

PROGRAM BRIEF

Children's Health Highlights

Agency for Healthcare Research and Quality • 2101 East Jefferson Street • Rockville, MD 20852



AHRQ is the lead Federal agency charged with supporting research designed to improve the quality of health care, reduce its cost, address patient safety and medical errors, and broaden access to essential services. AHRQ sponsors and conducts research that provides evidence-based information on health care outcomes; quality; and cost, use, and access. The information helps health care decisionmakers—patients and clinicians, health system leaders, and policymakers—make more informed decisions and improve the quality of health care services.



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Introduction

Children and adolescents are growing and developing, and their health care needs, use of services, and outcomes are very different from those of adults.

Unlike adults, children and adolescents usually are dependent on parents and others for access to care and evaluations of the quality of that care. Furthermore, adolescents differ from younger children; they are moving from childhood to adulthood and have their own unique health care needs, preferences, and patterns of use. For these and many other reasons, a special research focus is needed to increase understanding of the issues involved in improving the delivery of health care to children and adolescents.

In 1997, Christopher B. Forrest, M.D., Ph.D., of the Johns Hopkins School of Public Health, Lisa Simpson, M.B., B.Ch., Deputy Director of the Agency for Healthcare Research and Quality (AHRQ), and Carolyn Clancy, M.D., Director of AHRQ's Center for Outcomes and Effectiveness Research (now Acting Director of AHRQ), proposed six strategies for increasing the quantity and quality of child health services research (CHSR). In an article published in the June 11, 1997 issue of the *Journal of the American Medical Association*, they explained the need to (1) expand the disease orientation of health services research to include a focus on child health development; (2) establish child-sensitive standards for

setting research priorities; (3) increase the size and capacity of the CHSR workforce; (4) develop appropriate laboratories to study child health care; (5) improve coordination of research funding across the Federal Government, foundations, and the private sector; and (6) enhance the research function of health care delivery in the private sector.

Finding ways to improve outcomes, quality, and access to health care for America's 70 million children and adolescents is a critical goal of health services research and a continuing priority for AHRQ (see Dougherty, D., Simpson, L., and Eisenberg, J., in the April 2000 issue of *Health Services Research*, pp. xi- xix). For many years, AHRQ has supported and conducted research on children's health issues. These activities are coordinated across the Agency's health services research portfolio to ensure that projects are appropriately addressed in all program areas.

In FY 2001, AHRQ announced \$16 million in total support for new research and training grants, contracts, and interagency agreements relating directly to health care issues concerning children and adolescents.

This program brief provides an overview of current AHRQ programs, activities, and priorities in health care research for children and adolescents, as well as summaries of selected findings from recent AHRQ-supported research projects. It reflects AHRQ's



commitment to build the infrastructure and capacity for child health services research and ensure that practitioners and policymakers have the knowledge and tools they need to:

- Improve child health outcomes.
- Enhance the quality of care children receive.
- Address access, use, and costs.
- Translate evidence-based research into improved clinical practice.

An asterisk (*) following a summary indicates that reprints of an intramural study or copies of other publications are available from AHRQ. Two asterisks (**) identify materials that are available from the National Technical Information Service. Ordering information appears on page 28, as well as contacts for more information about AHRQ's research programs, including grant announcements and application kits. Visit AHRQ's Web site at www.ahrq.gov and click on "Child Health" to find updates on child health initiatives at AHRQ, relevant conferences and workshops, funding announcements, and much more.

Acute Care/Injuries

In 2000, children and adolescents under age 18 had over 212 million ambulatory health care visits, including 49 million visits to hospital outpatient and emergency departments. Only 15 percent of visits to physicians' offices were for well-child care, while a high number of visits were for acute care. Fifty-four percent of visits to hospital emergency departments by 5-14 year olds are due to injuries, and injuries are the leading cause of death among those 1-24 years old in the United States. AHRQ's research portfolio on acute care and injuries focuses on the effectiveness, quality, and costs of care for children and adolescents.

Research in Progress

- *Study focuses on using evidence to enhance care for childhood illnesses.*

Investigators are examining whether providing evidence at the point of ambulatory pediatric care will improve antibiotic use in pediatric disorders, reduce duration of therapy for acute sinusitis, reduce use of bronchodilators, and increase the use of intranasal steroids for allergic rhinitis. Robert L. Davis, Principal Investigator (AHRQ grant HS10516).

- *Researchers are developing decision rules for use of chest x-ray to diagnose pneumonia in young children.*

Although a relatively low proportion of chest x-rays reveal radiographic pneumonia, many young children are referred for chest-rays, resulting in unnecessary exposure to radiation and additional cost. The goal of this study is to develop decision rules that will help clinicians predict when children with lower respiratory tract infections should be sent for chest x-rays. Melinda Mahabee-Gittens, Principal Investigator (AHRQ grant HS11038).

Recent Findings

- *One in five childhood injuries may be caused by abuse.*

Investigators examined data from 12,510 office visits during which primary care physicians (PCPs) evaluated 659 injuries, assessed the causes of the injuries, and determined their level of suspicion that the injuries were caused by abuse. The PCPs had "some suspicion" of abuse for 21 percent of the injuries. Flaherty, Sege, Mattson, et al., *Ambulatory Pediatrics* 2(2):120-126, 2002 (AHRQ grant HS09811).

- *Analysis affirms current guidelines for treating high fever.*

An analysis of six management strategies for a hypothetical group of 100,000 3- to 36-month-old

children was conducted. Findings show that current guidelines for treating children up to age 3 who have a high fever and no obvious source of infection are the most cost effective (i.e., obtain complete blood counts and cultures, and treat children with antibiotics if the white blood cell count is equal to or greater than $15 \times 10^9/L$). Lee, Fleisher, and Harper, *Pediatrics* 108(4):835-844, 2001 (NRSA grant T32 HS00063).

- *Criteria reduce unnecessary x-rays for blunt trauma victims.*

Researchers evaluated the use of National Emergency X-Radiography Utilization Study criteria for identifying which of over 3,000 children were at low risk for cervical spine injury (CSI). Five criteria can identify pediatric blunt trauma victims who are at low risk for CSI, thereby reducing unnecessary x-rays by 20 percent. Viccellio, Simon, Pressman, et al., *Pediatrics Electronic Pages* 108(2):E20 <http://www.pediatrics.org>, 2001 (AHRQ grant HS08239).

- *Researchers synthesize evidence on diagnosis and treatment of sinusitis in children.*

Researchers found little evidence on how to accurately diagnose acute sinusitis in children and note a lack of consensus on which clinical signs and symptoms are most useful for diagnosis. The various antibiotics used to treat pediatric sinusitis are equally effective; no convincing evidence supports the use of ancillary decongestants and antihistamines, and limited evidence supports the use of steroids. A summary of this evidence report (AHRQ Publication No. 01-E007) and the full report, *Diagnosis and Treatment of Uncomplicated Acute Sinusitis in Children* (AHRQ Publication No. 01-E005), are available from AHRQ* (AHRQ contract 290-97-0019).

Adolescent Health

Researchers have begun to target studies at the distinctive health care needs of adolescents. Establishing healthy behaviors early can reduce risks of acquiring many diseases. Recent AHRQ-funded studies have focused on such adolescent prevention topics as screening for sexually transmitted diseases and smoking cessation.

Research in Progress

- *Study focuses on eliminating barriers to implementation of adolescent preventive health guidelines.*

This quality improvement (QI) intervention addresses provider and system-level barriers to delivery of preventive services to adolescents during primary care visits. The goal is to determine whether a systems intervention in a managed health care organization—including provider training and customized screening and charting tools—results in increased delivery of clinical preventive services to adolescents than the usual standard of care. Charles E. Irwin, Principal Investigator (AHRQ grant HS11095).

- *Researchers examine the role of a regular source of care for at-risk youth.*

This study focuses on disparities in the use of physician services, the role of having a usual source of care, and the characteristics likely to result in greater use of services. Tanisha V. Carino, Principal Investigator (NRSA fellowship F31 HS00150).

- Internet learning modules for physicians may improve chlamydia screening for adolescents.

Study physicians will complete a year-long series of Internet learning modules that integrate case-based education with audit, feedback, and benchmarking of practice profiles. The goal is to improve chlamydia screening and treatment rates among

patients aged 16-26, which should result in lower rates of pelvic inflammatory disease. Jeroan Allison, Principal Investigator (AHRQ grant HS11124).

- *Researchers are testing an intervention for smoking cessation among rural teens.*

The goal is to determine the usefulness of a theory-based motivational tobacco intervention for rural smokers ages 14 to 18 who seek emergency care. Researchers will develop a transportable version of the intervention for emergency facilities. Kimberly A. Horn, Principal Investigator (AHRQ grant HS10736).

- *Investigators seek to improve STD screening for asymptomatic teens.*

This QI intervention involves a small-group educational program for clinic personnel on sexually transmitted diseases, including chlamydia. The sessions will be augmented with weekly supervision and followup to reinforce the educational content. Mary-Ann Shafer, Principal Investigator (AHRQ grant HS10537).

Recent Findings

- *Premature birth does not affect adolescent self-esteem.*

Premature infants who weighed less than 2 pounds were at high risk for neurodevelopmental, cognitive, behavioral, and emotional difficulties. However, once they reached adolescence, their self-esteem was similar to that of other adolescents. Saigal, Lambert, Russ, et al., *Pediatrics* 109(3):429-433, 2002 (AHRQ grant HS08385).

- *Delivery of smoking prevention/cessation services differs.*

Researchers analyzed survey responses from pediatricians and family physicians and found that doctors used more tobacco interventions when they were familiar with the Public Health Service guidelines, spent more time with adolescent

patients, and spent more time alone with patients. Klein, Levine, and Allan, *Arch Pediatr Adolesc Med* 155:597-602, 2001 (AHRQ grant HS08192).

- *Not all teens receive reproductive health services.*

In a survey of 354 family physicians, respondents reported asking 79 percent of their adolescent patients about contraceptive use, 73 percent about condom use, 72 percent about sexual relationships, and 61 percent about sexual behavior. Female doctors and younger doctors are among those more likely to provide reproductive health screening and counseling during adolescent visits. Kelts, Allan, and Klein, *Fam Med* 33(5):376-381, 2001 (AHRQ grant HS08192).

- *Providers' role in preventing alcohol problems is unclear.*

This article summarizes what is known about adolescent alcohol use and how it can be addressed in primary care settings. Studies show that few primary care doctors follow existing guidelines that recommend yearly screening of adolescents for alcohol problems. Knight, *Ambulatory Pediatr* 1(3):150-161, 2001 (AHRQ/NIAAA interagency agreement).

- *Adolescents accurately characterize the care they receive.*

To develop quality measures for adolescent care, researchers recruited 400 adolescents, audiotaped their visits with physicians, and conducted phone surveys to assess their recollection of the preventive health care they received. Adolescents' recall of the care they received was good. Klein, Graff, Santelli, et al., *Health Serv Res* 34(1):391-404, 1999 (AHRQ grant HS08192).

- *Researchers develop and test a taxonomy of adolescent health.*

Researchers used four domains of health to group adolescents into 13 profile types. They also identified combinations of problems that

characterize different subgroups of adolescents to develop a taxonomy of adolescent health and tested the taxonomy in four ethnically diverse groups of urban and rural youths ages 11 to 17. Riley, Forrest, Starfield, et al., *Med Care* 36(8):1228-1236, 1998 and Riley, Green, Forrest, et al., *Med Care* 36(8):1237-1248, 1998 (AHRQ grant HS07045).

Asthma

Asthma is a chronic inflammatory disease of the airways that affects approximately 5 million U.S. children a year. An estimated 400,000 of these children have moderate to severe asthma. It is the most common chronic disease of childhood, with about one-fourth of those affected being less than 5 years of age. Illness associated with asthma is on the rise, and reducing asthma-related morbidity continues to be a major objective for the U.S. Public Health Service.

Research in Progress

- *Study examines underuse of preventive care among black children.*

This study is exploring the factors that contribute to the disparity between black and white children in preventive asthma care. Factors include insurance coverage, access to preventive health care, financial resources, and health beliefs. Andrea Ireland, Principal Investigator (AHRQ grant HS11929).

- *Researchers study treatment adherence among children with cystic fibrosis and asthma.*

The aims of this study are three-fold: (1) assess the extent of adherence problems in children with cystic fibrosis and asthma, (2) compare patterns of adherence in two pediatric pulmonary populations, and (3) identify key barriers associated with poor adherence. Avani Modi, Principal Investigator (AHRQ grant HS11768).

- *Researchers explore the family effects of having a child with asthma.*

This project will extend previous research on the impact of having a child with asthma and the burden asthma places on the family's resources, availability of care, and barriers to care. Nazil Baydar, Principal Investigator (AHRQ grant HS13110).

- *Project underway to test the cost-effectiveness of recently developed practice guidelines for pediatric asthma.*

This 5-year study is being conducted in three unrelated, geographically dispersed managed care settings. The researchers are evaluating educational and organizational approaches to QI for pediatric asthma care, focusing primarily on symptom assessment. They also will examine other outcomes, including functional status, health care use, and patient satisfaction. Kevin Weiss, Principal Investigator (AHRQ grant HS08368).

- *Effects of Medicaid enrollment gaps on asthma outcomes are being studied.*

Researchers are evaluating the effect of gaps in enrollment in Tennessee's Medicaid program for children with asthma by studying two markers for use of asthma care—emergency room visits and hospitalizations. William O. Cooper, Principal Investigator (AHRQ grant HS10249).

- *Two studies explore the effects of managed care on the quality of pediatric asthma care.*

The first study is investigating the impact of the transition from fee-for-service to managed care on quality of treatment, quality of life, and health outcomes for indigent children with asthma, as well as the impact of organizational policies on quality and outcomes. Bruce Stuart, Principal Investigator (AHRQ grant HS09950). The second study involves 2,700 children with asthma who are enrolled in nine Medicaid

managed care organizations in California, Washington, and Massachusetts. Researchers are studying health plan payment mechanisms, provider profiling and incentives, and disease management programs; patient-level features; and other variables. Tracy Lieu, Principal Investigator (AHRQ grant HS09935).

- *Evaluation of school-based asthma care is underway.*

Children's functional status, school days missed, and resource use are among the indicators researchers are using to evaluate the impact of using school-based health centers to deliver care for asthma. Mayris P. Webber, Principal Investigator (AHRQ grant HS10136).

- *Researchers are assessing the use of telecommunications in asthma care.*

The researchers are assessing the effectiveness of Telephone-Linked Communications for Asthma, a computer-based system that monitors, educates, and counsels parents and children who have asthma. Robert Friedman, Principal Investigator (AHRQ grant HS10630).

- *Study compares two pediatric asthma management programs.*

Researchers are comparing a modified "easy breathing" program with a disease management program being used by 66 providers in 18 communities. Outcome measures will include adherence to guidelines, antiinflammatory prescription and use rates, hospitalization and ER visits, patient/family satisfaction, and quality of life. Michele M. Cloutier, Principal Investigator (AHRQ grant HS11147).

- *Multisite intervention project for children with asthma may lead to improved outcomes and reduced costs.*

Using a family-focused QI intervention for children with asthma, this study is targeting providers of care to poor, inner-city,

minority youths ages 5-18 who are enrolled in a community health center-based Medicaid managed care organization. The goals are to develop a method to deliver patient-linked guideline prompts at the point of care using affordable information technology; evaluate the system's effects on the process and outcomes of pediatric asthma care; and evaluate the effects on patient outcomes of a family-focused education intervention delivered by a community health worker. Judith Fifield, Principal Investigator (AHRQ grant HS11068).

- *Study findings will build an asthma case-management model for Head Start.*

The researchers are developing a pediatric asthma management model for Head Start personnel using evidence-based asthma management criteria. The goal is to improve the asthma management practices of children, parents, and staff, as well as reduce school absences and use of acute care services. Perla A. Vargas, Principal Investigator (AHRQ grant HS11062).

- *Researchers are evaluating quality improvement strategies.*

These researchers will compare the effects of office-based QI with regular practice on processes and outcomes of care for children with asthma ages 2 to 18. Effectiveness and cost-effectiveness will be evaluated in this managed care setting. Charles J. Homer, Principal Investigator (AHRQ grant HS10411).

Recent Findings

- *Experts develop policy recommendations for pediatric asthma.*

Experts and leaders in childhood asthma outline policy recommendations for ensuring children are quickly diagnosed and treated, agencies are prepared to address needs, and children are safe from environmental risks that worsen asthma. Lara, Rosenbaum,

Rachelefsky, et al., *Pediatrics* 109(5):919-930, 2002 (AHRQ grant K08 HS00008).

- *Improving medication use will reduce racial/ethnic disparities.*

Study findings show that despite having worse asthma than white children, black and Hispanic children with similar insurance and sociodemographic characteristics are 31 and 42 percent less likely to be using inhaled antiinflammatory medication to prevent the onset or worsening of an asthma episode. Lieu, Lozano, Finkelstein, et al., *Pediatrics* 109(5):857-865, 2002 (AHRQ grant HS09935).

- *Few parents are reducing household asthma triggers.*

In a study of 638 children with asthma, 45 percent of the parents had received written instructions about avoiding asthma triggers in their homes. Providing parents with these instructions was not associated with their efforts to do so. Finkelstein, Fuhlbrigge, Lozano, et al., *Arch Pediatr Adolesc Med* 156:258-264, 2002 (AHRQ grant HS08368).

- *Minority children get fewer medications than white children.*

Investigators analyzed responses to questionnaires, as well as prescription, demographic, provider, and other data on 1,000 asthmatic children and their families. Black and Hispanic children received fewer bronchodilators, and Hispanic children received fewer inhaled steroids than white children. Ortega, Gergen, Paltiel, et al., *Pediatrics Electronic Pages* 109(1):E1 <http://www.pediatrics.org>, 2002 (AHRQ Publication No. 02-R046)* (Intramural).

- *Mild asthma does not significantly affect quality of life.*

Researchers analyzed asthma symptom data (based on parent and child daily logs); child-reported health status and quality-of-life (QOL) scores; and child-reported anxiety scale, depression inventory,

and behavior checklist data for 339 children. Children with mild or moderate asthma do not differ in emotional functioning, symptoms, or total QOL scores, but those with moderate asthma report more activity limitations. Annett, Bender, Lapidus, et al., *J Pediatr* 139(6):854-861, 2001 (AHRQ grant HS09123).

- *Tobacco smoke increases risk of respiratory diseases.*

A literature review reveals the following: environmental tobacco smoke (ETS) increases the risk of respiratory diseases (including asthma) in children, and the home is the most important source of ETS exposure. The impact of ETS on respiratory symptoms is strongest in a child's first 2 years. Gergen, *Respir Physiol* 128:39-46, 2001 (AHRQ Publication No. 02-R022)* (Intramural).

- *Comorbidities led to higher use and cost of health care.*

Records of 71,818 children enrolled in a health care group plan revealed that children with asthma were three times more likely than those without asthma to have coexisting problems. The problems (sinusitis, otitis media, and allergic rhinitis) led to higher health care use and costs. Grupp-Phelan, Lozano, and Fishman, *J Asthma* 38(4):363-373, 2001 (NRSA training grant T32 HS00034).

- *Medicaid children use emergency departments most often.*

Investigators studied health care use and asthma symptoms of 804 children. Medicaid children used the emergency department almost twice as often for asthma care as privately insured children. Ortega, Belanger, Paltiel, et al., *Med Care* 39(10):1065-1074, 2001 (NRSA training grant T32 HS00034).

- *Rates of diagnosis vary despite similarities in symptoms.*

An asthma screening survey administered to a metropolitan and a nonmetropolitan group of American Indian and Alaska Native students

found similar rates of asthma symptoms and medical visits for these symptoms. However, the students' locale, ethnicity, and socioeconomic status had a stronger effect on physician diagnosis of asthma than prevalence of asthma symptoms. Stout, White, Redding, et al., *Public Health Rep* 116:51-57, 2001 (AHRQ Publication No. 02-R005)* (Intramural).

- *Few children with asthma use controller medication despite guidelines.*

Researchers conducted a 1-year study of 13,352 children with asthma who were cared for in three managed care organizations. They found that despite national guidelines recommending use of inhaled corticosteroids, few children with persistent asthma symptoms used them regularly. Adams, Fuhlbrigge, Finkelstein, et al., *Arch Pediatr Adolesc Med* 155:501-507, 2001 (AHRQ grant HS08368).

- *Bilingual scale helps clinicians assess asthma symptoms.*

A new Spanish-English scale for measuring the control of asthma in Latino children from low-income families has been developed and tested with parents of 234 inner-city Hispanic children with asthma. Lara, Sherbourne, Duan, et al., *Med Care* 38(3):342-350, 2000 (AHRQ Publication No. 00-R021)* (Intramural).

- *Factors that predict hospitalization of children with asthma have not changed over time.*

Researchers found that teenagers and boys were more likely than children aged 5 to 12 and girls to be hospitalized for severe respiratory distress or failure. Region of the country and hospital teaching status also were significantly associated with differences in severity of asthma among hospitalized children. The research team reviewed hospital records of more than 168,000 children in 746 hospitals in 1990 and

more than 174,000 children in 811 hospitals in 1995. Meurer, George, Subichin, et al., *Arch Pediatr Adolesc Med* 154:143-149, 2000 (AHRQ grant HS09564).

- *Children with asthma did not improve following a pharmacist-delivered intervention.*

Researchers assessed changes in disease control, functional status, and cost associated with a structured program of pharmacist-delivered care for children with asthma and found no evidence that they improved in pulmonary function, functional status, quality of life, asthma management, or satisfaction with care. Stergachis, Gardner, Anderson, and Sullivan, *J Am Pharm Assoc* 42(5):743-752, 2002 (AHRQ grant HS07834).

- *Asthma affects Puerto Rican children more severely than it does other Latino children.*

Puerto Rican children with asthma are affected by their illness significantly more than Cuban American or Mexican American children. Puerto Rican children usually have a smaller airway size, more severe inflammatory reactions, and lower birthweight than other Latino children, and their mothers are more likely to smoke cigarettes than other Hispanic mothers. Lara, Morgenstern, Duan, et al., *West J Med* 170:75-84, 1999 (NRSA training grant T32 HS00007).

- *Environmental tobacco smoke contributes to early childhood asthma.*

Data from the Third National Health and Nutrition Examination Survey (NHANES) reveal that almost half of the cases of early childhood asthma, chronic bronchitis, and wheezing result from secondhand cigarette smoke. Gergen, Fowler, Maurer, *Pediatrics Electronic Pages* 101(2):E8, <http://www.pediatrics.org> (AHRQ Publication No. 98-R033)* (Intramural).

Attention Deficit/Hyperactivity Disorder

Attention deficit/hyperactivity disorder (ADHD) is a psychiatric disorder distinguished by symptoms of inattention, hyperactivity, and impulsivity, and it may be accompanied by learning disabilities, depression, anxiety, conduct disorder, and oppositional defiant disorder. ADHD is one of the most common childhood-onset disorders, with a prevalence rate of approximately 4 percent to 12 percent for school-aged children. AHRQ has supported the development of evidence reports on the diagnosis and treatment of ADHD, research on the costs associated with the disorder, and efforts to improve quality of care for ADHD.

Research in Progress

- *Workshops will facilitate applications of research to practice.*

This conference grant supports a series of learning opportunities to improve care for children with attention-deficit/hyperactivity disorder (ADHD). The goal is to promote the translation of the evidence about the diagnosis and treatment of ADHD into clinical practice. Charles Homer, Principal Investigator (AHRQ grant HS12070).

- *Study examines use of computers in caring for children with ADHD.*

The researchers will develop and evaluate a computerized system for laptop use in the examining room to improve the care of children with ADHD. Paula Lozano, Principal Investigator (AHRQ grant HS11859).

- *New tools are being developed to help families cope with ADHD.*

Researchers are developing tools for families with children who have ADHD to help them coordinate the child's care and inform parents,

teachers, and health providers. Clinical Tools, Inc., Chapel Hill, NC (AHRQ contract 290-99-0008).

Recent Findings

- *Costs are similar for ADHD and asthma.*

Data from the 1996 Medical Expenditure Panel Survey reveal annual health care costs for children with ADHD and asthma were \$479 and \$437 more than the those of the general population of children. Chan, Zhan, and Homer, *Arch Pediatr Adolesc Med* 156:504-511, 2002 (AHRQ Publication No. 02-R074).*

- *Evidence report focuses on children with ADHD.*

Researchers assessed the effectiveness and long- and short-term safety of pharmacological and nonpharmacological interventions for ADHD. Copies of the report summary (AHRQ Publication No. 99-E0017) and full report, *Treatment of Attention-Deficit/Hyperactivity Disorder* (AHRQ Publication No. 00-E005), are available from AHRQ* (AHRQ contract 290-97-0017).

- *AHRQ technical review focuses on the screening tests used to diagnose ADHD.*

The researchers identified several rating scales that effectively discriminate between ADHD children and normal controls. Broad-band behavior rating scales were ineffective in identifying ADHD children, as were imaging procedures (CT, CAT scan, MRI) and neurological screening tests. Copies of the summary (AHRQ Publication No. 99-0049) and technical review, *Diagnosis of Attention-Deficit/Hyperactivity Disorder* (AHRQ Publication No. 99-0050), are available from AHRQ* (AHRQ contract 290-94-2024).

Chronic Illnesses

Approximately 20 million children suffer from at least one chronic health condition. Of the 200 chronic

conditions and disabilities that affect young people, AHRQ's current research focuses most predominantly on diabetes, cerebral palsy, respiratory problems, and traumatic brain injury. For a description of projects and findings on other chronic illnesses, see the sections on asthma, ADHD, and mental health in this program brief.

Recent Findings

- *Palliative care services should be partially hospital based.*

In examining the characteristics of deaths occurring in children's hospitals, researchers find that children with complex chronic conditions are in the hospital longer and spend longer periods on mechanical ventilation than other children and could benefit from hospital-based palliative care services. Feudtner, Christakis, Zimmerman, et al., *Pediatrics* 109(5):887-893, 2002 (AHRQ grant K08 HS00002).

- *Multidisciplinary care did not prevent adverse outcomes among children with type-1 diabetes.*

Researchers assessed how glycemic control and the frequency of glycemic monitoring affected the incidence of adverse events, hospitalizations, and emergency room visits of 300 youngsters with type-1 diabetes. Despite multidisciplinary care, glycemic control did not improve during the 1-year study period, and participants were hospitalized three times as often as the general pediatric population. Levine, Anderson, Butler, et al., *J Pediatr* 139:197-203, 2001 (NRSA training grant T32 HS00063).

- *Children with diabetes can learn to live well, despite the ever-present risk of serious illness and death.*

Attitudes of juvenile diabetes patients toward their illness early in its course can lead to emotional and ethical predicaments involving issues of control, stigma, risk, and responsibility. Because advances in medical therapy will keep patients with chronic diseases living longer in

states of “dangerous safety,” the inescapable threat of illness and death needs to be integrated into the concept of a well-lived life. Feudtner, *Cult Med* 173:64-67, 2000 (AHRQ training grant T32 HS00009 and HS07476).

- *Medicaid-insured children with chronic diseases receive most of their care from generalist physicians.*

To calculate annual rates of generalist, subspecialist, and pediatric subspecialist use, investigators analyzed Medicaid claims data for over 57,000 children and adolescents with 11 chronic conditions. Findings show that Medicaid-insured children with chronic diseases received most of their care from generalists. Kuhlthau, Ferris, Beal, et al., *Pediatrics* 108(4):906-912, 2001 (AHRQ grant HS09416).

- *Evidence report discusses rehabilitation for traumatic brain injury (TBI) in children.*

Researchers examined the effectiveness of early, intensive rehabilitation; the use and outcomes of special education; the role of developmental stage as a predictor of problems resulting from TBI; and the ability of support services to improve family coping and alleviate the burden of illness. The report summary (AHRQ Publication No. 99-E025) and full report, *Rehabilitation of Traumatic Brain Injury in Children and Adolescents* (AHRQ Publication No. 00-E001), are available from AHRQ* (contract 290-97-0018).

- *Medications are the third-largest health care expense for children infected with HIV.*

An analysis of medical costs for 100 children with AIDS and 41 children with HIV revealed that medications constitute the third-largest expense. The largest expenses are for hospital stays and outpatient services. Hsia, *AIDS Care* 10(6):761-770, 1998 (AHRQ Publication No. 99-R031)* (Intramural).

- *Costs are high for families that have children with diabetes.*

Questionnaires were sent to 197 families with a diabetic child and 142 families with no diabetic children. More than 60 percent of affected families reported having to pay a deductible for either insulin, syringes, or blood-testing strips; more than 85 percent paid a copayment for these items. Songer, LaPorte, Lave, et al., *Diabetes Care* 20(4):577-584, 1997 (NRSA Fellowship F32 HS00038).

Costs, Use, and Access to Care

AHRQ’s research indicates that as many as 11 million U.S. children ages birth to 18 are uninsured. Obtaining adequate access to care and maintaining a usual source of care are special challenges for these young people and their families. There also are significant racial and ethnic differences in children’s access to health care that cannot be explained by insurance and socioeconomic factors alone.

Research in Progress

- *Barriers faced by vulnerable children are being identified.*

Researchers aim to measure modifiable barriers to care that affect the link between vulnerability factors and health care structures, processes, and outcomes for children with special health care needs. English and Spanish versions of a Barriers to Care Questionnaire also will be developed. Michael Seid, Principal Investigator (AHRQ grant HS13058).

- *Study will examine family status and child mental health.*

This project will examine the socioeconomic status of families, mental health conditions of children, and related services for children. Michael Ganz, Principal Investigator (AHRQ grant HS13047).

- *Project assesses family experiences in managing health needs.*

The goal of this project is to provide qualitative information about managing the health care needs of vulnerable children in San Diego. The focus will be on health needs, use of services, problems in using care, and proposals for improving health care services. Michael Seid, Principal Investigator (AHRQ grant HS11751).

- *Study will evaluate risk-assessment instruments.*

Investigators will determine the sensitivity of risk assessment models that identify expected costs and use of managed care plans, if disincentives for enrollment exist, and whether additional information improves the predictive performance of risk assessment instruments. Paul Fishman, Principal Investigator (AHRQ grant HS11314).

- *Studies in the Child Health Insurance Research Initiative (CHIRI) are focusing on ways that public health insurance programs and health care delivery systems can improve quality and access for low-income children.*

In 1999, AHRQ in partnership with the Health Resources and Services Administration and the David and Lucile Packard Foundation funded nine 3-year projects to examine ways to improve health care for low-income children receiving care through publicly funded programs, including the State Children’s Health Insurance Program (SCHIP). Funding for these projects will total \$9.1 million over 3 years. The projects, which are dispersed around the country, will identify which health insurance and delivery features work best for low-income, minority, and special-needs children. The projects and principal investigators are:

- Access and Quality of Care for Low-Income Adolescents, Elizabeth Shenkman, University of Florida, Gainesville.

- Analysis of Fee-for-Services vs. Managed Care for Children with Special Health Care Needs, Elaine Beane, Michigan Public Health Institute, Ann Arbor.
- Evaluation of Kansas Healthwave, Robert St. Peter, Kansas Health Institute, Topeka.
- Health Care Access, Quality, and Insurance for Children with Special Health Care Needs, Nancy Swigonski, Indiana University, Indianapolis.
- Impact of Publicly Funded Programs on Child Safety Nets, Peter Budetti, Northwestern University, Evanston, IL.
- Medicaid vs. Premium Subsidy: Oregon’s CHIP Alternatives, Janet Mitchell, Center for Health Economics Research, Waltham, MA.
- New York’s SCHIP: What Works for Vulnerable Children, Peter Szilagyi, University of Rochester, Rochester, NY.
- Provider Participation and Access in Alabama and Georgia, Janet Bronstein, University of Alabama at Birmingham.
- Responsiveness of SCHIP to Children with Special Health Care Needs, Sara Rosenbaum, George Washington University, Washington, DC (funded by HRSA’s Maternal and Child Health Bureau).

Recent Findings

- *Adolescents in skipped-generation families are most likely to be uninsured.*

A study of the health insurance status of a nationally representative sample of 17,670 middle and high school students reveals that adolescents who live outside of two-parent families are significantly more likely to have been uninsured than adolescents in two-parent families. Adolescents living in households headed by grandparents are most likely to be uninsured. Kirby and Kaneda, *Med Care Res Rev*

59(2):146-165, 2002 (AHRQ Publication No. 02-R073)* (Intramural).

- *Limited English proficiency hinders enrollment in State Medicaid programs.*

Families who are not proficient in the English language have more difficulty enrolling in State Medicaid health insurance programs, according to a survey of 1,055 parents. Compared with English-proficient families, they were more likely not to know if they were eligible or how to enroll in Medicaid and to find the enrollment forms too difficult. Feinberg, Swartz, Zaslavsky, et al., *Maternal and Child Health Journal* 6(1):5-18, 2002 (AHRQ grant HS10207).

- *Georgia’s SCHIP enrollees have better access to care than its Medicaid-insured children.*

Based on responses to the Consumer Assessment of Health Plans Study Medicaid-Managed Care Child Survey, researchers report that children enrolled in Georgia’s Medicaid program have worse access to health care than children enrolled in Georgia’s SCHIP. Both programs have nearly identical rules and providers, and results were corroborated by focus groups with physicians and parents. Edwards, Bronstein, and Rein, *Health Affairs* 21(3):240-248, 2002 (AHRQ grant HS10435).

- *Passive reenrollment policies contribute to a lower SCHIP disenrollment rate.*

Kansas, New York, and Oregon require parents to periodically verify their children’s eligibility. Florida’s passive policy requires notification only if changes occur that affect eligibility for SCHIP. At reenrollment, this study found only 5 percent of children in Florida’s SCHIP were disenrolled compared with one-third to one-half of those in the other States. Dick, Allison, Haber, et al., *Health Care Financing*





Review 23(3):65-88, 2002 (AHRQ Publication No. 02-R070)* (Intramural).

- *Expanding income eligibility does not increase unmet needs.*

Researchers evaluated a State-financed health insurance program that provided coverage to children regardless of income before implementation of SCHIP. They found inclusion of higher income children benefits a larger group of children without substantially changing health service use in the program. Feinberg, Swartz, Zaslavsky et al., *Pediatrics* 109(2):2002, online at www.pediatrics.org/cgi/content/full/109/2/e29 (AHRQ grant HS10207).

- *State insurance does not “crowd out” private insurers.*

Telephone surveys of 996 parent/guardians of children enrolled in the Massachusetts Children’s Medical Security Plan (CMSP) revealed that access to employer-sponsored insurance (ESI) was limited (19 percent), and uptake was low (13 percent). Few children who had ESI at enrollment dropped this coverage to enroll in CMSP. Feinberg, Swartz, Zaslavsky, et al., *Health Serv Res* 36(6) (online only), 2001 (AHRQ grant HS10207).

- *Medicaid expansions were relatively inexpensive.*

Researchers analyzed 1984 to 1994 State Medicaid spending to determine the cost of Medicaid expansions for children. They found that the expansions had relatively low incremental costs per enrollee and were substantially below the average Medicaid expenditure for children. Gordon and Selden, *Med Care Res Rev* 58(4):482-495, 2001 (AHRQ Publication No. 02-R033)* (Intramural).

- *Market forces prompt evolution of children’s hospitals.*

Chief executive officers of 29 children’s hospitals responded to a

survey on the impact of market changes from 1991 through 1996. They note that hospitals experienced changes in mission, movement toward more outpatient care, a decline in lengths of stay, and an increase in marketplace competition. Yee, Shelton, Girouard, et al., *Ambulatory Pediatr* 1(2):117-121, 2001 (NRSA training grant T32 HS00063).

- *A regular source of care helps to ensure appropriate service.*

Middle and high school students in rural areas were surveyed regarding their health status and use of health care services. Those with no regular source of care were much less likely to obtain preventive or acute care than those with a regular source of care. Ryan, Riley, Kang, et al., *Arch Pediatr Adolesc Med* 155:184-190, 2001 (AHRQ grant HS07045).

- *Use of health services involves significant out-of-pocket expenditures for some families.*

Data from AHRQ’s 1996-1998 Medical Expenditure Panel Survey (MEPS) were used to analyze insurance coverage and health expenditures for children and youths, newborn to age 17. Although private health insurance was the largest payer, nearly 21 percent of expenditures were covered directly by families. McCormick, Weinick, Elixhauser, et al., *Ambulatory Pediatrics* 1(1):3-15, 2001 (AHRQ Publication No. 01-R036)* (Intramural).

- *Children who are eligible for public insurance programs often are not enrolled.*

Although nearly 90 percent of children had some form of health insurance in 1996, 15.4 percent of children were uninsured at any given point in time. White children were more likely to have insurance than minority children; Hispanic children were least likely to be insured. Many children who were eligible for public insurance (e.g., Medicaid) were not enrolled. McCormick, Kass, Elixhauser, et al.,

Pediatrics 105:219-230, 2000 (AHRQ Publication No.00-R014)* (Intramural).

- *Costs of treating Medicaid-insured and commercially insured children are similar.*

Researchers compared the use of services and costs for treating Medicaid-insured children and commercially insured children in a large nonprofit health maintenance organization. They concluded that treatment costs did not differ significantly between the two groups, and that States enrolling Medicaid recipients in managed care plans may need to adopt reimbursement levels comparable to rates for commercially insured patients. Ray, Lieu, Weinick, et al., *Am J Managed Care* 6:753-760, 2000 (AHRQ Publication No. 00-R044)* (Intramural).

- *Changes in State rules and processes for public insurance could improve coordination and outreach.*

Two reports examine efforts to increase enrollment in public health insurance programs that serve children. The first report describes administrative strategies that could promote coordination between Medicaid and SCHIP. Mann, Cox, and Cohen-Ross, *Making the Link: Strategies for Coordinating Publicly Funded Health Care Coverage for Children* (AHRQ Publication No. 00-0014)* (AHRQ contract 290-98-0009). The second report presents the results of a review of evidence on pre-SCHIP outreach efforts. Barents Group, *Review of the Literature on Evaluations of Outreach for Public Health Insurance and Selected Other Programs* (AHRQ Publication No. OM 00-0006)* (AHRQ contract 290-96-0004).

- *Proportion of privately insured children declined between 1977 and 1996.*

Between 1977 and 1996, the proportion of publicly insured children grew from 13.5 to 19.7 percent, the proportion with no

insurance increased from 12.7 to 15.1 percent, and the proportion of children with private coverage decreased from 73.8 to 65.2 percent. Weinick and Monheit, *Med Care Res Rev* 56(1):55-73, 1999 (AHRQ Publication No. 99-R051)* (Intramural).

- *The daily practice of children's primary care is changing.*

Using data from the National Ambulatory Care Surveys from 1979 to 1994 (58,000 visits), investigators concluded that primary care physicians were spending slightly more time with young patients in 1994 than they did in 1979. They also are providing increased preventive services and counseling and are prescribing antibiotics and the stimulant Ritalin more often. Ferris, Saglam, Stafford, et al., *Arch Pediatr Adolesc Med* 152:227-233, 1998 (AHRQ grant HS07892).

- *Outpatient capacity and access to primary care play a role in out-of-area hospitalizations.*

Children who live in areas with more primary care physicians and hospital-based outpatient services are less likely to go to hospitals outside their local area for ambulatory-care-sensitive conditions such as asthma and diabetes. Greater severity of illness, distance to a metropolitan area, and a higher county median income increase the likelihood of out-of-county care. Basu and Friedman, *Health Econ* 10:67-78, 2001 (AHRQ Publication No. 01-R033)* (Intramural).

- *Parental inability to speak English creates a substantial barrier to health care.*

Researchers found that parents' inability to speak English well enough to fully interact with health care providers creates disadvantages for their children in accessing care. Interpreters or bilingual providers and office staff would help to help reduce disparities. Weinick and Krauss, *Am J Public Health* 90:11-14,

2000 (AHRQ Publication No. 01-R008)* (Intramural).

- *Doctors with many patients in gatekeeping plans tend to refer their patients to specialists.*

Researchers found that gatekeeping arrangements nearly double the odds of patient referrals from pediatricians' offices to specialty care, even though coordinating referrals made during office visits is more difficult for patients in gatekeeping plans. Forrest, Glade, Starfield, et al., *Pediatrics* 104(1):28-34, 1999 (AHRQ grant HS08430).

Emergency Care/Hospitalization

Current studies are focused on evaluating specific units within hospitals and identifying commonalities between frequent users of these facilities. Researchers also hope to expedite decisionmaking by providing evidence-based solutions.

Research in Progress

- *Conference aims to improve practice through research.*

Pediatric emergency medicine investigators learned about concepts in outcomes research, reviewed measures, determined their applicability, identified where new measures are needed, and promoted dialogue with researchers of other disciplines. Several conference papers were published in *Ambulatory Pediatrics*, July 2002, volume 2, number 4, including the paper "The importance of outcomes research in pediatric emergency medicine" (AHRQ Publication No. 02-R087) by AHRQ's Carolyn Clancy, Denise Dougherty, and Elinor Walker.** Ellen Crain, Principal Investigator (AHRQ grant HS10942).

- *Researchers are developing a triage instrument.*

The Pediatric Emergency Assessment Tool, now under development, is intended to help emergency room

clinicians triage pediatric patients to the appropriate level of emergency care. Marc Gorelick, Principal Investigator (AHRQ grant HS11028).

- *Findings on quality and severity are being applied in a pediatric emergency setting.*

A pediatric emergency department severity system is being validated and applied to a quality-of-care evaluation. Murray M. Pollack, Principal Investigator (AHRQ grant HS10238).

- *Researchers examine adolescents' functional outcomes after trauma.*

This study is identifying risk factors for functional limitations after major trauma in adolescents and assessing their degree of disability, quality of life, and psychological well-being. Troy Holbrook, Principal Investigator (AHRQ grant HS09707).

Recent Findings

- *Three factors predict severity of car crash injuries.*

Emergency medical technicians can identify seriously injured children and properly triage them to trauma centers if at the car crash site they evaluate a child's degree of consciousness, extent of passenger space intrusion, and appropriate use of a seatbelt or other restraint.

Newgard, Lewis, and Jolly, *Ann Emerg Med* 39(1):481-491, 2002 (NRSA grant F32 HS00148).

- *Nurses can be trained to recognize suicide risk in an emergency department.*

After attending educational sessions on psychiatric issues and learning about the Suicide Risk

Questionnaire, nurses were better equipped to manage potentially suicidal children in the emergency department. Horowitz, Smith, Levin, et al., *Pediatr Emerg Care* 17(4):306-309, 2001 (NRSA training grant T32 HS00063). Four simple questions based on a standard 30-item Suicide Ideation Questionnaire helped the

ER triage nurses identify 98 percent of children at risk for suicide. Horowitz, Wang, Koocher, et al., *Pediatrics* 107(5):1133-1137, 2001 (NRSA training grant T32 HS00063).

- *Quality and research are key themes of conference.*

This report describes a national conference on childhood emergencies. Participants emphasized quality improvement and research. Jane Ball, Principal Investigator (AHRQ grant HS10084), *National Congress on Childhood Emergencies, 2000* (Final Report, NTIS Accession No. PB2001-102808).**

- *Children with special health care needs are much more likely to use emergency medical services than other children.*

A study of how Utah children used emergency medical services (EMS) and related hospital care found that children with special health care needs—for example, congenital anomalies or birth-related conditions—use more EMS than other children, are more likely to be admitted to the hospital and have longer stays, and usually incur greater hospital charges. Suruda, Vernon, Diller, et al., *Prehosp Emerg Care* 4(2):131-135, 2000 (AHRQ grant HS09057).

- *No significant differences in outcomes were found between two emergency breathing procedures—endotracheal intubation (ETI) and bag-valve-mask ventilation.*

Nearly all (97 percent) paramedic training programs teach ETI. Until this study, however, there were no data associating improved patient survival or other positive outcomes with its use. These researchers compared pediatric ETI with bag-valve-mask ventilation in 830 children and found no significant differences in survival or neurological outcome between the two approaches. Gausche-Hill, Lewis, Gunter, et al., *Ann Emerg Med*

36(4):356-365, 2000 and Gausche, Lewis, Stratton, et al., *JAMA* 283(6):783-790, 2000 (AHRQ grant HS09166).

- *Mortality and functional outcomes data are needed to evaluate pediatric intensive care units (PICUs).*

Researchers examined the relationships between illness severity, length of stay, and functional outcomes among 11,106 patients at 16 PICUs across the United States. Because mortality is a relatively rare event, by itself it probably is not a sufficient indicator of outcomes for PICUs but should be combined with other findings. Fiser, Tilford, and Roberson, *Crit Care Med* 28(4):1173-1179, 2000 (AHRQ grant HS09055).

- *High-volume PICUs have better outcomes than low-volume units.*

A study of patient volume and its relationship to risk of death and length of stay in 16 PICUs revealed that higher patient volume is consistent with lower mortality rates and shorter stays. Tilford, Simpson, Green, et al., *Pediatrics* 106:289-294, 2000 (AHRQ grant HS09055).

- *Handlebars cause major abdominal injuries in minor bicycle falls.*

Researchers studied the records of children age 18 and younger who had been treated for serious bicycle-related injuries at an urban pediatric trauma center. About 77 percent of the handlebar-related injuries resulted from minor crashes. Winston, Shaw, Kreshak, et al., *Pediatrics* 102(3):596-601, 1998 (AHRQ grant HS09058).

Mental Health

Despite the debilitating nature and prevalence of mental health problems in children, many disorders continue to be under-diagnosed and inadequately treated. AHRQ-funded research focuses on improving delivery of mental health care in general health care.

Research in Progress

- *Study evaluates an intervention for oppositional defiant disorder.*

Researchers are evaluating the effectiveness of using a psychological intervention in primary care pediatric settings to help identify and treat preschool children with oppositional defiant disorder (ODD). The study also will evaluate how well a 10-week training program on parenting skills reduces the incidence of ODD and the use of ambulatory and ER care. John V. Lavigne, Principal Investigator (AHRQ/NIMH grant MH59462).

- *Investigators explore better ways to treat depressed teens.*

This study is testing whether adolescents who receive psychotherapy and medication are more likely than those given medication alone to adhere to medication instructions, recover faster from initial depression, stay in remission longer, function better socially and academically, and be more satisfied with their treatment.

Gregory N. Clarke, Principal Investigator (AHRQ grant HS10535).

- *Researchers evaluate an intervention for depressed youths.*

This study involves an intervention to treat depression in adolescents and young adults in primary care settings. Effects are being compared for indicators including usual care, quality of care, satisfaction with care, clinical symptoms, daily functioning, service use and cost, and parental psychological distress. Joan Asarnow, Principal Investigator (AHRQ grant HS09908).

Recent Findings

- *More primary care physicians are prescribing psychotropic medications.*

An analysis of 1995-1999 claims data and calculation of the prevalence of antidepressant use for children with depression or attention

deficit/hyperactivity disorder reveal an increase in use of serotonin selective reuptake inhibitors and central nervous system stimulants, a decrease in use of tricyclic antidepressants, and an increase in other antidepressants. Also, more pediatricians and family doctors are prescribing these drugs, despite their limited training in this area. Shatin and Drinkard, *Ambulatory Pediatrics* 2:111-119, 2002 (AHRQ grant HS10397).

- *Affective disorders in children often go undetected and untreated in primary care.*

Researchers examined how primary care providers treat affective disorders in children and adolescents. They found that pediatricians identified mental health needs in only 1 to 16 percent of children, even though 17 to 27 percent of pediatric primary care patients may need care. Wells, Kataoka, and Asarnow, *Biol Psychiatry* 49(12):1111-1120, 2001 (AHRQ grant HS09908).

- *Family stress contributes to the use of services.*

In this study, mothers of 4,000 disabled children ages 6-17 reported on their children's health, psychosocial problems, and mental health services use, as well as the services provided by health care coordinators. Family stressors were found to be strongly associated with children's poor psychosocial adjustment and mental health care use. Whitney P. Witt, Principal Investigator (AHRQ grant HS11254), *Family Influences on Children's Health and Health Care* (Final Report, NTIS Accession No. PB2002-100381).**

- *Youths with dual diagnoses need a specialized approach.*

An analysis of data on 564 youths in residential treatment and State custody examined clinical characteristics and placement outcomes. Researchers recommend screening youths entering residential treatment for type and severity of

substance use problems and tailored services to ensure close supervision and monitoring of high-risk behaviors. Weiner, Abraham, and Lyons, *Psychiatr Serv* 52(6):793-799, 2001 (NRSA training grant T32 HS00078).

- *Monographs cover children's mental health issues.*

Two monographs, produced by the Children's Mental Health Alliance, focus on children's mental health issues. The first covers best practices, approaches, outcomes, and professional responsibilities across systems of care. Steinberg, *Children's Mental Health: The Changing Interface Between Primary and Specialty Care* (AHRQ grant HS09813). (AHRQ Publication No. 00-R040).* The second monograph examines children's access to and use of mental health services. Leonard Davis Institute of Health Economics Issue Brief—*Children's Mental Health: Recommendations for Research, Practice, and Policy* 7(5), 2000 (AHRQ grant HS09813) (AHRQ Publication No. 00-R042).*

- *Children who suffer traffic injuries may develop posttraumatic stress disorder (PTSD).*

Data show that even with minor injuries following a traffic accident, children and their parents are at risk for developing PTSD. Researchers interviewed parents from 102 families in which children had suffered traffic-related injuries; 25 percent of the children and 15 percent of parents suffered PTSD. De Vries, Kassam-Adams, Cnaan, et al., *Pediatrics* 104(6):1293-1299, 1999 (AHRQ grant HS09058).

Newborns and Infants

Four million babies are born each year in the United States. AHRQ's current research focuses on improving the babies' health outcomes, preventing jaundice, and reducing racial and ethnic disparities in access to care.

Research in Progress

- *Researchers are assessing the economic impact of breastfeeding promotions.*

Using a randomized controlled trial, researchers are comparing the effects of pre- and postnatal breastfeeding promotions on child health care costs, breastfeeding practices, and outcomes. Karen A. Bonuck, Principal Investigator (AHRQ grant HS10900).

- *Study will test the transferability of a simulation program.*

Investigators will determine whether the skills acquired in a simulated environment can be practiced in delivery rooms. Findings will be used to improve the technical and behavioral performance of health professionals caring for mothers and babies. Louis P. Halamek, Principal Investigator (AHRQ grant HS12022).

- *Two studies focus on racial/ethnic variations in managing prematurity and infant mortality.*

In the first study, the researchers are using vital statistics to determine the relationship between newborn ethnicity, obstetric volume, and neonatal intensive care unit volume in the hospital of birth. Mark Chassin, Principal Investigator (AHRQ grant HS10859). In the second study, the researchers are using linked birth records, death records, and hospital discharge abstract data, to examine racial/ethnic differences in infant mortality. Martin Shapiro, Principal Investigator (AHRQ grant HS10858).

- *Researchers seek to improve quality of care for newborns with jaundice.*

The impact of a QI intervention on adherence to the American Academy of Pediatrics' guidelines for jaundice management is being assessed. R. Heather Palmer, Principal Investigator (AHRQ grant HS09782).

- *Standardizing surfactant therapy for preterm infants.*

One of the goals of this QI study is to reduce morbidity and mortality among preterm infants by standardizing use of surfactant therapy. Jeffrey D. Horbar, Principal Investigator (AHRQ grant HS10528).

- *Study of neonatal intensive care addresses regionalization, market forces, and mortality.*

Researchers are assessing differences in neonatal mortality over time, focusing on assessing the volume of newborns in high-risk groups, comparing insurance coverage with mortality, and assessing how competition affects the diffusion of units into community hospitals. Ciaran S. Phibbs, Principal Investigator (NIH/AHRQ grant HD36914).

- *Quality of care measures for high-risk infants are being developed.*

This project has three objectives: (1) develop new methods for measuring quality of care for very low birthweight infants, (2) apply the methods to estimating past and future quality of care, and (3) apply measures that summarize quality differences and economic performance across time and place. Jeanette A. Rogowski, Principal Investigator (AHRQ grant HS10328).

- *Researchers examine outcomes for moderately premature newborns.*

This study focuses on the epidemiology, treatment, and outcomes of moderately premature newborns who are admitted to an intensive care setting during the birth hospitalization. Douglas K. Richardson, Principal Investigator (AHRQ grant HS10131).

Recent Findings

- *Survival of low birthweight infants is linked to care in neonatal intensive care units (NICUs).*

Birth certificates for 16,732 infants who weighed less than 4.2 pounds at

birth were linked with hospital discharge abstracts and death certificates. Those who were born at hospitals with no NICUs or intermediate NICUs had almost twice the risk of dying of babies born at hospitals with regional NICUs. Cifuentes, Bronstein, Phibbs, et al., *Pediatrics* 109(5):745-751, 2002 (AHRQ contract 290-92-0055).

- *Selective testing finds most urinary tract infections (UTIs).*

A study of the urine testing practices of 573 pediatricians shows many test the urine of young febrile infants according to their clinical judgment rather than the recommended routine testing. Over half of the 3,066 infants had their urine tested, and 10 percent of those had UTIs. Of the 807 infants not initially tested, only 2 had subsequent documented UTIs. Newman, Bernzweig, Takayama, et al., *Arch Pediatr Adolesc Med* 156:44-54, 2002 (AHRQ grant HS06485).

- *Market factors are not related to the offering of neonatal intensive care (NIC).*

Researchers examined how strongly a hospital's decision to offer NIC is associated with teaching status and market factors. A high hospital market share of births is not associated with a higher likelihood of offering NIC, although the effect of market share is confounded with hospital teaching status. Friedman, Dever, Steiner, et al., *J Health Polit Policy Law* 27(3):441-464, 2002 (AHRQ Publication No. 02-R078)* (Intramural).

- *Authors urge the discontinuation of a biased index.*

The Adequacy of Prenatal Care Utilization (APNCU) Index, used to measure resource use, demonstrates bias with the finding that more intensive resource use is associated with poorer birth outcomes. Investigators recommend discontinuing use of the APNCU index because it yields misleading results. Koroukian and Rimm, *J Clin Epidemiol* 55:296-305, 2002 (NRSA training grant T32 HS00059).

- *The long-term health of low birthweight survivors may be compromised.*

The physical growth and health status of 154 adolescents who were extremely low birthweight (ELBW) infants were examined and compared with 125 sociodemographically matched controls. Despite some catch-up growth, fewer acute health problems, and less use of medical services, the former group's physical growth continues to be compromised. Saigal, Stoskopf, Streiner, et al., *Pediatrics* 108(2):407-415, 2001 (AHRQ grant HS08385).

- *Method of delivery affects bleeding problems.*

Researchers studied the incidence of neonatal thrombocytopenia (NT); incidence of intraventricular hemorrhage (IVH); and method of delivery for 1,283 low birthweight infants. Vaginal delivery involved nearly three times the risk of IVH and 11 times the risk of severe NT during an infant's first day in the neonatal intensive care unit. Kahn, Richardson, and Billett, *Amer J Obstet Gynecol* 186:109-116, 2002 (AHRQ grant HS07015).

- *Ventilation increases risk of disabling cerebral palsy (DCP) in some low birthweight infants.*

With a population of 1,105 low birthweight newborns, researchers examined ventilatory practices as risks for cerebral palsy. Results show that ventilated newborns with low levels of carbon dioxide in the blood, high levels of oxygen in the blood, or unusually prolonged duration of ventilation support have a two- to three-fold increased risk of being diagnosed with DCP by age 2. Collins, Lorenz, Jetton, et al., *Pediatr Res* 50(6):712-719, 2001 (AHRQ grant HS08385).

- *Use of intensive care can pose a moral dilemma.*

Researchers examined two groups of extremely premature infants in New Jersey and the Netherlands. Near universal care in New Jersey (versus

selective initiation of intensive care in the Netherlands) was associated with an additional 24.1 survivors, 7.2 cases of disabling cerebral palsy, and 1,372 ventilator days per 100 live births. Lorenz, Paneth, Jetton, et al., *Pediatrics* 108(6):1269-1274, 2001 (AHRQ grant HS08385).

- *Prevalence of hypotension and vasopressor use varies.*

Researchers evaluated differences in the prevalence of hypotension and hypertension among 1,288 very low birthweight infants at six neonatal intensive care units (NICUs). Hypotensive prevalence ranged from 24 to 45 percent, and NICUs varied nine-fold in their use of vasopressors. Al-Aweel, Pursley, Rubin, et al., *J Perinatol* 21:272-278, 2001 (AHRQ grant HS07015).

- *Care differs widely despite similarity of illness.*

Researchers used the Pediatric Comprehensive Severity Index and patient charts of 601 infants less than a year old with viral lower respiratory illness (VLRI) to examine practice variations in 10 medical centers. They found that infants with similar illness severity receive very different care at different hospitals. A more conservative approach to treatment of VLRI in hospitalized infants would not affect recovery but could reduce resource use and related costs. Wilson, Horn, Hendley, et al., *Pediatrics* 108(4):851-855, 2001 (AHRQ contract 290-95-0042).

- *Study associates maternal fever with death of newborns.*

Investigators retrospectively analyzed data from more than 11 million single live births from 1995 to 1997. The data show that maternal fever during labor is strongly associated with neonatal and infant death. Petrova, Demissie, Rhoads, et al., *Obstet Gynecol* 98:20-27, 2001 (AHRQ grant HS09788).

- *Researchers examine attitudes on treating extremely premature newborns.*

Researchers examined the attitudes of parents of ELBW children and doctors about the desirability of saving ELBW children. Findings underscore the importance of parent-doctor decisionmaking. Steiner, Saigal, Burrows, et al., *Pediatrics* 108(1):152-157, 2001 (AHRQ grant HS08385).

- *Hospital sepsis evaluations for infants vary substantially.*

Researchers analyzed medical records of 303 infants. After controlling for illness severity, infant age, and pediatric ICU stay, 10 hospitals were found to vary 46-fold in the likelihood that an infant would undergo a sepsis evaluation. Antonow, Smout, Gassaway, et al., *J Nurs Care Qual* 15(3):39-49, 2001 (AHRQ contract 290-95-0042).

- *Biological mechanisms contribute to behavioral problems.*

A four-country study of ELBW babies reveals that 8 to 10 years after birth, these children suffer from behavioral difficulties. Central nervous system insult due to prenatal or neonatal complications can explain some of the problems. Hille, den Ouden, Saigal, et al., *Lancet* 357:1641-1643, 2001 (AHRQ grant HS08385).

- *Similar patterns of disorders are found in LBW infants internationally.*

Researchers examined cohorts of very low birthweight infants in the United States, Canada, Holland, Germany, and Jamaica. At school age, all groups had high rates of disabling cerebral palsy, mental retardation, school problems, and behavioral difficulties. Nigel S. Paneth, Principal Investigator (AHRQ grant HS08385), *Strategies for Care of the Very Low Birthweight Infant* (Final Report NTIS Accession No. PB2001-105904).**

- *Relationship between method of infant feeding and health care costs and use depends on several factors.*

A study of 1,374 infants enrolled in Medicaid found no specific relationship between method of feeding—breastfeeding or formula feeding—and use of health care services. Although breastfeeding initially appeared to lower costs and use of care, preexisting illnesses and more severe conditions affected this relationship. Aylin A. Riedel, Principal Investigator (AHRQ grant HS10163), *Impact of Infant Feeding Method on Health Services Costs and Utilization in a Medicaid Population* (Final Report, NTIS Accession No. PB2000-107824)**.

- *Many low birthweight babies have learning and behavioral problems in adolescence.*

A review of studies of six cohorts of infants born in the United States, Canada, Australia, and the United Kingdom found that adolescents who weighed only 2 pounds or less at birth (very low birthweight) suffer from more school difficulties and behavioral problems than their normal birthweight peers. Extremely low birthweight (less than 1.6 pounds at birth) adolescents fared the worst. Saigal, *Semin Neonatology* 5:107-118, 2000 (AHRQ grant HS08385).

- *Children with very low birthweight remain smaller than their normal-birthweight peers.*

Researchers found that adolescents who weighed 2 pounds or less at birth, even if they survived without major neurodevelopmental disability, continued to be smaller in height, weight, and head circumference than peers of normal birthweight. Peralta-Carcelen, Jackson, Goran, et al., *J Pediatr* 136:633-640, 2000 (PORT contract 290-92-0055).

- *Home visits to low-risk mothers and newborns cost more than clinic visits but are equally effective and increase mother's satisfaction.*

In a randomized study of 1,163 medically and socially low-risk mother-newborn pairs, researchers assigned the pairs to receive either 70-minute home visits by nurses or 20-minute clinic visits with nurse practitioners or physicians on the third or fourth postpartum day. No significant differences were seen in clinical outcomes between the groups, but the mothers were much more satisfied with the home visits. Lieu, Braveman, Escobar, et al., *Pediatrics* 105(5):1058-1065, 2000 (AHRQ grant HS07910).

- *Increasing postpartum hospital stays may reduce newborn readmissions and deaths.*

In the first of two studies, researchers compared the probability of readmission for newborns who had 39-hour stays with those who had 51-hour stays. They found that the 12-hour increase in length of hospital stay could reduce the newborn readmission rate by 0.6 percentage point. Malkin, Broder, and Keeler, *Health Serv Res* 35:1071-1091, 2000. In the second study, the researchers examined birth, death, and hospital discharge records of 47,879 newborns and found a significant association between early discharge and newborn death. Delayed diagnosis of curable but life-threatening conditions was a major factor in their finding that infants discharged within 30 hours of birth were at greater risk of death than those discharged within 30 to 78 hours. Malkin, Garber, Broder, et al., *Obstet Gynecol* 96:183-188, 2000 (AHRQ grant HS09342).

- *Clinicians should give high priority to parents' wishes in decisions about neonatal care.*

A study of ELBW adolescents and their parents found that despite severe disabilities, parents—and ELBW adolescents themselves—believe these young people have a decent quality of life. Saigal, *Clin Perinatology* 27(2):403-419, 2000 (AHRQ grant HS08385).

- *Physicians may underestimate preterm infants' outcomes.*

Pediatricians and obstetricians who are pessimistic about the outcomes of premature infants tend to underestimate their actual chances of survival and freedom from serious handicap and may be less likely to use potentially lifesaving therapies. Morse, Haywood, Goldenberg, et al., *Pediatrics* 105(5):1046-1050, 2000 (PORT contract 290-92-0055).

- *Comprehensive followup care reduces life-threatening illnesses and improves outcomes.*

When high-risk inner-city infants received comprehensive followup care, 47 percent fewer of them died or developed life-threatening illnesses that required admission for pediatric intensive care, compared with infants who did not receive comprehensive followup care. Broyles, Tyson, Heyne, et al., *JAMA* 284:2070-2076, 2000 (AHRQ grant HS06837).

- *Longer hospital stays for newborns may not affect readmission rates for jaundice.*

This study found that current laws mandating insurance coverage for 48-hour maternal and infant stays may not be the most effective way to prevent hospital readmission for jaundice and its complications. Grupp-Phelan, Taylor, Liu, et al., *Arch Pediatr Adolesc Med* 153:1283-1288, 1999 (NRSA training grant T32 HS00034).

- *Researchers develop model for treating infants with high fevers.*

These researchers documented clinical practices and costs of care for infants with fever, and developed an optimal clinical prediction model. They used data collected by 577 pediatricians on 3,066 infants less than 3 months old who had a fever of at least 100.2°F. Robert H. Pantell, Principal Investigator (AHRQ grant HS06485), *PROs Febrile Infant Study* (Final Report, NTIS Accession No. PB2000-100683).**

Oral Health

In order to reverse trends of under use and disparities in oral care for children, researchers are studying incentives to improve access to and delivery of care.

Research in Progress

- *Study assesses effects of public insurance on use of pediatric dental services.*

This researcher is studying the dental health status, use of dental services, and effectiveness of established pediatric oral health performance measures for children enrolled in the North Carolina Medicaid or State Children's Health Insurance Program. Tegwyn L. Hughes, Principal Investigator (AHRQ grant HS11514).

- *How do Federal programs affect use and cost of services?*

This dissertation research project involves costs to the Medicaid program and use of dental health services for children and the role of the Women, Infants, and Children's (WIC) Supplemental Food Program in helping to help increase oral health access for Medicaid children. Jessica Y. Lee, Principal Investigator (AHRQ grant HS11607).

Recent Findings

- *Dental expenses of poor and minority children are low compared with other population groups.*

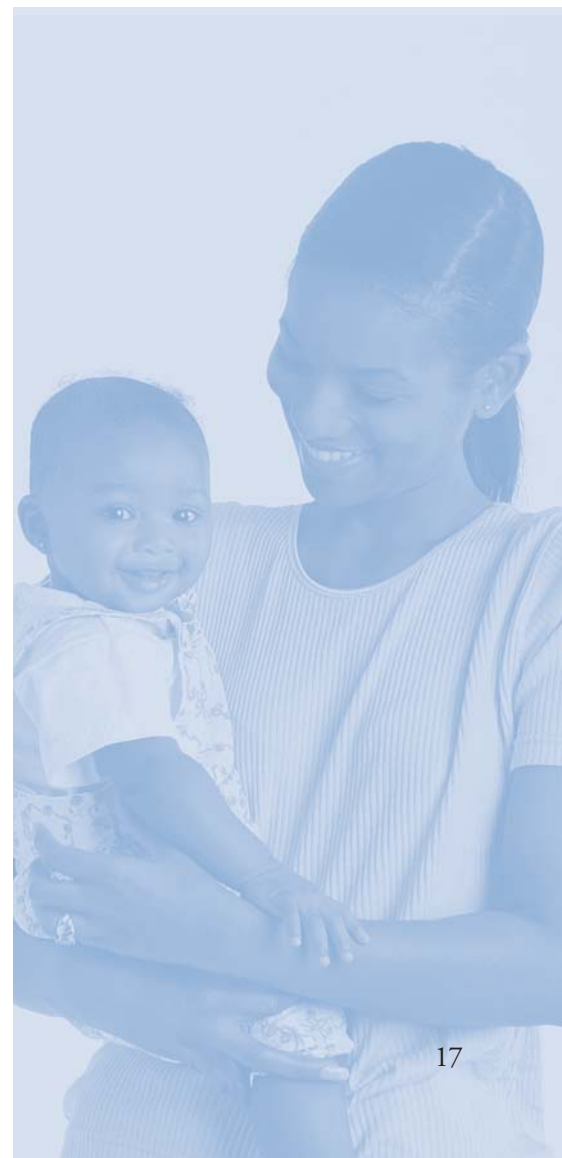
Data from the 1996 Medical Expenditure Panel Survey show that white children make up to 66 percent of the child population and incur 86 percent of dental expenditures. Black and Hispanic children each make up 17 percent of the population and incur about 6 and 8 percent of dental expenditures, respectively. Dental expenses for poor, middle-income, and high-income children account for 8, 43, and 41 percent respectively. Edelstein, Manski, and Moeller, *Pediatr Dent* 24(2):11-17, 2002 (AHRQ Publication No. 02-R062)* (Intramural).

- *Researchers characterize 10 years of dental expenditures for children.*

A comparison of data from the 1987 National Medical Expenditure Survey and the 1996 Medical Expenditure Panel Survey indicates that disparities in dental care expenses between poor and higher income children and among minority and white children are shrinking. Wall, Brown, and Manski, *J Am Dent Assoc* 133:474-482, 2002 (AHRQ Publication No. 02-R069)* (Intramural).

- *School-based dental sealant program reduces decay and tooth loss among poor children.*

A cost-effectiveness analysis was conducted on a school-based dental sealant program for low-socioeconomic-status children in New York. Despite having more untreated cavities than the control group (78 vs. 66 percent), the sealant group experienced fewer cavities (2.2 vs. 6.8), no loss of permanent teeth (0 vs. 6), and fewer decayed and filled surfaces (62 vs. 159). Zalos, Glied, Tobin, et al., *J Health Care Poor Underserved* 13(1):38-48, 2002 (AHRQ and HRSA interagency agreement).





- *Caregivers recount barriers to obtaining care.*

Researchers examined comments about dental care from an ethnically diverse group of 77 caregivers who participated in 11 focus groups. Participants identified barriers to making appointments for their Medicaid-insured children, as well as barriers at the dental setting, such as long waiting times and judgmental, disrespectful, and discriminatory behavior from staff and providers. Mofidi, Rozier, and King, *Am J Public Health* 92(1):53-58, 2002 (NRSA training grant T32 HS00032).

- *Poor and minority children experience substantial service disparities in dental care.*

Investigators analyzed dental visits among U.S. children by category of service and sociodemographic factors using 1996 Medical Expenditure Panel Survey data. For every type of dental service, use was higher among white children than among black and Hispanic children and among non-poor children than among poor children. Macek, Edelstein, and Manski, *Pediatr Dent* 23(5):383-389, 2002 (AHRQ Publication No. 02-R045)* (Intramural).

- *Consuming sugared soda does not increase cavities in children and teens.*

Using data from the 1988-1994 Third National Health and Nutrition Examination Survey, researchers examined associations between dental cavities and soda consumption. Children aged 12 to 16 drank an average of 9 to 12 ounces of soda a day, those aged 6 to 11 drank about 6.5 ounces a day, and those aged 2 to 5 drank an average of 2.3 ounces a day. No differences in decayed, missing, and filled permanent tooth surfaces were found. Heller, Burt, and Eklund, *J Dent Res* 80(10):1949-1953, 2001 (AHRQ grant HS09554).

- *Income affects the number of preventive dental visits made.*

These researchers calculated national estimates for preventive dental visits by poor and near-poor youths. Such visits were only about half as likely among poor and near-poor youngsters as they were among young people in middle or high income families across racial/ethnic groups. Watson, Manski, and Macek, *J Am Dent Assoc* 132:1580-1587, 2001 (AHRQ grant HS10129) (AHRQ Publication No. 02-R034)* (Intramural).

- *Sealants save Medicaid money for children prone to cavities.*

Researchers assessed dental experiences of 15,438 children enrolled in the North Carolina Medicaid program from 1985 to 1992. They found savings in Medicaid expenditures related to sealant use within 2 years of application for children with two or more prior caries-related services involving the occlusal surface. Weintraub, Stearns, Rozier, et al., *Am J Public Health* 91(11):1877-1881, 2001 (AHRQ grant HS06993).

- *Study reveals the impact of insurance on dental visits.*

Using data from the 1996 Medical Expenditure Panel Survey, researchers found that Medicaid-insured children are more likely than uninsured children to visit a dentist but not as likely as privately insured children. Manski, Edelstein, and Moeller, *J Am Dent Assoc* 132:1137-1145, 2001 (AHRQ Publication No. 01-R083)* (Intramural).

- *Age and sociodemographic differences exist in dental visits.*

An analysis of data on the civilian, community-based U.S. population during 1977, 1987, and 1996 was conducted. Children aged 6 to 18 had higher dental use rates than any other age group. Manski, Moeller, and Maas, *J Am Dent Assoc* 132:655-664, 2001 (AHRQ

Publication No. 01-R068)*
(Intramural).

- *Review demonstrates benefits of preventive oral care in children.*

Studies show that by mid-childhood, more than 50 percent of children have dental caries; by late adolescence about 80 percent have caries.

Researchers say the infectious nature of dental caries, their early onset, and the potential of early interventions require an emphasis on preventive oral care in primary pediatric care to complement existing dental services. Mouradian, Wehr, and Crall, *JAMA* 284(20):2625-2631, 2000 (AHRQ purchase order R40281601D).

- *Applying fluoride during dental checkups does not affect restorative care.*

Researchers correlated the application of topical fluoride with dental fillings and found that children who receive topical fluoride most frequently are at least as likely to receive fillings as children who receive little or no topical fluoride. Eklund, Pittman, and Heller, *J Public Health Dent* 60(1):33-38, 2000 (AHRQ grant HS09554).

- *Study suggests that increasing reimbursement will not substantially improve access to dental care for children.*

Expanding Medicaid eligibility in North Carolina between 1985 and 1991 and increasing payments to providers between 1988 and 1991 only marginally increased access to dental services for Medicaid-insured children in the State. Pediatric dentists were more likely to participate in Medicaid than general dentists, as were dentists in solo rather than group practices. Mayer, Stearns, Norton, et al., *Inquiry* 37:33-44, 2000 (AHRQ grant HS09330).

- *Data reveal disparities in dental care.*

Data from AHRQ's Medical Expenditure Panel Survey were analyzed to determine the percentage of children who made a dental visit and the number of visits they made.

Low income, low education, and minority race were associated with lower odds of visiting the dentist and a lower number of visits per child. Edelstein, Manski, and Moeller, *Pediatr Dent* 22(1):17-20, 2000 (AHRQ Publication No. 00-R024)* (Intramural).

- *Half of Medicaid-insured children do not use dental services.*

Despite Federal law requiring dental care for Medicaid-eligible children, researchers found that half of such children never used dental services. Robison, Rozier, and Weintraub, *Am J Public Health* 88(11):1669-1673, 1998 (AHRQ grant HS06993 and NRSA training grant T32 HS00032).

Otitis Media

Otitis media (middle ear infection) is a common childhood illness that affects more than half of children under age 5 each year. Current debate revolves around antibiotic use and the long-term effects of ear infection on functioning, behavioral problems, and parental stress.

Research in Progress

- *Conference attendees focused on the effects of otitis media on language and learning.*

Aims of this interdisciplinary conference included addressing research and controversies on the linkage of otitis media in early childhood with hearing, speech and language development, behavior, and academic achievement. Joanne Roberts, Principal Investigator (AHRQ grant HS12072).

- *Investigators are developing and validating quality measures related to insertion of tympanostomy tubes.*

Researchers are assessing the usefulness of tympanostomy tubes in children with recurring otitis media with effusion and developing quality measures and evidence-based criteria to identify appropriate candidates for tube placement. Mark R. Chassin, Principal Investigator (AHRQ grant HS10302).

- *Study focuses on use of nonantibiotic treatments for otitis media.*

These researchers are examining the safety, effectiveness, cost, and acceptability of withholding antibiotics from children with mild acute otitis media (AOM). They are using nonantibiotic symptomatic treatment, parent education, and followup to manage the condition. David P. McCormick, Principal Investigator (AHRQ grant HS10613).

Recent Findings

- *Parents influence pediatricians' treatment decisions.*

An analysis of audiotapes and videotapes of 295 acute care visits reveals that parents often pressure pediatricians to prescribe antibiotics for their children. The doctors prescribed antibiotics in 15 of the 31 cases involving overt pressure. Stivers, *Soc Sci Med* 54(7):1111-1130, 2002 (AHRQ grant HS10577).

- *Researchers describe complications associated with tympanostomy-tube placement.*

Investigators prospectively monitored the middle ear status of 173 children who underwent bilateral tympanostomy tube placement. They found that tube otorrhea (discharge of pus through the tube) is a common and recurring complication in young children who undergo tube placement for persistent middle-ear effusion. Ah-Tye, Paradise, and Colborn, *Pediatrics* 107(6):1251-1258, 2001 (AHRQ and NICHD grant HD26026).

- *Antibiotics offer only modest benefits to children with uncomplicated otitis media.*

Data show that most children with uncomplicated AOM who were not initially treated with antibiotics (78 percent) no longer had pain or fever within 4 to 7 days and suffered no complications. Takata, Chan, Shekelle, et al., *Pediatrics* 108(2):239-247, 2001 (AHRQ contract 290-97-0001).

- *Expert panel labels literature on otitis media “uneven.”*

Reviewers screened 3,461 abstracts and titles of AOM studies from 1966 to 1999, reviewed 760 full-length articles, and used 80 studies in 85 articles. The experts concluded that there is a large body of research literature; however, its quality is uneven and not generalizable. Chan, Takata, Shekelle, et al., *Pediatrics* 108(2):248-254, 2001 (AHRQ contract 290-97-0001).

- *Ear tube placement in children with persistent otitis media does not measurably improve development at age 3.*

Children under age 3 in this study did not have improved developmental outcomes—speech, language, cognitive, or psychosocial development—as a result of tympanostomy tube placement for persistent fluid in the middle ear, regardless of whether tube insertion was prompt or delayed. Paradise, Feldman, Campbell, et al., *N Engl J Med* 344:1179-1187, 2001 (AHRQ/NICHD grant HD26026).

- *Report summarizes available scientific evidence on managing AOM.*

This report presents a synthesis of available scientific evidence on treating AOM. The researchers discuss the natural history of AOM, assess whether antibiotics are effective in treating the condition, and compare the effectiveness of specific antibiotic regimens. The summary (AHRQ Publication No. 00-E008) and full report, *Management of Acute Otitis Media* (AHRQ Publication No. 00-E009), are available from AHRQ* (AHRQ contract 290-97-0001).

- *Primary care physicians can use tympanometry to diagnose middle ear infections.*

Primary care physicians who have been trained in using a hand-held tympanometer to diagnose otitis media can interpret tympanograms as accurately as experts, according to

this study. In addition, their readings can provide high-quality data for research purposes. Green, Culpepper, De Melker, et al., *J Fam Pract* 49(10):932-936, 2000 (AHRQ grant HS07035).

- *Researchers examine effects of persistent middle-ear inflammation in the first 3 years of life.*

Two studies from the University of Pittsburgh School of Medicine involved 2,278 children to examine the effects of persistent otitis media in the first 3 years of life on later functioning and behavior. The first study found that problems with impaired hearing, language, speech, and cognitive development correlated more with socioeconomic status than with otitis media. The second study found no substantial relationship between parents’ ratings of parent-child stress or children’s behavioral problems and the duration of middle-ear effusion. Paradise, Dollaghan, Campbell, et al., *Pediatrics* 105(5):1119-1130, 2000 (AHRQ/NICHD grant HD26026) and Paradise, Feldman, Colborn, et al., *Pediatrics* 104(6):1264-1273, 1999 (AHRQ grant HS07786).

- *Using less expensive antibiotics to treat children’s ear infections could save money without compromising care.*

Researchers found that more expensive antibiotics accounted for only 30 percent of the prescriptions written but up to 77 percent of the more than \$2 million spent on medications for AOM in the Colorado Medicaid program. Less expensive antibiotics, which worked just as well, accounted for 67 percent of the prescriptions but only 21 percent of the costs. Berman, Byrns, Bondy, et al., *Pediatrics* 100(4):585-592, 1997 (AHRQ grant HS07816).

Preventive Services

The majority of injuries and deaths in children and adolescents are preventable. Although the

importance of preventive services has been identified, there still are barriers, flaws, and disparities in the content and delivery of clinical preventive services.

Research in Progress

- *Intervention to improve delivery of adolescent preventive health services.*

Researchers are analyzing the value of a QI strategy to enhance delivery of office-based clinical preventive services for adolescents during routine well-care visits. Charles E. Irwin, Principal Investigator (AHRQ grant HS11095).

- *Will enhanced services alter future parental practices?*

Investigators will assess whether enhanced delivery of behavioral and developmental services in children’s first 3 years of life changes parental attitudes and practices when their children reach 5 years of age. Cynthia Minkovitz, Principal Investigator (AHRQ grant HS13086).

Recent Findings

- *QI systems improve service delivery.*

Researchers had project teams work with QI teams in eight primary care practices to develop systems to assess and improve the delivery of immunizations and screening (for anemia, tuberculosis, and lead exposure). The proportion of children with complete immunizations improved 7 percent within 1 year and 12 percent after 2 years. Bordley, Margolis, Stuart, et al., *Pediatrics Electronic Pages* 108(3):E41, <http://www.pediatrics.org>, 2001 (AHRQ grant HS08509).

- *Long-term benefits of routine newborn hearing screening are unclear.*

Evidence suggests that universal screening leads to earlier identification and treatment of infants with hearing loss. However, the evidence is inconclusive about whether earlier treatment as a result of screening leads to long-term

improvements in language skills. Thompson, McPhillips, Davis, et al., *JAMA* 286(16):2000-2010, 2001 (AHRQ contract 290-97-0018).

- *Study finds lower than expected risk of intussusception.*

The claim that the rotavirus vaccine Rotashield increases risk of intussusception by approximately 20-fold were not confirmed, say researchers. Based on an analysis of hospital discharge data from 10 States, no increase in hospital infant admission rates for intussusception followed vaccination with Rotashield. Simonsen, Morens, Elixhauser, et al., *Lancet* 358:1224-1229, 2001 (AHRQ Publication No. 02-R016)* (Intramural).

- *Survey uncovers discrepancies in immunization practices.*

Researchers conducted a national survey of 252 pediatric nurse practitioners. Although 44 percent were less likely to vaccinate a child during an acute care visit, 56 percent treated this situation the same as a routine, well-child visit. Richard K. Zimmerman, Principal Investigator (AHRQ grant HS09527), *Immunization Barriers: A Study of Pediatric Nurse Practitioners* (Final Report, NTIS Accession No. PB2002-100268).**

- *Availability of free vaccines affects clinicians' referrals.*

Researchers surveyed primary care pediatric nurse practitioners (PNPs) about their use of free vaccines provided by the Federal Vaccines for Children Program. PNPs who received free vaccine supplies were less likely than those who did not to refer children to public clinics for vaccinations. Zimmerman, VanCleve, Medsger, et al., *Matern Child Health J* 4(1):53-58, 2000 (AHRQ grant HS09527).

- *Medicaid managed care enrollment improves use of well-child care.*

Researchers examined the impact of mandatory Medicaid managed care

enrollment on access to and use of health care services by 488 mother-infant pairs and found that managed care enrollment had a positive effect on use of well-child care when compared with private insurance and lack of insurance. Laurel K. Leslie, Principal Investigator (AHRQ grant HS09563), *Medicaid Changes: Impact on at-Risk Children* (Final Report, NTIS Accession No. PB2000-105025).**

- *Economic barriers prevent timely immunizations.*

According to this study, children are vaccinated later in the practices of providers who do not receive free vaccine supplies, those that refer uninsured children to a public vaccine clinic, and providers who over-interpret contraindications to vaccinations. Zimmerman, Mieczkowski, and Michel, *Fam Med* 31(5):317-323, 1999 (AHRQ grant HS08068).

- *A majority of clinicians consider early childhood hepatitis B vaccination to be important.*

In a 1995 telephone survey, 78 percent of 1,236 primary care physicians rated vaccination against the hepatitis B virus as important, 7 percent rated it as unimportant, and 15 percent gave it an intermediate rating. Zimmerman and Mieczkowski, *J Fam Pract* 47(5):370-374, 1998 (AHRQ grant HS08068).

- *Demographics, rather than geographics, account for disparities in immunization rates.*

Analysis of the 1991 National Maternal and Infant Health Survey and the 1993 National Health Interview Survey revealed no significant differences in immunization rates of rural and urban 2-year-old children. Low family income and education, minority race, parental unemployment, and female sex were associated with underimmunization. Lowery, Belansky, Siegel, et al., *J Fam Pract* 47(3):221-225, 1998 (AHRQ

contract 290-93-0039).

- *Reasons for low immunization rates include referral practices and cost.*

A survey of 1,236 physicians found that uninsured children are not as likely as insured children to be immunized when they see their primary care physicians, particularly when the doctor does not receive free vaccines. Zimmerman, Medsger, Ricci, et al., *JAMA* 278(12):996-1000, 1997 (AHRQ contract HS08068).

- *Feedback and financial incentives do not improve pediatric preventive care.*

In this study, providing pediatricians in Medicaid managed care organizations with feedback on compliance with preventive health services and financial bonuses did not increase their provision of these services. Hillman, Ripley, Goldfarb, et al., *Pediatrics* 104(5):931-935, 1999 (AHRQ grant HS07634).

- *Providers often do not address major injury-prevention issues during well-child visits.*

A survey of 465 pediatricians, family physicians, and pediatric nurse practitioners found that attitudes about certain childhood injuries, rather than knowledge about the prevalence of particular injuries, affected which counseling topics the clinicians discussed with their patients. Barkin, Fink, and Gelberg, *Arch Pediatr Adolesc Med* 153:1226-1231, 1999 (NRSA training grant T32 HS00046).

- *Clinicians often do not counsel parents on drowning prevention.*

Despite the high incidence of drowning injuries in Los Angeles County, only one-third of a random sample of primary care providers counseled parents about drowning prevention. Two-thirds of the PCPs surveyed did not know that deaths of young children due to drowning are more common than deaths due to poisoning and firearm injury. Barkin

and Gelberg, *Pediatrics* 104(5):1217-1219, 1999 (NRSA training grant T32 HS00046).

Quality of Care/Patient Safety

In order to assess quality of care and patient safety, researchers are developing quality measures, analyzing medical injuries, and assessing the usefulness of guidelines and other strategies to improve care.

Research in Progress

- *Investigation focuses on choosing managed care plans for children with special needs.*

This study will examine the factors used in selecting managed care plans by the parents of children with special health care needs, the difficulties they face in obtaining access to care, and indicators of quality of care. Jean Mitchell, Principal Investigator (AHRQ grant HS10912).

- *Study focuses on the impact of electronic prescribing on patient safety.*

After determining an institution's baseline medication error rate, investigators will compare handheld implements for electronic prescription writing and determine the effect of the instruments on error rates and prescribing practices. Kevin B. Johnson, Principal Investigator (AHRQ grant HS11868).

- *Two centers for pediatric patient safety are being established.*

One project will establish a Developmental Center for Evaluation and Research in Patient Safety (DCERPS) at the University of Washington Children's Hospital Regional Medical Center. The goal is to reduce and prevent medical errors. James A. Taylor, Principal Investigator (AHRQ grant HS11590). The second project involves collaboration between the University of Vermont, Harvard University, and Dartmouth University to establish a DCERPS in

neonatal intensive care. Center programs will work to reduce medical errors, enhance patient safety, and determine how to learn most effectively from errors and communicate the information to families. Jeffrey D. Horbar, Principal Investigator (AHRQ grant HS11583).

- *Study examines effects of intensive care unit (ICU) errors.*

The goal is to calculate the increase in resource use attributable to medication errors in the pediatric ICU, determine the risk of death from errors, and determine the risk of requiring inpatient rehabilitation or technology dependence associated with exposure to medication errors. Joel D. Portnoy, Principal Investigator (AHRQ grant HS11636).

- *Researchers are validating quality-of-care measures for vulnerable children.*

In the context of a school health initiative, this project will validate a health-related quality-of-life instrument and examine the relationships among structures and processes of care, health-related quality of life, and outcomes. The project will include children and families who speak English, Spanish, Tagalog, and Vietnamese. Michael Seid, Principal Investigator (AHRQ grant HS10317).

- *Injury analysis will assess management of suspected abuse.*

This study will analyze practitioner management of 16,000 childhood injuries and provide the first comprehensive analysis of the management of suspected child abuse in primary care practices. Emalee G. Flaherty, Principal Investigator (AHRQ grant HS10746).

- *Effects of teamwork on errors in neonatal intensive care units.*

Researchers are testing the hypothesis that specific behaviors in teamwork correlate with errors in delivering care to preterm infants during initial

resuscitation and in the first 90 minutes of care. Eric J. Thomas, Principal Investigator (AHRQ grant HS11164).

- *AHRQ's evidence-based practice program is synthesizing scientific evidence to improve quality of care.*

Under this program, 12 5-year contracts have been awarded to institutions in the United States and Canada to serve as evidence-based practice centers (EPCs). They review the scientific literature on assigned topics and produce evidence reports and assessments that can be used by public and private organizations as the basis for QI tools and activities. The following topics for evidence reports relevant to children were assigned in 2001 and are in development:

- Management of bronchiolitis. Research Triangle Institute and University of North Carolina at Chapel Hill.
- Neonatal hyperbilirubinemia. New England Medical Center.
- Preventing adolescent criminal and other health-risking social behavior. Oregon Health and Science University.
- Treatment-resistant epilepsy. Emergency Care Research Institute (ECRI).

Recent Findings

- *Regionalization of cardiac surgery patients saves lives.*

A simulated regionalization of surgery study uncovered benefits to referring pediatric cardiac surgery patients from low- to high-volume hospitals. Based on 2 years of discharge data, results show a decrease in mortality along with an increase in travel distance for families. Chang and Klitzner, *Pediatrics* 109(2):173-181, 2002 (NRSA training grant T32 HS00028).

- *CAHPS® survey results differ for adults and children.*

Researchers examined the adult and child versions of the Consumer

Assessment of Health Plans Study (CAHPS®). CAHPS® scores for children were significantly higher than those for adults except for customer service (which was lower for children) and specialist ratings. Zhan, Sangl, and Meyer, *Med Care* 40(2):145-154, 2002 (AHRQ Publication No. 02-R047)* (Intramural).

- *Factors affecting physician behavior change are outlined.*

According to a review of studies on changing physician behavior to improve the quality of pediatric care, factors affecting change include: continuing medical education that includes interactive intervention, practice guideline implementation, reminders, and educational outreach. Bauchner, Simpson, and Chessare, *Arch Dis Child* 84:459-462, 2001 (AHRQ Publication No. 01-R067)* (Intramural).

- *Availability of care reduces ambulatory-care-sensitive hospitalizations.*

Using Healthcare Cost and Utilization Project data, researchers analyzed 1994 hospital discharges. They found high rates of locally available primary care doctors and high market penetration by health maintenance organizations are associated with reduced hospitalizations for children with ambulatory-care-sensitive conditions. Friedman and Basu, *J Managed Care* 7(5):473-481, 2001 (AHRQ Publication No. 01-R074)* (Intramural).

- *A video and brochure are not sufficient to teach parents about the correct use of antibiotics.*

A control group of parents (no intervention) was paired with an educational group who were shown a 20-minute video and given brochures on the appropriate use of antibiotics. After 2 months, only a modest effect on parent knowledge, beliefs, and self-reported behaviors was found in the intervention group. Bauchner,

Osganian, Smith, et al., *Pediatrics* 108(4):845-850, 2001 (NRSA training grant T32 HS00063).

- *Parental assessments note racial/ethnic disparities in care.*

Parental evaluations of the pediatric care provided by 33 Medicaid HMOs in six States indicate the following: health plans need to pay increased attention to racial/ethnic differences in assessments of care, and language barriers are a significant contributor to racial/ethnic disparities in care. Weech-Maldonado, Morales, Spritzer, et al., *Health Serv Res* 36(3):575-594, 2001 (AHRQ grant HS09204).

- *Proposed information technologies may empower families.*

At the conference "Information Technology in Children's Health Care," researchers described a variety of information technologies to assess their promise for improving care for children and barriers to their use. Technologies that can facilitate information sharing and empower children and families include the electronic pediatric personal medical record, customized health information systems, and interactive physician offices with e-mail and telemedicine capabilities. Several papers commissioned for the conference were published.

D'Alessandro and Dosa, *Arch Pediatr Adolesc Med* 155:1131-1136, 2001; Kaushal, Barker, and Bates, *Arch Pediatr Adolesc Med* 155:1002-1007, 2001; Weitzman and Shiffman, *Arch Pediatr Adolesc Med* 155:990-991, 2001; Johnson, *Arch Pediatr Adolesc Med* 155:1374-1379, 2001 (AHRQ contract 290-95-2000).

- *Summit suggests improvements are needed in pediatric sedation practices.*

The proceedings from a summit on pediatric sedation features lectures on the challenges facing providers of pediatric sedation and a roundtable discussion of controversial issues. Joseph P. Cravero, Principal Investigator (AHRQ grant

HS10110), Dartmouth Symposium on Pediatric Sedation (Final Report, NTIS Accession No. PB2002-102263).**

- *Study measures parental perceptions of primary care.*

The Parent's Perceptions of Primary Care (P3C) is a 23-item questionnaire that asks parents to evaluate the elements of primary care defined by the Institute of Medicine. Researchers found the P3C has good internal consistency, reliability, and validity and can be used by pediatricians, medical groups, and policymakers. Seid, Varni, Bermudez, et al., *Pediatrics* 108(2):264-270, 2001 (AHRQ grant HS10317).

- *Medication errors are common among hospitalized children.*

Researchers analyzed data on 1,120 pediatric patients admitted to two urban teaching hospitals in 1999. They found errors occurred in 5.7 percent of medication orders. Also, the rate of potential adverse drug events was three times the rate found in a similar study of hospitalized adults. Kaushal, Bates, Landrigan, et al., *JAMA* 285(16):2114-2120, 2001 (NRSA training grant T32 HS00063).

- *Different measures are needed to assess the quality of health care provided to children and adults.*

Because children differ from adults in their health care needs and in the way they use care, researchers should use measures of health care quality that are appropriate to children. Future research should address specific methodologic challenges involved in measuring quality of pediatric health care. Palmer and Miller, *Ambulatory Pediatrics* 1(1):39-52, 2001 (AHRQ Publication No. 01-R037)* (Intramural).

- *Parents stress the importance of parent-doctor and child-doctor communication.*

The Child Core Survey from the Consumer Assessment of Health

Plans Study (CAHPS®) was used to assess the interpersonal care of children based on parental responses. The most important factors—according to 3,083 assessments of overall care and of personal doctors—are parent-doctor communication, child-doctor communication, and sufficient time spent with the child. Homer, Fowler, Gallagher, et al., *Jt Comm J Qual Improv* 25(7):369-377, 1999 (AHRQ grant HS09205).

- *Children in staff-model Medicaid managed care receive care equal to that of privately insured children in managed care.*

Researchers used administrative data and a telephone survey to obtain data on access to, satisfaction with, and use of services for enrollees of Kaiser Permanente of Northern California. They found that Medicaid-enrolled children received care at least equal to that of their commercially enrolled peers. Newacheck, Lieu, Kalkbrenner, et al., *Ambulatory Pediatrics* 1(1):28-35, 2001 (AHRQ Publication No. 01-R039)* (Intramural).

- *Researchers review research on QI and examine barriers to QI activities in children's health care.*

Researchers reviewed the published literature (1985-1997) on QI activities in child health and interviewed experts. Research shows that some QI strategies are effective. Barriers to pediatric QI were similar to those for adult populations and were complicated by limited resources and difficulties in measuring health outcomes, among other factors. Ferris, Dougherty, Blumenthal et al., *Pediatrics* 107:143-155, 2001 (AHRQ Publication No. 01-R020)* (Intramural).

- *Measuring quality for vulnerable children requires a special approach.*

These authors point out that pediatric quality measurement is distinct from that for adults because of factors related to children's development and dependence,

differential epidemiology, demographic factors, and differences between the child and adult health service systems. A noncategorical approach, rather than one based on illness status or specific condition, is indicated. Seid, Varni, and Kurtin, *Am J Med Qual* 15(4):182-188, 2000 (AHRQ grant HS10317).

- *Reducing errors in treating febrile infants may require system changes.*

A research team found that 7 percent of infants arriving at the emergency room with a high fever were treated inappropriately. They either were given antibiotics they did not need or did not receive antibiotics they actually did need. Glauber, Goldmann, Homer, et al., *Pediatrics* 105(6):1330-1332, 2000 (NRSA grant T32 HS00063).

- *Embedding guidelines in a computer charting system does not improve quality of care.*

Researchers embedded clinical guidelines for managing young children with high fevers and examined the impact of this approach on 830 febrile children under age 3. There were no changes in appropriateness of care or hospital charges for these children. Schriger, Baraff, Buller, et al., *J Am Med Assoc* 284(2):186-195, 2000 (AHRQ grant HS06284).

- *Study tracks hospital admissions data to determine impact of insurance status on potentially unnecessary hospitalizations.*

Researchers used hospital data for 19 States to determine baseline rates of ambulatory-care-sensitive (ACS) conditions and analyze trends in the rates prior to the implementation of the State Children's Health Insurance Program. The rate of ACS admissions for self-pay and Medicaid-enrolled children increased between 1990 and 1995, but the rate for other insured children decreased significantly. Friedman, Jee, Steiner, and Bierman, *Med Care Res Rev* 56(4):440-455,

1999 (AHRQ Publication No. 00-R009)* (Intramural).

- *Monthly recertification of Medicaid eligibility may undermine health care quality.*

Twelve months of continuous Medicaid enrollment and an assigned primary care physician (PCP) improved the care of children with middle ear infections, say researchers. Children who are continuously enrolled are far less likely to visit the ER for middle ear infections, more apt to receive antibiotics for the condition, and more likely to be referred for ear surgery than those who are discontinuously enrolled (due to monthly recertification) and lack a PCP. Berman, Bondy, Lezotte, et al., *Pediatrics* 104(5):1192-1197, 1999 (AHRQ grant HS07816).

- *A number of variables affect assessments of managed care for children.*

A review of the research found that access to, satisfaction with, and quality of managed care depend on a range of variables. Future research should focus on specific features of managed care, managed care providers, and poor and chronically ill children. Simpson and Fraser, *Med Care Res Rev* 56(Suppl. 2), 13-36, 1999 (AHRQ Publication No. 99-R062)* (Intramural).

- *Pediatric practice guidelines lack input from families.*

A review of the literature on pediatric practice guidelines found that patient and family involvement in guideline development has been limited, potentially affecting the likelihood that guidelines will be successfully implemented. Bauchner and Simpson, *Health Serv Res* 33(4):1161-1177, 1998 (AHRQ Publication No. 99-R003)* (Intramural).

- *Do practice guidelines make a difference?*

Researchers argue that practice guidelines can enhance health care

quality. Physician participation in guideline development and their perception of the philosophy behind a guideline were identified as key factors affecting guideline acceptance. Simpson, Kamerow, and Fraser, *Pediatr Ann* 27(4):234-240, 1998. (AHRQ Publication No. 98-R081)* (Intramural).

- *Earlier recognition of a child's terminal illness allows clinicians and parents to focus on improving the child's quality of life and comfort.*

According to researchers, doctors usually accept that a child is terminally ill about 6 months before the child's death, compared with 3 months for the parents. Earlier recognition of this prognosis by both doctors and parents was associated with more comfort treatment and greater integration of palliative care. Wolfe, Klar, Grier, et al., *JAMA* 284(19):2469-2475, 2001 (NRSA training grant T32 HS00063).

- *Caregivers should pay more attention to palliative care.*

A review of medical records of children who had died of cancer showed that parents were more likely than physicians to report that their child had fatigue, poor appetite, constipation, and diarrhea and that these symptoms were not recognized by the medical team. Also, pain was more likely in children whose parents reported that the physician was not actively involved in end-of-life care. Wolfe, Grier, Klar, et al., *N Engl J Med* 342:326-333, 2000 (NRSA training grant T32 HS00063).

- *Providers give reasons for not reporting all cases of suspected child abuse.*

Researchers surveyed 85 providers in a regional practice-based research network. Reasons given for not reporting suspected abuse included uncertainty about the abuse diagnosis, past negative experience with Child Protective Services, and a perception that past reporting of

abuse did not help the child. Flaherty, Sege, Binns, et al., *Arch Pediatr Adolesc Med* 154:489-493, 2000 (AHRQ grant HS09811).

Capacity-Building

High-quality research in children's health care can only come from having a pool of talented researchers and a strong infrastructure to support analytic projects. AHRQ is committed to the development and support of health services researchers, particularly minority researchers and those who are new to the field.

Research in Progress

- *Conference focused on ways to improve child health care.*

The purpose of the March 2002 First Annual Forum for Improving Children's Health Care was to disseminate best practices and research findings. Tracks focused on improving care and flow in clinical settings, teaching and education, safety and therapy, and systems of care. Charles Homer, Principal Investigator (AHRQ grant HS12070).

- *Child health services researchers (CHSRs) meet.*

The fourth annual CHSR meeting featured plenary sessions on the future of CHSR and community-focused CHSR. Sessions addressed health insurance, welfare reform, patient safety, disparities, mental health treatment, and issues pertaining to terrorism. Go to <http://academyhealth.org/childhealth/agenda.htm> to access slides and presentations from the meeting. The fifth annual meeting will be held June 26, 2003 in Nashville, TN. Wendy Valentine, Principal Investigator (AHRQ grant HS08201).

- *Scholars and data users discuss methodology and measures.*

The Pediatric Health Status and Outcome Measurement Conference will address the current state of





knowledge in pediatric measures, as well as measurement validity, appropriate ways to obtain data, and use of measures. Lynn Olson, Principal Investigator (AHRQ grant HS12078).

- *Child health services research consortium is planned.*

This project will develop the infrastructure to generate and support a child health services research program in the Intermountain West. The program will emphasize children with special health care needs. Charles J. Hoff, Principal Investigator (AHRQ grant HS11826).

- *Program focuses on improving health in the Mississippi Delta.*

Investigators will develop a multidisciplinary research program to improve the health care and health outcomes of underserved, rural, predominantly minority children in 12 impoverished counties in the Mississippi Delta. Linda H. Southward, Principal Investigator (AHRQ grant HS11849).

- *Phase II of Pediatric Practice Research Group (PPRG) begins.*

During this phase of an ongoing PPRG study, researchers will develop a plan for phased trials of computerized data collection in the practice setting, develop strategies for implementing studies that lead to enhanced patient care, and examine the challenges and diversity of clinic flow patterns. Helen Binns, Principal Investigator (AHRQ grant HS11248).

- *Project will further develop a pediatric research group.*

The Cincinnati Pediatric Research Group Enhancement Project will continue creating the infrastructure for an established community practice-based research network to provide pediatric primary care. Michele Kiely, Principal Investigator (AHRQ grant HS11201).

- *Data collection methodologies will be compared.*

This study will compare the traditional paper/pencil data collection for the National Ambulatory Medical Care Survey (NAMCS) with data collection via Web-based technologies. Richard C. Wasserman, Principal Investigator (AHRQ grant HS11192).

- *Study to obtain measures to monitor access and quality.*

This Mentored Clinical Scientist Development Award will enable the investigator to conduct research using interviews, focus groups, and a pilot test to document the factors necessary for monitoring access and quality of primary health care for homeless youths. B. Josephine Ensign, Principal Investigator (AHRQ grant HS11414).

- *Four projects support and facilitate health services researchers' career development in children's health.*

An Independent Scientist Award to Marielana Lara is facilitating her development as a researcher whose work will improve health outcomes and quality of life for Latino children with asthma (AHRQ grant K08 HS00008). John Feudtner's 5-year project will develop techniques to monitor health care use for indicators of quality of care for dying children and develop and test a longitudinal needs assessment program for children with complex chronic conditions (AHRQ grant K08 HS00002). Glenn Flores is focusing on ways to increase health coverage of Hispanic children. (AHRQ grant K02 HS11305). Christopher Forrest's project will focus on the mechanisms by which managed care influences children's access to medical care, use of specialty care, and expenditures for health care. He will examine the impact of alternative models of primary-specialty care collaboration on quality, costs, and outcomes for children with chronic and mental health disorders (AHRQ grant K02 HS00003).

- *Training program builds the field of child health services research.*

This project supports and expands an ongoing training program for pediatric health services research within the Children's Hospital in Boston. Donald Goldmann, Principal Investigator (NRSA grant T32 HS00063).

Recent Findings

- *New KID database facilitates child health services research.*

In August 2001, AHRQ unveiled the Kids' Inpatient Database (KID), the Nation's first all-children's hospital care research database. It was developed for use in making national and regional estimates of children's treatment, including surgery and other procedures, and for estimating treatment outcomes and hospital charges. The database includes information on the hospital care of children from birth through age 18, regardless of insurance status. The KID contains information on the inpatient stays of about 1.9 million children at over 2,500 hospitals across the country in 1997. KID is a component of AHRQ's Healthcare Cost and Utilization Project (HCUP). For more information, go to the AHRQ Web site at www.ahrq.gov and click on "HCUP." (Intramural)

- *Methodological problems pose special challenges for research on pediatric health issues.*

The authors outline methodological challenges in child health services research, including issues involving empirical research, policy analyses, evidence-based guidelines, and QI. Lohr, Dougherty, and Simpson, *Ambulatory Pediatrics* 1:36-38, 2001 (AHRQ Publication No. 01-R038)* (Intramural).

- *Proceedings highlight key issues in child health.*

This report describes a 1998 conference, which provided a forum for introducing junior investigators to

key issues in child health services research. James Perrin, Principal Investigator (AHRQ grant HS09815), *Ambulatory Pediatric Association Child Health Services Research Conference* (final report, NTIS Accession No. PB2000-105025).**

Other Research

Research in Progress

- *Researchers examine the epidemiology and causes of injuries.*

This project will examine the epidemiology and causes of pediatric injuries seen in emergency and outpatient departments. Simon J. Hambidge, Principal Investigator (AHRQ/HRSA joint project 240-97-0043).

- *Researchers will analyze trends in managing splenic injury.*

Study participants plan to characterize the diffusion of nonoperative management of splenic injury in children within a regionalized trauma system. Daniela H. Davis, Principal Investigator (AHRQ/HRSA joint project 240-97-0043).

- *Office visits will include assessments of school readiness.*

This project will analyze current practices during pediatric office visits. Investigators will focus on the school readiness assessment from the National Survey of Early Childhood Health. Alice Kuo, Principal Investigator (AHRQ/HRSA joint project 240-97-0043).

- *Researchers are assessing poverty, diet, and poor growth in U.S. children.*

This project is examining how poverty and growth are associated in U.S. children aged 2 months to 5 years. Jennifer Kasper, Principal Investigator (AHRQ/HRSA joint project 240-97-0043).

- *Center will focus on therapeutics for the pediatric population.*

Improvement in child health is the focus of this Center for Education and Research on Therapeutics. Potential study topics include therapeutic drug monitoring in HIV-infected children, drug metabolism, vitamin D-deficient rickets, asthma care, attention-deficit/hyperactivity disorder, and adverse drug reactions. William Campbell, Principal Investigator (AHRQ grant HS10397).

- *Telemedicine may enhance pediatric care in rural, urban, and suburban settings.*

Telemedicine employs telecommunications and computer technology as a substitute for in-person contact between providers and patients. Investigators are examining whether telemedicine will improve access and increase the efficiency of routine pediatric care in urban and suburban areas. Kenneth McConnochie, Principal Investigator (AHRQ grant HS10753).

Recent Findings

- *Children can provide valid answers to questions about their health.*

Using three cross-sectional interviews of children, investigators determined the children's ability to respond to questions about their health. The results will enable the development of a pediatric health status questionnaire for children aged 6 to 11. Rebok, Riley, Forrest, et al., *Qual Life Res* 10:59-70, 2001 (AHRQ grant HS07045).

- *Evidence syntheses in child health are difficult to build.*

Child health researchers face a lack of high-quality primary studies, difficulty in finding existing studies, variability in the usefulness of outcome measures, and problems with production and dissemination. Moyer, *Ambulatory Pediatrics* 1(1):53-58, 2001 (AHRQ grant HS09815).

For More Information

AHRQ's World Wide Web site (www.ahrq.gov) provides information on the Agency's children's health services research agenda, including detailed information on funding opportunities. Also, www.ahrq.gov/child includes a State-by-State map of AHRQ-funded research projects and other child health services research information. AHRQ also offers a child and adolescent health LISTSERV® (AHRQkid-L) to which users may subscribe via e-mail (Address:

Listserv@list.ahrq.gov; in the message box, type: subscribe AHRQkid-L Your Full Name).

Further details on AHRQ's programs and priorities in child health services research are available from:

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Items in this program brief that are marked with an asterisk (*) are available free from the AHRQ Clearinghouse; to order, contact the AHRQ Clearinghouse, P.O. Box 8547, Silver Spring, MD 20907; phone 800-358-9295. Please use the AHRQ publication number when ordering.

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