



# Research Activities



U.S. Department of Health and Human Services • No. 313, September 2006

Agency for Healthcare Research and Quality

## Highlights

### Departments

- 2 Patient Safety and Quality
- 5 Women's Health
- 5 Child/Adolescent Health
- 8 Health Information Technology
- 9 Outcomes/Effectiveness Research
- 10 Health Care Costs and Financing
- 12 Public Health Preparedness

### Regular Features

- 12 Agency News and Notes
- 14 Announcements
- 15 Research Briefs

## National studies examine excess work hours among medical interns and the risk for needlestick injuries

In 2003, the Accreditation Council for Graduate Medical Education (ACGME) introduced work-hour limits for all first-year residents training in U.S. hospitals. Under these standards, interns are limited to a maximum of 30 consecutive work hours (known as the 30-hour rule), which includes time used for sign-out, teaching, and continuity of care. Interns are also prohibited from working more than 80 hours per week (the 80-hour rule), averaged over 4 weeks, and must be free of all duties for 1 day in 7 (the 7-day rule). In the year following implementation of the standards, mandatory reports submitted to the ACGME by residency programs concluded that only 5 percent of residency programs did not comply, and only 3 percent of residents reported any violations of the 80-hour rule. However, a study, funded in part by the Agency for Healthcare Research and Quality (HS12032), found that nearly 84 percent of medical interns reported they continue to work hours that exceed the ACGME limits. A related study

(HS12032 and HS14130) concludes that interns are much more likely to injure themselves mistakenly with a needle or another sharp instrument when working in a hospital more than 20 consecutive hours, or at night. Both studies are discussed here.

**Landrigan, C.P., Barger, L.K., Cade, B.E., and others. (September 2006). "Interns' compliance with Accreditation Council for Graduate Medical Education work-hour limits." *JAMA* 296(9), pp. 1063-1070.**

An independent, nationwide study conducted by researchers at Brigham and Women's Hospital, Boston, found that 83.6 percent of interns reported work hours that did not comply with the ACGME standards during at least 1 month in the year (July 2003 through May 2004) following implementation. In the study, Christopher P. Landrigan, M.D., M.P.H., Director of the Sleep and Patient Safety Program at Brigham and Women's Hospital, and colleagues prospectively collected data on interns' work

*continued on page 2*

## Work-hour limits

*continued from page 1*

and sleep hours in the year before (June 2002 through May 2003) and after (June 2003 through May 2004) the ACGME standards were implemented. The 4,015 participants completed monthly reports of their work hours and sleep, representing residency programs across all specialties. About 67 percent of interns reported working shifts in excess of 30 consecutive hours. Averaged over 4 weeks, 43 percent of interns reported working more than 80 hours a week, and 43.7 percent reported not having 1 day in 7 free from work duties.

The researchers offer several reasons why non-compliance with the ACGME work-hour rules may be high. Because the standards were created without taking financial or technical implementation into account, residency programs may not have the resources to redesign their programs appropriately. Non-

compliance might also be due to a particular medical institution's culture. Some senior physicians have expressed disapproval of work-hour limits, while others do not believe fatigue represents a threat to patient safety.

**Ayas, N.T., Barger, L.K., Cade, B.E., and others. (September, 2006). "Extended duration work and the risk of self-reported percutaneous injuries in interns." *JAMA* 296(9), pp. 1055-1062.**

Researchers found that interns working during the day following an overnight shift suffered 61 percent more needlesticks and other sharp object injuries than they experienced during a day that was preceded by a night at home (1.3 per 1,000 opportunities versus 0.76 per 1,000 opportunities). Furthermore, interns suffered more than twice as many injuries during the night (1.48 per 1,000) as they did during the daytime (0.7 per 1,000). Lapses in

concentration and fatigue were the two most commonly reported contributing factors (64 percent and 31 percent, respectively). These types of injuries may result in transmission of blood-borne pathogens, including hepatitis and HIV.

The study, conducted by researchers at Brigham and Women's Hospital, Boston, and Vancouver General Hospital, Vancouver, British Columbia, surveyed 2,737 interns in U.S. residency programs from July 2002 through May 2003. Najib Ayas, M.D., M.P.H., and colleagues collected monthly data on work schedules and the occurrence of injuries with sharp instruments. These findings build on previous research and the growing awareness that sleep-deprived first-year doctors in training (interns) working traditional 24-hour shifts make many more serious medical errors and crash their cars more often than those whose work is limited to 16 consecutive hours. ■

*Research Activities* is a digest of research findings that have been produced with support from the Agency for Healthcare Research and Quality. *Research Activities* is published by AHRQ's Office of Communications and Knowledge Transfer. The information in *Research Activities* is intended to contribute to the policymaking process, not to make policy. The views expressed herein do not necessarily represent the views or policies of the Agency for Healthcare Research and Quality, the Public Health Service, or the Department of Health and Human Services. For further information, contact:

AHRQ  
Office of Communications and Knowledge  
Transfer  
540 Gaither Road  
Rockville, MD 20850  
(301) 427-1360  
Barbara L. Kass, MPH, CHES,  
Managing Editor  
Gail Makulowich, Contributing Editor  
Joel Boches, Design and Production  
Karen Migdail, Media Inquiries

## Patient Safety and Quality

### Financial incentives to physicians and hospitals to improve quality of care seem ineffective

A recent review finds little evidence to support the effectiveness of financial incentives to physicians and hospitals to improve performance. The studies suggest that small-scale bonus arrangements are insufficient to motivate substantial changes on the part of physicians and hospitals. Among the health care studies reviewed, many of those with the strongest research designs yielded null results, with only two positive findings. Five of the studies examined interventions that targeted relatively narrow sets of quality measures, such as compliance with preventive health care guidelines. The sixth study examined a single element of a larger-scale, multidimensional quality bonus program. What's more, the incentive dollar amounts per patient and shares of eligible patients involved were often small.

*continued on page 3*

## Financial incentives

*continued from page 2*

Nevertheless, the Harvard University researchers caution against generalizing these findings to the efforts currently being introduced in the commercial insurance market. The majority of previous studies targeted individual physicians, while current programs are more likely to be directed at physician organizations or health systems. Also, half the studies reviewed involved interventions around Medicaid populations, where reimbursements historically have been low.

Looking outside of health care for indirect empirical support for pay-for-performance, the authors also reviewed evaluations of school and job training incentive programs, as well as the extensive literature on executive compensation. Here they found similarly mixed results in terms of effectiveness and evidence of unintended (adverse) consequences.

The authors note that the U.S. health care system is characterized by a large number of overlapping

contracts among payers (that is, health plans and government programs) and providers. As such, financial incentives introduced by any one payer must be a relatively large percentage of total reimbursement by that payer to justify any quality improvement effort with substantial fixed costs. In addition, physicians and hospitals have a limited ability to manage a large number of quality improvement initiatives from several payers at one time. In either case, some coordination among payers on the choice of quality targets may be desirable. Also, the Centers for Medicare & Medicaid Services can play an important role in providing incentives due to their leverage to spur quality improvement and their dominant market share, suggest the researchers. Their study was supported by the Agency for Healthcare Research and Quality (HS10803).

More details are in "What is the empirical basis for paying for quality in health care?" by Meredith B. Rosenthal, Ph.D., and Richard G. Frank, Ph.D., in the April 2006 *Managed Care Research and Review* 63(2), pp. 135-157. ■

## Patients are willing to help prevent medical errors, but reluctant to take all the recommended actions

Many hospital leaders and prominent patient safety organizations encourage patients to become actively involved in preventing medical errors. For example, they recommend that patients confirm that they receive the right medication, mark their surgical site, and ask medical professionals whether they have washed their hands. Patients are motivated to take action to avoid harm caused by errors; however, some actions may be unfamiliar, difficult, or anxiety provoking, according to a new study.

The study included telephone interviews with 2,078 patients discharged from 11 Midwest hospitals and was supported by the Agency for Healthcare Research and Quality (HS14012 and HS11898). Researchers found that 91 percent of patients were very comfortable asking about a medication's purpose, 89 percent were very comfortable asking general medical questions, and 84 percent were

comfortable confirming their patient identity. However, only 46 percent of patients were very comfortable asking medical providers whether they had washed their hands.

While hospitalized, many patients asked questions about their care (85 percent) and a medication's purpose (75 percent). Fewer patients confirmed that they were the correct patient (38 percent), helped mark their incision site (17 percent), or asked about handwashing (5 percent).

Patients who felt very comfortable with error prevention were significantly more likely to take six of seven error-prevention actions compared with uncomfortable patients. The researchers suggest that educational interventions to increase comfort with error prevention may be needed to help patients become more engaged in preventing medical errors. For example, patient safety programs can help reduce patients'

fears about insulting their providers by posting signs in hospital rooms about how patients can help prevent

*continued on page 4*

### Also in this issue:

Diabetes screening in children, see page 5

Use of medications and attention deficit hyperactivity disorder, see page 7

Handheld computers to reduce unsafe prescribing, see page 8

Health insurance and coverage for mental health specialists, see page 10

Hospitals and community emergency preparedness, see page 12

## Medical errors

*continued from page 3*

errors or by having providers wear reminder buttons stating, "Ask me if I washed my hands."

More details are in "Brief report: Hospitalized patients' attitudes about and participation in error prevention," by Amy D. Waterman, Ph.D., Thomas H. Gallagher, M.D.,

Jane Garbutt, M.B., Ch.B., and others, in the April 2006 *Journal of General Internal Medicine* 21, pp. 367-370. ■

## Survey suggests that hospitals in Iowa have made the most progress in following longstanding safe practices

The National Quality Forum recently released a list of 30 safe practices to enhance patient safety at all types of hospitals. The survey asked chief executive officers or administrators at 100 Iowa hospitals to rate the priority given to and the progress made at their hospital for each of the 30 safe practices. Marcia M. Ward, Ph.D., of the University of Iowa, and colleagues correlated hospital ratings of the practices with measures of hospital structure, capacity, and resources.

Hospitals generally made the most progress in the following safe practices: handwashing, unit-dose medication dispensing, administering influenza vaccinations, implementing protocols to prevent wrong-site procedures, and using standardized methods for labeling and storing

medications. Hospitals made the least progress in staffing intensive care units with intensivists (specialists in intensive care) and implementing a computerized provider order entry system. Overall, hospitals gave higher priority to and made more progress in implementing safe practices that have been recommended for some time. Most safe practices were equally endorsed by large and small hospitals.

Priority and progress ratings on 20 of the 30 safety practices were not correlated with factors such as hospital structure, capacity, and resources. Of the Iowa hospitals responding to the survey, 40 percent were accredited by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) and had made greater progress than other hospitals on

several safety practices. These included reading back of verbal orders, use of only standardized abbreviations, implementation of protocols to prevent wrong-site and wrong-patient procedures, evaluation of patients for risk of pressure ulcers, and identification of high-alert drugs. Four of these safety practices overlap with JCAHO safety priorities. The study was supported in part by the Agency for Healthcare Research and Quality (HS15009).

More details are in "National Quality Forum 30 safe practices: Priority and progress in Iowa Hospitals," by Dr. Ward, Thomas C. Evans, M.D., Arthur J. Spies, M.M., and others, in the March 2006 *American Journal of Medical Quality* 21(2), pp. 101-108. ■

### Free and fast—Subscribe to AHRQ's Electronic Newsletter!

If you want the latest information from AHRQ on new RFAs, research findings, conferences, and more, just subscribe to AHRQ's Electronic Newsletter. All you need is a computer and an e-mail address. Here's how:

1. Send an e-mail message to: [listserv@list.ahrq.hhs.gov](mailto:listserv@list.ahrq.hhs.gov)
2. In the subject line type: Subscribe
3. In the body of the message type: sub public\_list-L your full name
4. That's it. You will receive an e-mail confirmation.

Questions? Please send an e-mail to Nancy Comfort in AHRQ's public affairs office at [nancy.comfort@ahrq.hhs.gov](mailto:nancy.comfort@ahrq.hhs.gov)

### Bone protection therapy shifted from estrogen to nonestrogen anti-osteoporosis medicine after publication of the Women's Health Initiative study

The Women's Health Initiative (WHI) study established that hormone therapy (HT) containing estrogen plus progestin increased post-menopausal women's risk of breast cancer, stroke, and heart attack. The study also found a decreased risk of hip fractures among HT users. Nevertheless, researchers concluded that HT should be considered only for women at significant risk of osteoporosis (loss of bone density that can lead to fractures), who cannot take nonestrogen medications. Physicians prescribed less estrogen and more nonestrogen anti-osteoporosis medicine (AOM) after publication of the WHI study findings, according to a study supported in part by the Agency for

Healthcare Research and Quality (HS11673).

Researchers analyzed Medicaid claims data for women 50 years of age and older, who were enrolled in the Pennsylvania Medicaid program from December 1, 2001 through December 31, 2002. The researchers compared use of the following AOMs: estrogens, biphosphonates, selective estrogen receptor modulators (SERMs), and calcitonin in the pre-WHI (December 1, 2001 to July 30, 2002) and post-WHI (August 1, 2001 to December 31, 2002) study periods.

Estrogen use decreased significantly for women from all age and racial groups, but mostly among women 80 years and older (30 percent decrease) and racial

groups other than white or black (38 percent decrease). In contrast, use of biphosphonates increased in all age and racial groups. Use of SERMs significantly increased among white and black women, and all age groups except for women in their 70s. Yet, after the WHI study findings were published, only 15 percent of women were prescribed an AOM of any kind, similar to the pre-WHI period.

See "Osteoporosis management in a Medicaid population after the Women's Health Initiative study," by Euni Lee, Pharm.D., Ph.D., Anthony K. Wutoh, Ph.D., Zhenyi Xue, M.D., and others, in the March 2006 *Journal of Women's Health* 15(2), pp. 155-161. ■

## Child/Adolescent Health

### Diabetes screening practices in children vary widely among pediatric clinicians

As U.S. obesity rates have risen, so has the incidence of type 2 diabetes (previously called adult-onset diabetes) among U.S. children. It is enough of a concern that the American Diabetes Association (ADA) recommends screening for type 2 diabetes in moderate- and high-risk children, but only one-fifth of clinicians follow these screening guidelines, concludes a new study. The ADA recommends a fasting plasma glucose (FPG) test or an oral glucose tolerance test (OGTT), which should be done twice at different times to confirm a diagnosis of diabetes.

However, clinicians prefer screening tests that don't require a second visit, notes Erinn T. Rhodes, M.D., M.P.H., of Harvard Medical School. In a study supported in part by the Agency for Healthcare

Research and Quality (T32 HS00063), Dr. Rhodes and colleagues analyzed responses to a mailed survey of 62 pediatricians, nurse practitioners, and physician assistants from a group practice. The survey addressed attitudes, barriers, and practices related to type 2 diabetes screening of children. Most respondents reported type 2 diabetes screening practices that differed from current ADA recommendations, and screening practices varied widely.

When presented with three hypothetical vignettes of pediatric patients with low, moderately high, and high risk of type 2 diabetes, 21 percent of clinicians screened only moderately high and high-risk patients as recommended by the ADA. An additional 39 percent also screened low-risk children, and 35 percent

*continued on page 6*

## Diabetes screening

*continued from page 5*

screened only high-risk children. Clinicians rarely used FPG or OGTT alone, but used these along with other tests in about one-third to one-half of patients screened. One-third of respondents were likely to order a nonfasting (random) glucose test instead of a fasting glucose test for the average patient. The findings

suggest that type 2 diabetes screening tests must be practical for clinicians and patients, if they are to be used in pediatric practice.

More details are in "Screening for type 2 diabetes mellitus in children and adolescents: Attitudes, barriers, and practices among pediatric clinicians," by Dr. Rhodes, Jonathan A. Finkelstein, M.D., M.P.H., Richard Marshall, M.D., and others, in the March-April 2006 *Ambulatory Pediatrics* 6(2), pp. 110-114. ■

## Anthrax in children is difficult to detect and treat

Difficulties in diagnosing anthrax may lead to dangerous delays in caring for children infected with this often-deadly disease, according to a new report from the Agency for Healthcare Research and Quality. Treating pediatric anthrax is also a special challenge because most currently recommended therapies have not been widely used to treat children with the disease. The anthrax report was requested and funded by the Health Resources and Services Administration of the Department of Health and Human Services.

Since anthrax exposure occurs rarely in the United States and most of the recent cases have been naturally occurring, clinicians may not have first-hand knowledge of the disease and might have difficulty diagnosing it. In addition, symptoms of pediatric anthrax can be easily confused with those of

more common illnesses; for example, inhalational anthrax has symptoms similar to influenza. Also, there is little evidence about the effectiveness in children of interventions currently recommended for adults.

The researchers found very little published evidence of the efficacy of treating children who have anthrax with newer antibiotics such as ciprofloxacin. They also found no reports of anthrax vaccine given to children. The report calls for more current research on the effectiveness in children of non-antibiotic therapies that have been used with considerable success in the past, such as anthrax antiserum and drainage of fluid from the lung cavity.

For the new AHRQ report, investigators analyzed 62 pediatric cases obtained through an extensive review of the scientific literature. Because case reports of pediatric

anthrax are relatively rare, investigators examined cases from as early as 1900 in an effort to maximize the available evidence. More than 50 percent involved children between the ages of 14 and 18; data on younger children, especially those under age 2, were more limited. There were only two cases of inhalational anthrax, the most deadly form of the disease.

**Editor's note:** The AHRQ report, *Pediatric Anthrax: Implications for Bioterrorism Preparedness* was prepared by AHRQ's Evidence-based Practice Center at Stanford University and the University of California, San Francisco. Copies of the report can be found at the Agency's Web site at [www.ahrq.gov/clinic/tp/pedanthtp.htm](http://www.ahrq.gov/clinic/tp/pedanthtp.htm). Print copies of the report (AHRQ Publication No. 06-E013) are also available through the AHRQ Publications Clearinghouse.\* ■

## Children's hospitals are much more likely than general hospitals to diagnose child abuse in severely injured infants

Approximately 1,300 U.S. children died as a result of abuse in 2001. Diagnosing child abuse is difficult, particularly in abused infants. A new study recently found that children's hospitals were more than twice as likely to diagnose child abuse in severely injured infants than general hospitals (29 vs. 13 percent), where most injured children receive care. General hospitals with a children's unit identified more abuse cases (19 percent) than general hospitals without

a children's unit, but fewer than a children's hospital. The study was led by Matthew Trokel, M.D., of Boston Medical Center, and supported in part by the Agency for Healthcare Research and Quality (T32 HS00060).

Researchers analyzed 1997 hospital discharge data from the Kids' Inpatient Database of the Healthcare Cost and Utilization Project to examine abuse diagnosis by hospital type for children less than 1 year

*continued on page 7*

## Child abuse

*continued from page 6*

old. Overall, they analyzed the diagnoses of 2,253 infants who were admitted to U.S. hospitals in 1997 for treatment of traumatic brain injury or femur fracture. When these injuries do not result from either penetrating trauma or motor vehicle accidents, they are often caused by child abuse. An additional 178 infants (39 percent of the total) with these specific injuries would have been diagnosed as abused had they been treated at children's rather than general hospitals, even after controlling for patient and hospital factors, note the researchers.

Nearly half (49 percent) of the infants studied were admitted to general hospitals. One-fourth of infants

were admitted to general hospitals with children's units, and the remaining one-fourth were admitted to a children's hospital. Children who were treated at children's hospitals tended to be younger, more severely injured, and more likely to have private health insurance than those cared for at general hospitals. The researchers suggest that the variation in abuse diagnoses may result from systematic underdiagnosis of abuse in general hospitals.

See "Variation in the diagnosis of child abuse in severely injured infants," by Dr. Trokel, Anthony Wadimmba, M.B., Ch.B., John Griffith, Ph.D., and Robert Sege, M.D., Ph.D., in the March 2006 *Pediatrics* 117(3), pp. 722-728. ■

## Use of stimulant medications to treat attention deficit hyperactivity disorder in children has leveled off since 1997

**B**etween 4 and 5 percent of U.S. children suffer from attention deficit hyperactivity disorder (ADHD). Stimulant medications such as methylphenidate (Ritalin) and amphetamines have been used to treat children with symptoms of ADHD for over 30 years. These medications typically curb restlessness and impulsiveness and increase the ability to pay attention and focus on the task at hand. Use of stimulants to treat U.S. youngsters with ADHD increased four-fold between 1987 (0.6 percent) and 1996 (2.4 percent). However, stimulant prescribing for ADHD leveled off from 2 million U.S. children in 1997 (2.7 percent)

to 2.2 million (2.9 percent) in 2002, according to a new study.

The overall pattern of use did not change over the 6-year period. By 2002, 4.8 percent of children age 6 to 12 years used stimulants compared with 3.2 percent of those age 13 to 18 and 0.3 percent of children under 6. Predictors of stimulant use included being male, white, under 13 years of age, insured, functionally impaired, and living in the South. For instance, in 2002, use of stimulants was higher in males than in females (4.0 vs. 1.7 percent) and in white (3.6 percent) than in black (2.2 percent) or Hispanic (1.4 percent) children.

However, more girls and black children were prescribed stimulants in 2002 compared with 1997. This

suggests that some earlier gender and race differences in stimulant prescribing may be abating, notes Samuel H. Zuvekas, Ph.D., of the Agency for Healthcare Research and Quality, along with researchers at the National Institutes of Mental Health, Benedetto Vitiello, M.D., and Grayson S. Norquist, M.D., M.S.P.H. Their findings were based on analysis of Medical Expenditure Panel Survey data from 1997-2002.

See "Recent trends in stimulant medication use among U.S. children," by Drs. Zuvekas, Vitiello, and Norquist, in the April 2006 *American Journal of Psychiatry* 163, pp. 579-585. Reprints (AHRQ Publication No. 06-R063) are available from AHRQ.\* ■

**Note:** Only items marked with a single (\*) asterisk are available from the AHRQ Clearinghouse. Items with a double asterisk (\*\*) are available from the National Technical Information Service. See the back cover of *Research Activities* for ordering information. Consult a reference librarian for information on obtaining copies of articles not marked with an asterisk.

## Children receiving surgery for hypoplastic left heart syndrome have better outcomes at hospitals that perform more such surgeries

Children born with the congenital heart defect hypoplastic left heart syndrome (HLHS) usually die within the first days or months of life without treatment. In this condition, the entire left half of the heart (aorta, aortic valve, left ventricle, and mitral valve) is underdeveloped (hypoplastic). Treatment options for children with HLHS include staged surgical palliation (usually shortly after birth), orthotopic heart transplantation, or comfort care. Children with HLHS who underwent stage 1 palliation surgery in teaching hospitals in 1997 were 2.6 times more likely to die than those who underwent the surgery at nonteaching hospitals. This was after accounting for hospital palliation surgery volume (usually indicative of outcomes)

and severity of the child's condition.

However, by 2000, palliation surgery was centralized at teaching hospitals, with only 2 percent of surgeries performed at nonteaching hospitals. This centralization of surgery, along with advances in postoperative medical and surgical care for these children, was associated with an overall decrease in mortality from 28 to 24 percent. Yet mortality rates continued to approach 50 percent at hospitals that conducted only one or two of these surgeries a year (compared with 19 percent for high-volume hospitals), according to the study supported in part by the Agency for Healthcare Research and Quality (HS11826).

Researchers retrospectively examined in-hospital mortality rates for 754 children with HLHS in 1997 and 880 children with

HLHS in 2000 using the Kids' Inpatient Database (created as part of AHRQ's Healthcare Cost and Utilization Project). Over one-fourth (28 percent) of the children in 1997 and 24 percent in 2000 died in the hospital. Limited access to higher volume hospitals and patient preference for local health care may be contributing factors for the continued use of low-volume hospitals in 2000.

See "In-hospital mortality for children with hypoplastic left heart syndrome after stage 1 surgical palliation: Teaching versus nonteaching hospitals," by Jay G. Berry, M.D., Collin G. Cowley, M.D., Charles J. Hoff, Ph.D., and Rajendu Srivastava, M.D., F.R.C.P.C., M.P.H., in the April 2006 *Pediatrics* 117(4), pp. 1307-1313. ■

## Health Information Technology

### Using handheld computers with specific prescribing software at the point of care can reduce unsafe NSAID prescribing

Although nonselective, nonsteroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen increase the risk of gastrointestinal (GI) bleeding, they are often prescribed for patients at risk for GI bleeding. These medications are also often prescribed without a prescription for a gastroprotective agent such as a proton pump inhibitor or misoprostol, which limit acid secretion in the stomach. A handheld computer (personal digital assistant, PDA) includes a software program that assesses GI risk factors prior to prescribing NSAIDs and can reduce unsafe practices in prescribing NSAIDs, concludes a study supported in part by the Agency for Healthcare Research and Quality (HS11820).

At baseline, the mean proportion of cases per resident physician with unsafe NSAID prescriptions for PDA intervention and control physicians was

similar (0.27 vs. 0.29). However, intervention physicians, whose PDA software advised them to assess patient GI risk factors before prescribing NSAIDs, wrote half as many unsafe prescriptions for NSAIDs as control physicians, whose PDA software did not include the GI risk assessment rule (0.23 vs. 0.45). The GI rule prompted physicians to assess six established risk factors for GI complications from NSAIDs (age, self-assessed health status, diagnosis of rheumatoid arthritis, steroid use, a history of GI hemorrhage or hospitalization for an ulcer, and symptoms with NSAIDs).

The program also provided real-time treatment recommendations based on a patient's risk, explains Eta S. Berner, Ed.D., of the University of Alabama at Birmingham. Dr. Berner and colleagues randomized

*continued on page 9*



## Unsafe NSAID prescribing

*continued from page 8*

68 internal medicine resident physicians at a university-based clinic to either the PDA intervention or control group. They assessed residents' prescribing practices by examining the treatment provided for "standardized patients." In this case, the standardized patients were lay individuals trained to portray patients with musculoskeletal symptoms typically treated with NSAIDs, as well as one of four cases that posed a risk for GI hemorrhage if nonselective NSAIDs were prescribed for an extended period of time without gastroprotection.

See "Improving ambulatory prescribing safety with a handheld decision support system: A randomized controlled trial," by Dr. Berner, Thomas K. Houston, M.D., M.P.H., Midge N. Ray, R.N., M.S.N., and others in the March 2006 *Journal of the American Medical Informatics Association* 13(2), pp. 171-179.

**Editor's note:** In a related study, also supported in part by AHRQ, researchers developed and evaluated a rating scale, the Attitudes toward Handheld Decision Support Software Scale (H-DSS), to assess physician attitudes about handheld decision support systems. The psychometric properties of the H-DSS were tested among 82 residents, with 75 residents completing the assessment once prior to receiving a PDA and again 6 months after receiving the PDA. Their evaluation showed that the H-DSS scale was reliable, valid, and responsive and can be used to guide future handheld DSS development and implementation. See Ray, M.N., Houston, T.K., Yu, F.B., and others. (2006, September/October). "Development and testing of a scale to assess physician attitudes about handheld computers with decision support." (AHRQ grant HS11820). *Journal of the American Medical Informatics Association* 13(5), pp. 567-572. ■

## Outcomes/Effectiveness Research

### Nurse-led care improves functioning for patients with heart failure in minority communities

Patients with heart failure whose care is directed by nurse managers perform everyday activities better and have fewer hospitalizations than patients who self-manage their own care, according to a study funded by the Agency for Healthcare Research and Quality (HS10402). Heart failure is a condition in which the heart becomes too weak to adequately deliver oxygen-rich blood throughout the body. Over time this condition can cause a buildup of fluid or congestion in the lungs and other body tissues.

Researchers led by Jane Sisk, Ph.D., of Mount Sinai School of Medicine and currently at the Centers for Disease Control and Prevention's National Center for Health Statistics, enrolled 406 heart failure patients, about one-half African American and one-third Hispanic, from ambulatory

practices affiliated with Harlem, NY hospitals. The patients were randomly assigned to a nurse-management group or a usual-care group. By 9 months, nurse-managed patients reported only slight limitations in their physical functioning, while self-managed patients reported marked limitations. This difference persisted through the 12-month intervention period. Also, the nurse-managed patients had fewer hospitalizations at 12 months, 143 vs. 180 for the usual-care patients.

The nurses counseled patients on the signs and symptoms of heart failure, benefits of a low-salt diet, and the importance of taking prescribed medications. Also, the nurses arranged any medication changes and tests with the patients' clinicians, who remained in charge of the patients' care. Patients in the usual-care group received only

Federal consumer guidelines for managing their condition but no other intervention.

The percentage of patients hospitalized at least once, number of emergency department visits, and medications prescribed did not differ between the groups. After 12 months, when the nurses were no longer counseling the patients, researchers found that the nurse-led patients' functioning began decreasing at a rate similar to that of patients who had received no counseling at all.

Mount Sinai Medical Center and North General Hospital, a nearby community hospital, are continuing this nurse-management treatment through the Alliance for Health Improvement, an organization created in part to develop health improvement programs in Harlem. Under an arrangement with the

*continued on page 10*

## Nurse-led care

*continued from page 9*

State of New York that increased the State's Medicaid payments for clinical care, these hospitals agreed to undertake activities to improve the quality of care, and the Alliance's heart failure nurse-

management program enrolled its first patient in September 2005. Building on the results of this study, nurses in the new program will work with patients beyond 12 months. This heart failure program is the first quality improvement activity for the Alliance for Health Improvement.

More details are in "Effects of nurse management on the quality of heart failure care in minority communities," by Dr. Sisk, Paul L. Hebert, Ph.D., Carol R. Horowitz, M.D., M.P.H., and others, in the August 15, 2006 *Annals of Internal Medicine* 145(4), pp. 273-283. ■

## Health Care Costs and Financing

### Health insurance coverage for mental health specialists is still lower than for other medical visits

Consumers have long faced high out-of-pocket costs for mental health and substance abuse treatment in private health insurance plans, as well as limits on the amount of treatment covered. Despite passage of Federal and State mental health parity mandates and voluntarily improved coverage by employers, expenses for outpatient mental health visits, especially to psychiatrists and other specialists, remain less well covered than other medical visits, according to a new study by researchers at the Agency for Healthcare Research and Quality.

Samuel H. Zuvekas, Ph.D., and Chad D. Meyerhoefer, Ph.D., found that out-of-pocket expenses generally declined over the 1996-2003 period, from 39 to 35 percent of total expenses for outpatient mental health visits and from 31 to 26 percent for non-mental health outpatient visits. However, the ratio of out-of-pocket costs was still significantly higher for mental health care. For the first five visits in a year, out-of-pocket costs for ambulatory mental health and non-mental health visits were similar. But from the sixth

visit onwards, average out-of-pocket costs for non-mental health visits declined, while those for mental health visits remained the same. However, out-of-pocket costs for mental health visits increased as the number of visits approached and surpassed 20. In addition, out-of-pocket expenses for visits to mental health specialists such as psychiatrists were higher compared with nonspecialists.

Continued high out-of-pocket expenses for mental health care may impede access to mental health treatment, especially for those who need greater treatment intensity, suggest the researchers. Their findings were based on analysis of data on health care use and expenses in 1996 and 2003 from the nationally representative Medical Expenditure Panel Survey.

More details are in "Coverage for mental health treatment: Do the gaps still persist?" by Drs. Zuvekas and Meyerhoefer, in the *Journal of Mental Health Policy and Economics* 9, pp. 123-131, 2006. Reprints (AHRQ Publication No. 06-R058) are available from AHRQ.\* ■

### Previous hospital performance, internal operations, and market competition are key in improving hospital performance

Hospitals employ various strategies to enhance their performance and control costs. To better understand what drives organizational improvements, H. Joanna Jiang, Ph.D., and Bernard Friedman, Ph.D., of the Agency for Healthcare Research and Quality, and a University of Minnesota colleague, James W.

Begun, Ph.D., analyzed data on 934 hospitals in 10 States from the Healthcare Cost and Utilization Project State Inpatient Databases for 1997 and 2001. High-performance hospitals were defined as high-quality (low mortality rates for six common medical conditions and four surgical procedures) and low cost.

The effectiveness of strategies to improve performance differed by a hospital's baseline performance. Among hospitals in the high-cost category in 1997, cost-containment strategies (for example, reduced nurse staffing) were helpful to hospitals with low mortality rates.

*continued on page 11*

## Hospital performance

*continued from page 10*

Yet, revenue-enhancing strategies (for example, shifting to outpatient services) were helpful to those hospitals with high mortality rates. Among hospitals in the low-cost/high-mortality category in 1997, increasing nurse staffing levels with no change in skill mix was found effective in improving hospital performance.

The ability to reduce nurse staffing without compromising quality of care or increase nurse staffing without incurring higher costs characterized those hospitals that successfully moved into the high-performing group over time. Furthermore, achieving high-quality/low-cost performance was

associated with improved profit margins.

Changes in market forces (for example, competition from other hospitals and managed care penetration) only affected movement of low-mortality/high-cost hospitals into the high-performing category over time. The researchers suggest that health policymakers consider the concurrent effects of market forces in evaluating pay-for-performance programs. In areas where market forces have been strong and hospitals already have moved in the direction of lower costs and higher quality, the response to pay-for-performance may be relatively weak. Conversely, the effects may

be more striking where market forces have been weak.

Finally, hospitals that were persistently high-performing in both 1997 and 2001 were more likely to be investor-owned and system-affiliated. They had a higher share of Medicare patients, but lower nurse staffing levels, and were located in markets with more HMOs.

See “Sustaining and improving hospital performance: The effects of organizational and market factors,” by Drs. Jiang, Friedman, and Begun, in the July-September 2006 *Health Care Management Review* 31(3), pp. 188-196. Reprints (AHRQ Publication No. 06-R067) are available from AHRQ.\* ■

## Study identifies factors contributing to growth in hospital inpatient costs since 1998

Nationwide, hospital inpatient costs have accelerated each year since 1998, with costs rising nearly 5 percent per year by 2001. A new study by researchers at the Agency for Healthcare Research and Quality illuminates some of the factors contributing to these escalating hospital costs. Bernard S. Friedman, Ph.D., Herbert S. Wong, Ph.D., and Claudia A. Steiner, M.D., M.P.H., used State inpatient databases from the Healthcare Cost and Utilization Project to analyze all discharges from 1,706 hospitals in 172 metropolitan statistical areas (MSAs) from 22 States in 1998 and 2001. They combined discharge summary information with surveys of managed care plans, MSA demographics, and State malpractice data to examine factors affecting growth in inpatient costs across nine leading clinical conditions.

Results suggest that HMO market penetration continued to restrain hospital admission rates after 1998. The percentage of unemployed adults in an MSA, included as a proxy for the uninsured population, increased admission rates. This may have been due to lower use of ambulatory and preventive services by this group, resulting in more preventable hospital

admissions. However, this was partly offset by a lower increase in cost per case. A cap on malpractice awards appeared to restrain admissions at hospitals in States with caps. However, the net effect on hospital cost-per-adult eroded by 2001 for those States with the most experience with award caps.

The admission rate increased significantly for three of four conditions for which beneficial technology advances were introduced: nonspecific chest pain; osteoarthritis; cardiac arrhythmias; and complication of a device, implant, or graft. Significant cost increases per case were seen in two of these four conditions. The illness severity index had a large effect on cost after controlling for the type of condition. HMO market penetration, level of hospital competition, and proportion of hospital system membership were not significantly associated with hospital inpatient costs.

See “Renewed growth in hospital inpatient cost since 1998: Variation across metropolitan areas and leading clinical conditions,” by Drs. Friedman, Wong, and Steiner, in the March 2006 *American Journal of Managed Care* 12(3), pp. 157-166. Reprints (AHRQ Publication No. 06-R062) are available from AHRQ.\* ■

### Hospitals could be better linked with other community response teams to manage public health emergencies

Recent natural disasters and terrorist attacks have underscored the need for hospitals to integrate their activities with other community response teams. Many hospitals report substantial integration in community preparedness planning and familiarity with local emergency response plans. Nevertheless, a new study, supported in part by the Agency for Healthcare Research and Quality (HS13728), found that relationships between hospitals, public health departments, and other critical first responders are not adequately robust. Investigators analyzed questionnaire responses from 575 hospital representatives involved in emergency management at 1,750 U.S. hospitals in 2004. The questionnaire asked about community linkages related to training and drills, equipment, surveillance, laboratory testing, surge capacity (ability to handle a

large, sudden surge in patients), incident management, and communication.

Most hospitals (88 percent) engaged in community-wide drills and exercises, and most (82 percent) conducted a collaborative threat and vulnerability analysis with community responders. Yet only 57 percent of hospital representatives reported that their community plans addressed their hospital's need for additional supplies and equipment for disaster response. Community plans addressed decontamination capacity needs for 73 percent of hospitals and the need to expand hospital capacity to isolate people or support ventilator-dependent patients for only half of hospitals. Finally, community plans addressed mechanisms for tracking patient location and managing a large volume of calls for nearly half of hospitals.

Few hospitals reported a direct link to the Health Alert Network (54 percent) and around-the-clock access to a live voice from a public health department (40 percent). Most community plans had identified community-based alternative care sites to help with hospital overflow. Performance on many of 17 community planning elements was better in large and urban hospitals, and was associated with a high number of perceived hazards, previous national security event preparation, and experience in actual disaster response.

See "Integrating hospitals into community emergency preparedness planning," by Barbara I. Braun, Ph.D., Nicole V. Wineman, M.A., M.P.H., M.B.A., Nicole L. Finn, M.A., and others, in the June 6, 2006 *Archives of Internal Medicine* 144, pp. 799-811. ■

## Agency News and Notes

### Over 1 million U.S. babies are delivered by Cesarean section

More than 1 million (over one-fourth of all children born in the United States) annually are delivered by Cesarean section, according to a new report by Agency for Healthcare Research and Quality (AHRQ). Cesarean section annually, or "C-section" as it is commonly called, is an abdominal procedure that involves making an incision in the mother's abdomen and uterus to deliver her child. AHRQ's report also found that:

- Use of C-section has increased by 38 percent since 1997, when about one-fifth of all American babies were delivered this way.
- The rise was accompanied by a 60 percent decline in the rate of women giving birth vaginally after having

a previous child born via C-section, and conversely, by a 33 percent rise in the rate of repeat C-sections.

- The national bill for childbirth as a whole in 2003 totaled \$34 billion with hospital stays involving C-section delivery accounting for nearly half this amount (\$15 billion).
- Medicaid was billed for 43 percent of childbirths overall and 41 percent of those involving C-section delivery.

These data were drawn from the Agency's Healthcare Cost and Utilization Project. For more information, see Hospitalizations Related to Childbirth, 2003, Statistical Brief #11 at [www.hcup-us.ahrq.gov/reports/statbriefs.jsp](http://www.hcup-us.ahrq.gov/reports/statbriefs.jsp). ■

## Almost 70 percent of children visiting a physician for a sore throat are prescribed antibiotics

Data from the Agency for Healthcare Research and Quality's Medical Expenditure Panel Survey (MEPS) show that 14 percent of U.S. children visit a health professional at least once a year for serious sore throat, and over two-thirds of these children are prescribed antibiotics. MEPS data also show that about 1 of every 5 children prescribed an antibiotic did not receive a throat swab to confirm a bacterial infection. Sore throats caused by bacteria can be cured by antibiotics; those caused by viruses cannot.

The Michigan Quality Improvement Consortium recommends that children with a high probability for streptococcus

pharyngitis (a bacterial infection known as "strep throat") be started immediately on antibiotics. The treatment should stop if a swab is obtained and the results are negative. Children with an intermediate probability should not be prescribed antibiotics until swabbing confirms infection.

MEPS data also indicate that:

- About 30 percent of children under age 5 were prescribed antibiotics without having their throats swabbed, as were 18 percent of those ages 5 to 12 and 24 percent of children ages 13 to 17.
- Hispanic children who were prescribed antibiotics were less likely to have their throats

swabbed than white non-Hispanic children – 72 percent vs. 81 percent, respectively.

- Privately insured children prescribed antibiotics were more likely to get a throat swab (81 percent) than children covered by Medicaid or other public insurance only (71 percent).

For more information, see *Treatment of Sore Throats: Antibiotic Prescriptions and Throat Cultures for Children under 18 Years of Age, 2002-2004 (Annual Average)*, MEPS Statistical Brief #137 on the MEPS Web site at [www.meps.ahrq.gov/papers/st137/stat137.pdf](http://www.meps.ahrq.gov/papers/st137/stat137.pdf). ■

## Life-saving surgery for heart patients increases by more than one-third

Use of a surgical procedure to open plaque-narrowed or blocked arteries in hospital patients—called percutaneous coronary angioplasty, or PTCA — increased from 581,000 to 791,000 between 1997 and 2004, according to data from the Agency for Healthcare Research and Quality's Healthcare Cost and Utilization Project (HCUP).

PTCA, along with two other procedures used to diagnose heart cardiovascular problems — cardiac catheterization and echocardiogram — were among the 10 most frequently performed non-obstetrical procedures in U.S. hospitals in 2004.

In contrast to the increase in PTCA, use of coronary artery bypass graft surgery (CABG) — an operation

that circumvents narrowed or blocked coronary arteries — fell 29 percent, from 431,000 in 1997 to 308,000 in 2004.

Cardiovascular procedures were most common among patients age 45 and older. For example, among the 1.6 million cardiac catheterizations conducted in hospitals in 2004, about 92 percent were performed on patients age 45 and older. Patients over age 45 also accounted for 95 percent of the use of PTCA.

**Editor's note:** HCUP is the Nation's largest source of statistics on hospital inpatient care for all patients regardless of type of insurance or whether they were insured. For more information on HCUP, go to [www.ahrq.gov/data/hcup](http://www.ahrq.gov/data/hcup). ■

## Health insurance enrollment rates are down at large companies

The percentage of employees at large companies who were eligible for health insurance and who enrolled in plans fell from 87 percent in 1996 to 80 percent in 2004, according to data from AHRQ's Medical Expenditure Panel Survey (MEPS) Insurance Component: In addition:

- The steepest decline occurred among employees of large

retail firms – from 81.5 percent to 69 percent.

- Enrollment of eligible workers in other types of large, private-sector firms also declined, but more modestly.
- Enrollment of eligible wholesale trade workers slipped from 92 percent to 86 percent and construction

worker enrollment declined from 87 percent to 82 percent.

**Editor's note:** These data are from the Establishment Survey of Employer-Based Health Insurance available online at [www.meps.ahrq.gov/Data\\_Pub/IC\\_TOC.htm](http://www.meps.ahrq.gov/Data_Pub/IC_TOC.htm). ■

## Announcements

### AHRQ releases evidence report on tests for heart failure

A new report released by AHRQ finds that tests for the natriuretic peptides BNP and NT-proBNP can be used to rule out heart failure in patients seen in emergency rooms, clinics, and primary care settings. While elevated levels of these peptides do not confirm that heart problems are causing a patient's symptoms, relatively low levels make it unlikely that these heart problems are present.

The report, *Testing for BNP and NT-proBNP in the Diagnosis and Prognosis of Heart Failure*, Evidence Report/Technology Assessment No. 142, was prepared at the request of the American Association of Clinical

Chemistry and the American College of Chest Physicians to use in updating relevant clinical practice guidelines. The American College of Physicians and the American College of Emergency Physicians will be partners in the dissemination and use of the report. AHRQ's Evidence-based Practice Center at McMaster University in Ontario, Canada, conducted the systematic literature review and prepared the report.

Copies of this report (AHRQ Publication No. 06-E014) are available online at [www.ahrq.gov/clinic/tp/bnptp.htm](http://www.ahrq.gov/clinic/tp/bnptp.htm) or from the AHRQ Publications Clearinghouse.\* ■

### AHRQ awards seven grants for health services research dissertation

The Agency for Healthcare Research and Quality (AHRQ) supports dissertation research undertaken as part of an academic program to earn a research doctoral degree. Through this program, AHRQ seeks to expand the number of researchers who address its mission "to improve the quality, safety, efficiency and effectiveness of health care for all Americans." Recently, AHRQ awarded seven dissertation grants to individuals from universities throughout the country.

Wendy Chen  
R36 HS015580-01A1  
State Community Benefit Laws and Hospital Response  
University of North Carolina  
Advisor: Shoou-Yih Daniel Lee, Ph.D.

Leslie Conwell  
R36HS16219-01  
Association Between Quality of Care for Diabetes and Medically Complex Conditions  
John Hopkins University  
Advisor: Chad Boulton, MD, M.P.H., M.B.A.  
Chandrakala Ganesh  
R36HS16331-01  
Diffusion of Prescription Drugs for Alzheimer's Disease Among Older Adults  
Pennsylvania State University, Hershey Medical Center  
Advisor: Dennis Shea, Ph.D.

*continued on page 15*

## Dissertation research

*continued from page 14*

Janel Hanmer  
R36HS16574-01  
Health Utility Estimates and Co- Occurring  
Conditions

University of Wisconsin, Madison  
Advisor: Dennis Fryback, Ph.D.

Patrick High  
R36HS16583-01  
HIV Risk Assessment Practices of Primary Care  
Providers: A National Survey  
Henry M. Jackson Foundation for the Advancement of  
Military Medicine  
Advisor: Deborah C. Girasek, Ph.D., MPH

Briana Jegier  
R36HS16012-01A1  
The Economics of Mother's Milk Feedings in Neonatal  
Intensive Care Unit  
Saint Louis University  
Advisor: Timothy McBride, Ph.D.

Lisa Nicholson  
R36HS016568-01  
Racial and Ethnic Variation in Adolescent Obesity: A  
Multilevel Study of Neighborhoods  
Ohio State University  
Advisor: Christopher R. Browning, Ph.D. ■

## Research Briefs

**Barkin, S., Ip, E., Richardson, I., and others. (2006, April).** "Parental media mediation styles for children aged 2 to 11 years." (AHRQ grant HS10913). *Archives of Pediatric and Adolescent Medicine* 160, pp. 395-401.

Children in the United States use electronic media (television, video, and computer) an average of more than 4 hours a day—twice the recommended limit of 2 hours per day for children older than 2 years. Researchers conducted a survey of parents during well-child visits for children 2 to 11 years in physician offices. The majority of parents (59 percent) studied used some type of strategy to control and inform their children's use of electronic media. About 23 percent used a restrictive approach and 11 percent used an instructive approach, with some using multiple approaches. Only 7 percent of parents allowed unlimited media use and engaged in no mediation strategy.

Unlimited media use was twice as common when parents permitted a television in the child's bedroom (36 percent of the parents in this study), or were Latino or black. The restrictive approach was associated with the least media

exposure (mean of 2.4 hours), and an unlimited approach was associated with the most exposure (4.1 hours). In single-parent homes and black and Latino homes, parents used less active mediation.

**Barton M.B. (2006, April).** "Exploring and crossing the disparity divide in cancer mortality." *Annals of Internal Medicine* 144(8), pp. 614-616.

The author of this editorial discusses two articles in this journal issue relevant to cancer screening in special populations. One article reports on two potential sources of the disproportionate burden of death due to breast cancer borne by black women: less frequent screening and more advanced-stage tumors. After controlling for different mammography screening rates by ethnic group, breast cancer differences in tumor stage were no longer present between white and black women. However, black women still had less favorable tumor grades. The second article examined the effectiveness of using "prevention coaches" as a means to increase use of cancer screening by largely Hispanic and black women

at community and migrant health centers. Women with coaches had significantly higher rates of Pap smears, mammography, and colorectal cancer screening than women without coaches. Reprints (AHRQ Publication No. 06-R065) are available from AHRQ\*.

**Baser, O., Gardiner, J.C., Bradley, C.J., and others. (2006, May).** "Longitudinal analysis of censored medical cost data." (AHRQ grant HS14206). *Health Economics* 15, pp. 513-525.

The authors of this paper used a statistical method to examine how various treatment regimens affected the cost of lung cancer care per month. They examined care costs over 2 years after lung cancer diagnosis among Medicare patients diagnosed between 1994 and 1997. They applied the inverse probability weighted (IPW) least-squares method to estimate the effects of treatment on total medical cost, subject to censoring, in a panel-data setting. Because total medical cost might not be independent of survival time under administrative censoring,

*continued on page 16*

## Research briefs

continued from page 15

unweighted pooled ordinary-least squares and random effects models cannot be used with censored data to assess the effects of certain explanatory variables. Even under the violation of this independency, IPW estimation provided consistent asymptotic normal coefficients with easily computable standard errors.

**Bell, C.M., Urbach, D.R., Ray, J.G., and others. (2006, March). "Bias in published cost effectiveness studies: Systematic review." (AHRQ grant HS10919). *British Medical Journal* 332, pp. 699-701.**

Most published cost effectiveness analyses report favorable incremental cost effectiveness ratios, that is, below \$20,000, \$50,000, and \$100,000 per quality adjusted life year (QALY) gained, concludes this study. Researchers found that half of reported incremental cost effectiveness ratios were below \$20,000 per QALY. Studies funded by industry were twice as likely to report ratios below \$20,000 per QALY. Studies of higher methodological quality and those conducted in Europe and the U.S. rather than elsewhere were less likely to report ratios below \$20,000 per QALY. The authors caution that more rigor and openness are needed before decisionmakers and the public can be confident that cost effectiveness analyses are conducted and published in an unbiased manner. Their findings were based on a systematic review of 494 English language studies measuring health effects in QALYs published up to December 2001.

**Clancy, C.M. (2006, March). "Informing quality health care."**

***Healthcare Financial Management* 60(3), pp. 64-68.**

In this commentary, the Director of the Agency for Healthcare Research and Quality (AHRQ) emphasizes the importance of evidence-based findings of effectiveness research as the foundation for measuring health care quality. In 2005, AHRQ launched its new Effective Health Care Program, which is systematically identifying key effectiveness research needs. It is also disseminating findings to providers, payers, and consumers to better inform their health care decisions. The author points out that the Federal government's role helps guarantee comprehensive and unbiased findings to help inform medical practices. She asserts that to achieve a true quality-based healthcare system, payment systems must reward evidence-based practice and good health outcomes. Investment in health information technology—for example, electronic health records for Americans and clinical decision support systems for providers—will make a leap in quality care possible. Reprints (AHRQ Publication No. 06-R057) are available from AHRQ.\*

**Coopey, M., Nix, M.P., and Clancy, C.M. (2006). "Translating research into evidence-based nursing practice and evaluating effectiveness." *Journal of Nursing Care Quality* 21(3), pp. 195-202.**

Evidence-based practice is clearly being adopted and practiced in nursing, note the authors of this commentary. The Director of AHRQ and fellow Agency researchers note that the AHRQ-sponsored National Guideline Clearinghouse currently contains 106 clinical practice guidelines (about 5 percent of the total) developed by 14 nursing organizations or departments. The

guidelines cover a wide range of clinical topics, including family bereavement support, pressure ulcer prevention and treatment, and breastfeeding. AHRQ awarded more than 151 grants to nurse principal investigators between 1989 (when AHRQ was established) and March 2005, which have contributed to the evidence base of nursing. The California Nursing Outcomes Coalition project is one example of how nursing research evidence on fall risk assessment and prevention is being used to reduce patient falls and fall-related injuries in hospitals. Reprints (AHRQ Publication No. 06-R061) are available from AHRQ.\*

**Gardiner, J.C., Luo, Z., Liu, L., and Bradley, C.J. (2006). "A stochastic framework for estimation of summary measures in cost-effectiveness analyses." (AHRQ grant HS14206). *Expert Review of Pharmacoeconomics Outcomes Research* 6(3), pp. 347-358.**

Markov modeling has become the paradigm for studying the progression of patients through various states of health following an intervention or treatment. This review describes the use of a nonhomogeneous Markov process to describe the occurrence of patient events and related costs as they unfold over time. States of the process represent health conditions or health states (for example, well, ill, or dead). Commonly used measures of health outcomes, such as life expectancy and quality-adjusted survival, are defined in terms of expected values of functions of the process. Costs are incurred through medical resource use while sojourning in health states, and in transitions between health states. By combining these expenditure

continued on page 17



## Research briefs

*continued from page 16*

streams, the authors define net present values for expected total cost over a specified time period.

**Glance, L.G., Dick, A., Osler, T.M., and Mukamel, D.B. (2006, April).** “Impact of changing the statistical methodology on hospital and surgeon ranking.” (AHRQ grant HS13617). *Medical Care* 44(4), pp. 311-319.

Adjustment for patient risk factors is central to the generation of health outcome report cards such as the New York State (NYS) Coronary Artery Bypass Graft (CABG) Surgery Report Card. This study examined how various patient risk adjustment models affected the NYS CABG Surgery Report Card. The researchers used data from the NYS Cardiac Surgery Reporting System on all patients undergoing CABG in New York who were discharged between 1997 and 1999. They found that shrinkage estimators based on random-effects models were slightly more conservative in identifying quality outliers (surgeons or hospitals that performed better or worse than most) than the traditional approach based on fixed-effects modeling and standard regression. Explicitly modeling surgeon provider effect (fixed-effects and random-effects models) did not significantly alter the distribution of quality outliers when compared with standard logistic regression (which does not model provider effect).

**Glazer, J. and McGuire, T.G. (2006, March).** “Optimal quality reporting in markets for health plans.” (AHRQ grant HS10803). *Journal of Health Economics* 25, pp. 295-310.

Better-informed consumers may choose health care providers more appropriately, researchers say.

Furthermore, consumers and patients choosing on the basis of quality conveys incentives to providers to improve care quality in the first place. This paper casts the decision about what information to report to consumers about health plans as a policy decision. In a market with adverse selection, complete information about quality leads to inefficient outcomes, according to the authors. They use a model to show that averaging quality information into a summary report can enforce pooling in health insurance. By choice of the right weights in the averaged report, a payer or regulator can induce first-best quality choices. The authors conclude that an optimal quality report is as powerful as optimal risk adjustment in correcting adverse selection inefficiencies.

**Levy, D.E. and Meara, E. (2006, March).** “The effect of the 1998 Master Settlement Agreement on prenatal smoking.” (AHRQ grant HS00055). *Journal of Health Economics* 25, pp. 276-294.

The Master Settlement Agreement (MSA) between the major U.S. tobacco companies and 46 States created an abrupt 20 percent increase in cigarette prices in November 1998. This study found that, after adjusting for secular trends in smoking, prenatal smoking declined by less than half what was predicted — from 2.5 to nearly 8 percent compared with the 7 to 20 percent decline that had been predicted — in response to the MSA. However, the effect was slightly stronger among the youngest and oldest pregnant smokers. Thus, policymakers should be aware that not all populations of smokers, and therefore not all smoking-related illnesses (such as low birth weight), will be affected equally by cigarette price increases, caution the researchers. They examined

changes in smoking during pregnancy by analyzing birth records on 9.8 million U.S. births between January 1996 (prior to the MSA) and February 2000 (after the MSA).

**Morales, L.S., Elliott, M., Weech-Maldonado, R., and Hays, R.D. (2006, February).** “The impact of interpreters on parents’ experiences with ambulatory care for their children.” (AHRQ grant HS09204). *Medical Care Research and Review* 63(1), pp. 110-128.

Hispanic and Asian/Pacific Islander (API) parents who always use interpreters during outpatient medical visits for their children report similar or significantly better care access and quality than their counterparts who don’t always use interpreters. They also report better service from their health plan and better care on several dimensions when compared with health plan members who do not need interpreters. The use of interpreters reduced white-Hispanic disparities in reports of care by up to 28 percent and white-API disparities by as much as 21 percent. In this study, the average proportion of plan members who needed and always used an interpreter was only 47 percent (ranging from a low of 15 percent to a maximum of 57 percent in individual plans).

The researchers estimated that increasing the use of interpreters by health plan members who need them could potentially result in a 6-point improvement in provider and staff communication for Hispanics, a 4-point increase in access to care, and 2-point increase in health plan customer service. The impact of always providing interpreters to APIs was more dramatic, with corresponding increases of 15 points, 8 points, and 11 points. These findings were based on analysis of Consumer Assessment

*continued on page 18*

## Research briefs

*continued from page 17*

of Health Plans Survey (CAHPS®) data on members enrolled in the California State Children's Health Insurance Program in 2000 and 2001. A total of 26,671 members of 26 health plans completed CAHPS® surveys.

**Roughead, E.E., Zhang, F., Ross-Degnan, D., and Soumerai, S. (2006, April). "Differential effect of early or late implementation of prior authorization policies on the use of Cox II inhibitors." (AHRQ grant HS10391). *Medical Care* 44(4), pp. 378-382.**

State Medicaid programs introduce many types of drug prescribing restrictions to manage pharmaceutical use and expenditures. Implementing prescribing restrictions at market entry of COX-2 inhibitors was effective in restricting uptake. The researchers examined the impact on overall use of COX-2 inhibitors of prior authorization policies implemented at market entry versus at least 2 years after market entry. Despite the difficulty in changing well-established prescribing patterns, COX-2 utilization in States implementing policies 2 years after market entry approached that of the early adopting States within 1 year. However, the clinical outcomes of such policies remain unknown.

**Sedrakyan, A., Atkins, D., and Treasure, T. (2006, April). "The risk of aprotinin: A conflict of evidence." *Lancet* 367, p. 1376-1377.**

There is conflicting evidence about whether use of aprotinin increases or reduces postoperative problems after heart surgery, note the authors. Research has repeatedly shown that the drug reduces blood loss and the need for transfusion after heart surgery, and

one meta-analysis showed that patients who underwent coronary artery bypass grafting showed no increased risk of heart attack, renal failure, or stroke after treatment with aprotinin. However, a recent observational study of high-risk patients reported double the number of cardiac, renal, and cerebral complications in patients treated with aprotinin compared with patients not receiving antifibrinolytics (drugs that decrease the breakdown of fibrin, a protein essential to blood clotting). The researchers call for more studies on the impact of antifibrinolytics on complications following heart surgery. Reprints (AHRQ Publication No. 06-R066) are available from AHRQ.\*

**Siegel, J.E., and Clancy, C.M. (2006, April-June). "Relative value in healthcare: Cost-effectiveness of interventions." *Journal of Nursing Care Quality* 21(2), pp. 99-103.**

To be taken seriously within the financially constrained health care environments in which they work, nurses must demonstrate the economic feasibility of interventions they want to implement. The growing interest of nurses in the field of cost effectiveness analysis (CEA) can only serve to improve the relevance of cost-effectiveness studies of nursing interventions and improve decisions about health resource allocation, note the authors from the Agency for Healthcare Research and Quality (AHRQ). They note that the Agency makes some grants available specifically for CEA, while others ask for CEA to be appended to an effectiveness trial. AHRQ's activities in CEA, housed in the Research Initiative in Clinical Economics Program, support this commitment. AHRQ is also the primary funder of the CEA Registry, which provides public

electronic access to more than 500 cost-utility ratios from research studies published from 1976 through 2001.

**Smith, S.R., Catellier, D.J., Conlisk, E.A., and Upchurch, G.A. (2006, February). "Effect on health outcomes of a community-based medication therapy management program for seniors with limited incomes." *American Journal Health-System Pharmacy* 63, pp. 372-379.**

A medication therapy management (MTM) program can help seniors with limited income to significantly reduce emergency department (ED) visits and hospitalizations and improve their health. Researchers analyzed data from the Senior PHARMAssist program. The program provided financial assistance to low-income seniors through pharmacy reimbursement for medications on a geriatric drug formulary, periodic review of seniors' medications by a program pharmacist (including screening for drug interactions or adverse effects, tailored health education, and monitoring of medication adherence), staff communication with prescribers and dispensing pharmacies, and tailored referrals to community and governmental programs.

Probability of any hospitalization declined from 47 percent at baseline to 23 percent at the end of followup. The rate of ED visits decreased during the first 12 months of the study and then increased, although the rate at 24 months remained lower than at baseline. Self-reported ratings of health improved over the study period, with 54 percent indicating that their health was better than a year ago and 79 percent saying it was better after 2 years of participating in the program. Also,

*continued on page 19*

## Research briefs

*continued from page 18*

those reporting at least one bed-bound episode in the previous 3 months declined from 43 percent at baseline to 28 percent at the end of followup. All participants maintained baseline functional status. Reprints (AHRQ Publication No. 06-R036) are available from AHRQ.\*

**Steinman, M.A., McQuaid, K.R., and Covinsky, K.E. (2006, March).** “Age and rising rates of cyclooxygenase-2 inhibitor use.” (AHRQ grant HS00006). *Journal of General Internal Medicine* 21, pp. 245-250.

Use of cyclooxygenase-2 (COX-2) inhibitors for arthritis and other painful or inflammatory conditions rose rapidly in all age groups, particularly the elderly, from 1998 to 2002, according to this study. COX-2 inhibitors are selective nonsteroidal anti-inflammatory drugs (NSAIDs). They generally do not cause the gastrointestinal bleeding associated with use of nonselective NSAIDs like ibuprofen; however, they do

increase the risk of cardiovascular problems such as heart attack and stroke. Researchers found that by 2002, COX-2 inhibitors accounted for 67 percent of recorded NSAID use in visits by patients age 65 and older, compared with 33 percent of NSAID use in adults age 18 to 44, and 54 percent in adults age 45 to 64. Also, elderly NSAID users with cardiovascular disease were more likely to receive COX-2 inhibitors than those without cardiovascular disease (86 vs. 66 percent). Recommended co-administration of gastroprotective agents (proton pump inhibitors or misoprostol) with all types of NSAIDs was low for all age groups and for people taking COX-2 inhibitors and nonselective NSAIDs. These findings were based on medication use data from 1998 to 2002 from the National Ambulatory Medical Care Survey, a nationally representative sample of patient visits to community-based outpatient practices.

**Zuckerman, I.H., Lee, E., Wutoh, A.K., and others. (2006, April).** “Application of regression-discontinuity analysis in

**pharmaceutical health services research.” (AHRQ grant HS11673). *HSR: Health Services Research* 41(2), pp. 550-563.**

Health services research is often challenged to evaluate the effectiveness of medical interventions or service programs outside of a controlled environment. For example, it is often not feasible to design a randomized controlled trial. This paper demonstrates how a relatively underused design, regression-discontinuity (RD), can provide robust estimates of medical intervention effects when stronger designs are impossible to implement. The researchers conducted a drug utilization review study to evaluate a letter to doctors treating Medicaid children with potentially excessive use of short-acting beta-agonist inhalers using RD design. They found that RD design was a useful quasi-experimental method that had significant advantages in internal validity compared with other pre-post designs. The findings were based on claims data from a State Medicaid program. ■

## Ordering Information

Most AHRQ documents are available free of charge and may be ordered online or through the Agency's Clearinghouse. Other documents are available from the National Technical Information Service (NTIS). To order AHRQ documents:

**(\*) Available from the AHRQ Clearinghouse:**  
Call or write:

AHRQ Publications Clearinghouse  
Attn: (publication number)  
P.O. Box 8547  
Silver Spring, MD 20907  
800-358-9295  
703-437-2078 (callers outside the  
United States only)  
888-586-6340 (toll-free TDD service;  
hearing impaired only)

To order online, send an e-mail to:  
[ahrqpubs@ahrq.hhs.gov](mailto:ahrqpubs@ahrq.hhs.gov)

**(\*\*) Available from NTIS:**

Some documents can be downloaded from the NTIS Web site free or for a nominal charge. Go to [www.ntis.gov](http://www.ntis.gov) for more information.

To purchase documents from NTIS, call or write:

National Technical Information Service  
(NTIS)  
Springfield, VA 22161  
703-605-6000, local calls  
800-553-6847

**Note: Please use publication numbers when ordering**

**To subscribe to *Research Activities*:**

Send an e-mail to [ahrqpubs@ahrq.hhs.gov](mailto:ahrqpubs@ahrq.hhs.gov) with "Subscribe to Research Activities" in the subject line. Be sure to include your mailing address in the body of the e-mail.

## U.S. Department of Health and Human Services

Public Health Service  
Agency for Healthcare Research and Quality  
P.O. Box 8547  
Silver Spring, MD 20907-8547

---

Official Business  
Penalty for Private Use \$300



AHRQ Pub. No. 06-0071  
September 2006

ISSN 1537-0224