths from asthma? *Am J Respir Crit Care Med* 2001;163:12-8.
18. Lwebuga-Mukasa J, Dunn-Georgiou E. A school-based asthma intervention program in the Buffalo, New York schools. *J Sch Health* 2002;72(1):27-32.
19. National Institutes of Health. Clinical practice guidelines: expert panel report 2: guidelines for the diagnosis and management of asthma. Rockville, Maryland: U.S. Department of Health and Human Services, National Institutes of Health, 2002. NIH publication 97-4051.
20. U.S. Department of Education. Family Educational Rights and Privacy Act (FERPA) regulations. Washington, DC: U.S. Department of Education, 2002. Website available at <http://www.ed.gov/policy/gen/reg/ferpa/index.html>
21. Madden JA. Managing asthma at school. *Educ Leader* March 2000;57(6):50-2.
22. Evans R, Gergen PJ, Mitchell H, Kattan M, Kercksmar C, Crain E. A randomized clinical trial to reduce asthma morbidity among inner-city children: results of the National Cooperative Inner-city Asthma Study. *J Pediatr* 1999;135(3):332-8.
23. Raskin L. Breathing easy: solutions in pediatric asthma. Washington, DC: National Center for Education in Maternal and Child Health, Georgetown University, February 2000. Available at www.ncemch.org/policy/asthma.html
24. Lara M, Nicholas W, Morton SC, Vaiana M, Genovese B, Rachelefsky G. Improving childhood asthma outcomes in the United States: a blueprint for policy action. *Pediatrics* 2002;109(5):919-30.
25. Fritz GK, McQuaid EL, Spirito A, Klein RB. Symptom perception in pediatric asthma: relationship to functional morbidity and psychological factors. *J Am Acad Child Adolesc Psychiatry* 1996;35(8):1033-41.

26. Clark NM, Partridge MR. Strengthening asthma education to enhance disease control. *Chest* 2002;121(5):1661-9.
27. Evans D, Clark M, Feldman C, Rips J, Kaplan D, Levison M. A school health education program for children with asthma aged 8-11 years. *Health Educ Q* 1987; 14:267-79.
28. Evans D, Clark N, Levison M, Levin B, Mellins R. Can children teach their parents about asthma? *Health Educ Behav* 2001; 28:500-11.
29. Spencer G, Atav S, Johnston Y, Harrigan J. Managing childhood asthma: the effectiveness of the Open Airways for Schools program. *Fam Community Health* 2000;23:20-30.
30. Gregory EK. Empowering students on medication for asthma to be active participants in their care: an exploratory study. *J Sch Nursing* 2000; 16(1):20-7.
31. Fillmore EJ, Jones N, Blankson JM. Achieving treatment goals for schoolchildren with asthma. *Arch Dis Child* 1997;77:420-2.
32. Atchison JM, Cuskelly M. Educating teachers about asthma. *J Asthma* 1994;31(4):269-76.
33. Henry RL, Hazell J, Halliday JA. Two hour seminar improves knowledge about childhood asthma in school staff. *J Paediatr Child Health* 1994;30:403-5.
34. Hay GH, Harper TB, Courson FH. Preparing school personnel to assist students with life-threatening food allergies. *J Sch Health* 1994;64(3):119-21.
35. Eisenberg JD, Moe EL, Stillger CF. Educating school personnel about asthma. *J Asthma* 1993;30(5):351-8.
36. Lurie N, Straub MJ, Goodman N, Bauer EJ. Incorporating asthma education into a traditional school curriculum. *Am J Pub Health* 1998;88(5):822.
37. Centers for Disease Control and Prevention. Guidelines for school health programs to prevent tobacco use and addiction. *MMWR* 1994;43(RR-2):1-18.
38. Centers for Disease Control and Prevention. Preventing tobacco use among young people: a report of the Surgeon General. *MMWR* 1994;43(RR-4):1-10.
39. Clark NM, Brown RW, Parker E, Robins TG, Remick DG, Philbert MA. Childhood asthma. *Environ Health Perspect* 1999;107(3):421-9.
40. Epps RP, Manley MW, Glynn TJ. Tobacco use among adolescents: strategies for prevention. *Pediatr Clin North Am* 1995;42(2):389-402.
41. Morkjaroenpong V, Rand CS, Butz AM, Huss K, Eggleston P, Malveaux FJ. Environmental tobacco smoke exposure and nocturnal symptoms among inner-city children with asthma. *J Allergy Clin Immunol* 2002;110(1):147-54.
42. Eggleston PA, Bush RK. Environmental allergen avoidance: an overview. *J Allergy Clin Immunol* 2001;107(3):S403-5.
43. U.S. Department of Housing and Urban Development. Healthy home issues: asthma. Washington DC: U.S. Department of Housing and Urban Development, October 2001. Available at www.hud.gov/offices/lead/hhi/Asthma_v2_12-5-01.pdf
44. Dautel PJ, Whitehead L, Tortolero S, Abramson S, Sockrider MM. Asthma triggers in the elementary school environment: a pilot study. *J Asthma* 1999;36(8):691-702.
45. Tortolero SR, Bartholomew LK, Tyrrell S, Abramson SL, Sockrider MM, Markham CM. Environmental allergens and irritants in schools: a focus on asthma. *J Sch Health* 2002;72(1):33-8.
46. Campbell ME, Dwyer JJ, Goettler F, Ruf F, Vittiglo M. A program to reduce pesticide spraying in the indoor environment: evaluation of the "Roach Coach" Project. *Can J Public Health* 1999;90(4):277-81.
47. Greene A, Breisch NL. Measuring integrated pest management programs for public buildings. *J Econ Entomol* 2002;95(1):1013.
48. Herfurt D. Exercise and EIA. *J Respir Care Practitioners* 1997; 10(3):42-8.
49. Block ME, Garcia C, eds. *Including students with disabilities in regular physical education*. Reston, Virginia: National Association for Sport and Physical Education, American Association for Active Lifestyles and Fitness, 1995.
50. Gean J, Schroth MK, Lemanske RF. Childhood asthma: older children and adolescents. *Clin Chest Med* 1995;16(4):657-70.
51. Howenstine MS, Eigen H. Medical care of the adolescent with asthma. *Adolesc Med* 2000;11(3):501-19.
52. Kumar A, Busse WW. Recognizing and controlling exercise-induced asthma. *J Respir Dis* 1995;16(12):1087-96.
53. Majer LS. Managing patients who have asthma: the pediatrician and the school. *Pediatr Rev* 1993;14(10):391-4.
54. Einhorn E, DiMaio M. An interdisciplinary program to control pediatric asthma. *Continuum* May-June 2000;8-13.



**For more information about
CDC's asthma activities,
please contact:**

Division of Adolescent
and School Health,
National Center for Chronic
Disease Prevention and
Health Promotion, CDC
www.cdc.gov/HealthyYouth/asthma

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Hazards and Health Effects,
National Center for
Environmental Health, CDC
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