Research Activities

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Agency for Healthcare Research and Quality

Highlights

Departments

Regular Features

AHRQ and the Ad Council encourage patients to ask questions and get more involved with their health care

The Agency for Healthcare Research and Quality (AHRQ) has joined with the Ad Council to launch a national public service advertising (PSA) campaign designed to encourage adults to take a more proactive role in their health care. The campaign entitled "Questions Are the Answer: Get More Involved With Your Health Care" was launched during national Patient Safety Awareness Week (March 4-10, 2007).

Medical mistakes occurring in hospitals account for an estimated 44,000 to 98,000 deaths each year or at least 120 deaths per day, according to the Institute of Medicine. These mistakes lead to more deaths per year than motor vehicle accidents, breast cancer, or AIDS. Research shows that consumers who get more involved with their health care can greatly improve the safety of their care, but patients are generally unaware of what to do to help prevent medical mistakes. According to a recent study conducted by AHRQ and the Kaiser Family Foundation, 57 percent of Americans do not believe that preventable medical errors occur often.

The PSA campaign, which was created pro bono by ad agency McCann Erickson Detroit, aims to encourage all patients and caregivers to become more active in their health care by asking questions. The campaign includes new television, radio, print, and Web advertising that directs audiences to call a toll-free number, 1-800-931-AHRQ, and visit the Web site www.ahrq.gov/questionsaretheanswer, to obtain tips on how to help prevent medical mistakes and become a partner in their health care. The site also features an interactive "Question Builder" that allows consumers to generate a customized list of questions for their healthcare providers that they can bring to each medical appointment. The Web site also offers tips for patients to become more involved in their health care, including: bring a list of questions to each medical appointment; take notes in the

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Ask questions campaign

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examination room; make sure you receive the results of medical tests; and, upon leaving the hospital, make sure you understand instructions regarding followup care and medications.

Editor's note: This campaign is just one important piece of the many efforts to improve the safe delivery of health care and reduce medical mistakes. For example, AHRQ worked with the American Hospital Association and the American Medical Association to launch a campaign called "5 Steps to Safer Health Care" and has published a wide variety of materials in English and Spanish to help consumers receive safe, high-quality health care, which can be found at the Agency's Web site at www.ahrq.gov/consumer/. ■

Patient Safety and Quality

Efforts to improve chronic disease management quality yield better care delivery but not better intermediate outcomes

A national series of interventions designed to improve the quality of care in health centers for three prevalent chronic conditions has improved processes of care for these conditions but did not improve intermediate clinical outcomes, according to results of a study collaboratively supported by the Agency for Healthcare Research and Quality (HS13653), the Health Resources and Services Administration (HRSA), and the Commonwealth Fund.

The study focused on the principal quality improvement efforts adopted by HRSA for 1,000 health centers nationally, the Health Disparities Collaboratives. The Health Center Program, administered by HRSA, supports high-quality, comprehensive, and community-oriented primary care delivery systems serving low-income residents in inner cities and in rural and isolated areas. The collaborative improvement interventions focused on diabetes, asthma, and hypertension, which together affect more than 25 percent of the U.S. adult population. Health centers provide care for more than 14 million Americans, many of whom are uninsured, underinsured, or are members of immigrant or minority groups.

The interventions teach health center personnel quality improvement methods to measure quality performance and continuously implement and refine small-scale changes that collectively result in improvements in the processes of care. Typically, quality improvement efforts target both processes, such as use of certain tests or medications, which in turn will lead to improvements in intermediate outcomes, such as control of high blood pressure. Improvements in outcomes are more difficult to achieve because of factors that may lie beyond the control of the provider, such as age of the patient or whether the patient complies with medication instructions. As such, experts also gauge progress by measuring improvements in the processes of care as well as intermediate outcomes.

The researchers, led by Bruce E. Landon, M.D., M.B.A., of the Department of Health Care Policy at Harvard Medical School, analyzed interventions with

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9,658 patients at 44 health centers nationwide, approximately half of which were in urban areas. They used nationally validated quality measures that were collected from medical record reviews conducted over a 1-year period before the intervention and the same period after the intervention, and judged them against external control centers for comparison. Process improvements included:

- A 21 percent increase in foot examinations for patients with diabetes.
- A 14 percent increase in the use of anti-inflammatory medication for patients with asthma.
- A 16 percent increase in the level of screening for glycated hemoglobin in persons with diabetes mellitus.
- Overall, across the three conditions, a 6 percent improvement in processes of care related to screening and disease prevention and a 5 percent improvement in processes related to disease monitoring and treatment.

Even though processes were improved, the researchers found no improvement in intermediate outcomes, including:

- Control of glycated hemoglobin for people with diabetes.
- Control of blood pressure to normal levels for patients with hypertension.
- No reduction in urgent care, emergency department visits, or hospitalization for people with asthma.

The researchers observed that this focus on short-term outcomes to the exclusion of important longer-term outcomes may underestimate the true effect of quality improvement collaboratives.

See "Improving the management of chronic disease at community health centers," by Dr. Landon, LeRoi S. Hicks, M.D., M.P.H., A. James O'Malley, Ph.D., and others, in the March 1, 2007 *New England Journal of Medicine* 356(9), pp. 921-934. ■

Reliability model improves hospital safety and eliminates bloodstream infections in the ICU

Peter J. Pronovost, M.D., Ph.D., and colleagues at Johns Hopkins University, supported in part by the Agency for Healthcare Research and Quality (HS14246), recently developed a model to improve the reliability of hospital patient safety. They pilot tested the model at the Johns Hopkins Hospital and in nearly 200 intensive care units (ICUs) in Michigan, New Jersey, and Rhode Island. Use of the reliability model at nearly 100 Michigan ICUs markedly reduced catheter-related bloodstream infections (CRBSIs). The proportion of all ICU months of observation with no CRBSIs increased from 59 percent at baseline to 80 percent, 7 to 9 months following implementation of the reliability model. This approach was also beneficial at eliminating CRBSIs across a range of ICU sizes.

The reliability model targets three important groups—senior leaders, team leaders, and frontline staff. Also, teams are given a manual of operations to facilitate change management for planned interventions—engage, educate, execute, and evaluate. The model focuses on identifying evidence-based interventions that improve patient outcomes, selecting interventions with the most impact on outcomes and converting them to behaviors, developing measures to evaluate reliability, measuring baseline performance, and ensuring that patients receive the evidence-based interventions.

In addition, a comprehensive unit-based safety program (CUSP) is used to improve culture and guide organizations in learning from mistakes. As part of CUSP, a senior executive adopts a work area and actively participates in safety efforts with staff. Staff in each work area are asked to learn from one defect per month, and department and hospital leaders are asked to learn from one defect per quarter using a structured tool. In addition, CUSP asks safety teams to implement tools, such as daily goals and morning briefings, to

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help improve the organizational safety culture.

For more details, see "Tracking progress in patient safety: An elusive target," by Dr. Pronovost, Marlene R. Miller, M.D., M.Sc., and Robert M. Wachter, M.D., in the August 9, 2006 *Journal of the American Medical Association* 296(6), pp. 696-699; and "Creating high reliability in health care organizations," by Dr. Pronovost, Sean M. Berenholtz, M.D., M.H.S., Christine A. Goeschel, R.N., M.P.A., M.P.S., and others, in the August 2006 *HSR: Health Services Research* 41(4), pp. 1599-1617. ■

Studies highlight the interaction between managed care and market forces and their impact on quality of care

The Agency for Healthcare Research and Quality (AHRQ) supports several centers of excellence that conduct research on how market forces affect health care quality, access, and costs. These centers have examined a broad spectrum of markets in health care, including pharmaceutical, physician, hospital, and rural markets. A special December 2006 issue of *Medical Care Research and Review* 63(6 Suppl.), edited by Laurence Baker, Ph.D., of Stanford University, focuses on research into the interaction between managed care and market forces. The research was done by the University of California, San Francisco-Michigan Center of Excellence, and the RAND-University of California, Los Angeles Center of Excellence, supported in part by AHRQ (HS 10770, HS01771, and HS10856). Following are brief summaries of the introduction and five articles that appear in the issue.

Encinosa, W. and Hagan, M. "Introduction: AHRQ research on health care markets," pp. 3-8.

The introduction emphasizes the importance of research on how market forces affect health care quality, access, and costs, summarizing the five articles in the journal issue. Overall, the articles show that hospital competition improved care quality both for hospitals and for health plans. However, health plan competition did not seem to improve health plan quality. Managed care penetration did improve quality for health plans and hospitals, except for hospitals in States such as New York, where hospital rates were regulated before 1997. Neither hospital competition nor HMO penetration seemed to affect safety net hospitals that serve the poor.

Liang, S-Y., Phillips, K.A., and Haas, J.S. "Measuring managed care and its environment using national surveys: A review and assessment," pp. 9-36.

This article discusses the issues involved in defining managed care. It also explores how well 25 health plan characteristics can be used to identify managed care and its impact on health care use and access in 2 national surveys, the Medical Expenditure Panel Survey and the National Health Interview Survey. The authors note that these surveys are useful for measuring and examining managed care. However, they could be improved by adding data from the perspectives of providers, such as financial incentives or contractual relationships between individual physicians, medical groups, and health plans. The authors also suggest developing survey questions that collect information on new innovations of managed care, including multitiered networks and consumer-directed health plans.

Scanlon, D.P., Chernew, M., Swaminathan, S., and Lee, W. "Competition in health insurance markets: Limitations of current measures for policy analysis," pp. 37-55.

The authors systematically reviewed 35 studies on health plan competition. They found the three most common measures of competition are the number of HMOs in the market, the HMO penetration rate, and the HMO Herfindahl-Hirschman Index. They suggest that use of different measures may end in different results, especially in longitudinal studies. Moreover, certain measurement issues, such as the treatment of small firms and omitted market characteristics, could also affect the conclusions of the studies. The authors note that other competition-related measures (for example, the availability of information on price and outcomes) are important, but their impact on market outcomes has not been widely studied.

Scanlon, D.P., Swaminathan, S., Chernew, M., and Lee, W. "Market and plan characteristics related to HMO quality and improvement," pp. 56-89.

Using longitudinal data, the authors of this paper identified market and health plan characteristics associated with performance and improvement on the Health Plan Employer and Data Information Set (HEDIS) and Consumer Assessment of Health

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Plan Survey (CAHPS) measures. They found that HMO competition (measured by the Herfindahl-Hirschman Index) was not associated with better performance or greater rates of improvement in performance on the HEDIS chronic care measures, but it was related to HMO performance on the CAHPS measure (consumer satisfaction). On the other hand, HMO penetration was positively associated with HEDIS performance in several of the chronic care process and outcome measures, but not with a greater rate of improvement over time. The results suggest some caution before assuming that competition will, by itself, generate improved care quality.

Zwanziger, J. and Khan, N. "Safety-net activities and hospital contracting with managed care organizations," pp. 90-11.

This article examines what effect managed care and market forces have on safety net hospitals that serve poor and vulnerable populations. The researchers found that safety net hospitals were less likely to be members of managed care networks, which may place them at a competitive disadvantage. They used insurance contract data to identify the hospital networks of managed care plans in 71 metropolitan statistical areas. They combined these data with hospital, managed care, and market characteristic data to determine characteristics of safety net hospitals that influenced the likelihood of their contracting with managed care plans. Certain safety net hospital measures and a cluster of related hospital characteristics were associated with a lower probability of contracts.

Escarce, J.J., Jain, A.K., and Rogowski, J. "Hospital competition, managed care, and mortality after hospitalization for medical conditions: Evidence from three States," pp. 112-140.

This study assessed the effect of hospital competition and HMO penetration on mortality after hospitalization for six medical conditions (heart attack, hip fracture, stroke, gastrointestinal hemorrhage, congestive heart failure, and diabetes) in California, New York, and Wisconsin. Greater hospital competition was associated with fewer deaths in California and New York, but not Wisconsin. Higher HMO penetration was similarly associated with fewer deaths in California, but more deaths in New York. These findings suggest that hospitals in highly competitive markets compete on quality, even in the absence of mature managed care markets. The results also underscore the need to consider geographic effects in studies of market structure and hospital quality. ■

Barriers impede efforts to use a region-wide hospital medication error reporting system

Medication-related errors harm 6 to 10 percent of hospitalized patients. Some States have passed laws requiring the reporting of medical errors, with penalties for delayed or incomplete reporting. However, to date, no clear-cut method of medical error reporting has been uniformly adopted with broad success. A new study of hospitals in the Pittsburgh region who participate in MEDMARX, a regional Web-enabled anonymous medication error reporting system, uncovered barriers to use of the regional system that need to be addressed in order to improve patient safety.

The researchers analyzed focus group remarks on medical error reporting by representatives from eight Pittsburgh hospitals (two urban, four community, one long-term care, and one pediatric). Participants identified four obstacles to reporting errors to the MEDMARX system and use of the MEDMARX quarterly report. First, few hospitals had sufficient dedicated staff for identification, verification, and reporting of errors. Efforts to promote reporting were compromised by other demands on staff time. Next, information systems in most hospitals were fragmented, leading to duplication of efforts and inefficiency. For example, most participating hospitals did not have computerized patient medical records or did not have the capacity to link pharmacy records to laboratory data to identify certain drug errors.

Participants also expressed concerns about benchmarking by hospital administrators and their reactions to increases in error reporting. For example, the process used to identify potential medication errors varied across hospitals, which could result in artificial differences in hospital-specific error rates. Finally, hospitals could generate internal error reports for analyses much faster than they received the quarterly MEDMARX reports. These last two issues had a negative impact on report use and dissemination. The study was supported by the Agency for Healthcare Research and Quality (HS11926).

More details are in "Perceived barriers in using a region-wide medication error reporting system," by Kim C. Coley, Pharm.D., Janice L. Pringle, Ph.D., Robert J. Weber, M.S. and others, in the March 2006 *Journal of Patient Safety* 2(1), pp. 39-44. ■

Blacks are more distrustful of equity in the organ donor system and favor providing benefits to donor families

Blacks are more likely than whites to develop end-stage kidney disease due to diabetes and other medical problems, yet they are less likely than whites to receive a kidney transplant and wait longer for transplantation. A new study finds that blacks are more distrustful than whites of the equity of the organ donation system and are more in favor of providing tangible benefits to donor families. A telephone survey of 1,283 adults in Ohio asked them whether they had signed a donor card and were willing to donate their own or a loved one's organs.

Fewer blacks than whites had signed a donor card (39 vs. 65 percent) and were willing to donate their own organs (73 vs. 88 percent) or a loved one's organs (53 vs. 66 percent). Blacks also had lower scores on the Trust in the Health Care System scales (mean score of 9.43 vs. 9.93). They were more likely to agree that "if doctors know I am an organ donor, they won't try to save my life" (39 vs. 26 percent) and that the rich or famous are more likely to get a transplant (82 vs. 76 percent). Blacks were less likely than whites to agree that doctors can be trusted to pronounce death (68 vs. 83 percent). Blacks were also more likely to agree that families should receive money for donating organs (46 vs. 28 percent) and funeral expenses (63 vs. 47 percent).

Although blacks were not as positive about organ donation as whites, the majority stated that they would be willing to donate an organ. This is in contrast to real donor rates that hover around 30 percent. A second finding of note is the pervasive distrust of the health care system, including its inequity. Until some of these issues are addressed, the rates of organ donation among blacks may continue to be low, caution Laura A. Siminoff, Ph.D., of Case Western Reserve University School of Medicine, and colleagues. Their study was supported in part by the Agency for Healthcare Research and Quality (HS10047).

See "Racial disparities in preferences and perceptions regarding organ donation," by Dr. Siminoff, Christopher J. Burant, M.A.C.T.N., M.A., and Said A. Ibrahim, M.D., M.P.H., in the August 2006 *Journal of General Internal Medicine* 21, pp. 995-1000. ■

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Certain types of severe abdominal injury may signal child abuse in young children

Certain abdominal injuries may signal child abuse in children younger than 5 years, suggests a new study. Young children with severe injuries to the pancreas or hollow viscous organs (for example, small bowel or colon), or severe abdominal injuries in the context of either brain injury or malnourishment should be evaluated for possible abuse. Researchers identified 664 cases from the National Pediatric Trauma Registry of blunt abdominal injury (excluding motor vehicle injuries) in children up to 4 years of age. This database includes information from pediatric trauma centers on pediatric trauma, its causes, treatment, and consequences.

The three most common mechanisms of abdominal injury were suspected child abuse (40.5 percent), falls (36.6 percent), and being struck (not child abuse, 9.7 percent). Liver injury was the most common intra-abdominal injury (46.1 percent), followed by splenic (26 percent), hollow viscous (17.9 percent), and pancreatic (8.6 percent) injuries. Child abuse was suspected in 84 percent of deaths.

The medical diagnosis of suspected child abuse was significantly associated with all patient and injury characteristics evaluated: mortality, undernourishment, young age, traumatic brain injury, hollow viscous injury, pancreatic injury, and other intra-abdominal injuries. More than three-quarters of hollow viscous injury and two-thirds of pancreatic injury and traumatic brain injury were found in the suspected abuse group. In contrast to patients in the child abuse group, 15 percent of whom were undernourished, less than 5 percent of the nonabused group were undernourished. The study was supported in part by the Agency for Healthcare Research and Quality (HS00060).

See "Patient and injury characteristics in abusive abdominal injuries," by Matthew Trokel, M.D., M.A., Carla Discala, Ph.D., Norma C. Terrin, Ph.D., and Robert D. Sege, M.D., Ph.D., in the October 2006 *Pediatric Emergency Care* 22(10), pp. 700-704. ■

Substantially delaying the first dose of hepatitis B vaccine may lead to underimmunization of children

Many pediatric vaccine schedule changes have been issued in recent years due to vaccine shortages, introduction of new vaccines, and other concerns. For example, the initial birth dose of the three-dose hepatitis B vaccine was suspended in 1999 due to concerns about thimerosal (a preservative in vaccines that is metabolized into ethylmercury). As a result, in practices that delayed the timing of the first hepatitis B dose, fewer children were fully immunized at 24 months. As vaccine policy changes occur, providers should adopt vaccination schedules that minimize delays in the recommended timing of vaccine doses to minimize underimmunization, suggests Nancy D. Lin, Ph.D., of Harvard Medical School and Stanford University.

Dr. Lin and colleagues studied children enrolled in five large U.S. provider groups to evaluate the association between the hepatitis B birth dose suspension and a child's probability of being under-immunized at 24 months. Prior to the hepatitis B birth dose suspension (baseline), the percentage of children who received a hepatitis B vaccination at birth varied widely (3 to 90 percent) across the five provider groups. After the suspension, the percentage of children who received the vaccination at birth decreased in all provider groups.

However, the most substantial decreases in vaccine coverage at 24 months occurred in the two provider groups that shifted the first hepatitis B dose from birth to 5 or 6 months of age. Children in these two provider groups were about three times more likely to be underimmunized for the hepatitis B series at 24 months of age compared with baseline. This trend persisted even after the policy was reversed, with the introduction of the first thimerosal-free hepatitis B vaccine. In contrast, in the three provider groups whose vaccination schedules were unaffected by the birth dose suspension (either due to a combination hepatitis B-Hib vaccine or other reasons), hepatitis B vaccination coverage either was maintained or improved. The study

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was supported in part by the Agency for Healthcare Research and Quality (HS00028).

See "Variation in hepatitis B immunization coverage rates associated with provider practices after the temporary suspension of the birth dose," by Dr. Lin, Ken Kleinman, Sc.D., K. Arnold Chan, M.D., and others, in the November 13, 2006 *Pediatrics* 6 (31), which is available at www.biomedcentral.com/. ■

Children are more likely to attend a weight management program if location and time are convenient for parents

Pediatricians are seeing more children whose health is threatened by being overweight or obese. Weight management programs can help these children lose weight; however, if children are to attend the programs, the locations need to be convenient and the programs held at times that fit parents' preferred structure. Researchers Sarah E. Barlow, M.D., M.PH., and Chris L. Ohlemeyer, M.D., of the St. Louis University School of Medicine studied 157 obese children (mean age of 12 years and mean body mass index of 39.9) and found that one-third did not return for second visits and nearly two-thirds did not show up for future visits to their weight management program.

The individualized, behavior-based, weight management program was designed for children and adolescents. As part of the program, an interdisciplinary team and the family identified two to four specific goals for improved eating and activity based on the child's current patterns. Followup visits were scheduled monthly.

Survey responses from 43 families, whose children attended two or fewer program visits, provided some insight into why the children didn't return. Over one-third (37 percent) of parents reported that the program was not what they were looking for. Some parents specified that they wanted a different approach, such as a structured diet or group exercise program. Some expressed discomfort with program staff. Other reasons for nonreturn were distance to the program (23 percent), scheduling conflicts (21 percent), and lack of insurance coverage for weight management (21 percent). Another 16 percent said their child was not ready to make this type of change, and 5 percent said the family was not ready to make this type of change. The study was supported by the Agency for Healthcare Research and Quality (HS13901).

See "Parent reasons for nonreturn to a pediatric weight management program," by Drs. Barlow and Ohlemeyer, in the May 2006 *Clinical Pediatrics* 45, pp. 355-360. ■

Some pediatric offices may not be prepared to handle emergencies such as seizures or severe asthmatic episodes

Pediatric offices occasionally see children with emergencies such as epileptic seizures or asthma-related breathing problems. Yet these offices may be unprepared to treat a critically ill child until the arrival of paramedics, according to a new study. For example, four of eight pediatric offices surveyed did not have the appropriate medications for epileptic seizures, and some lacked the basic supplies needed to handle respiratory emergencies. One office lacked an oxygen source with a flow meter, and only five of the eight offices had suction machines.

Reasons given for lack of equipment and training included office proximity to a hospital emergency department (median transport time of 5 minutes) and quick response time of emergency medical services. However, the researchers found a significant delay from the initial 911 call from the pediatrician's office until the child's arrival at the emergency department. Actions taken by the pediatrician during this time could affect the outcome, note the researchers.

The pediatric offices generally treated an average of one child a week who required emergency treatment or subsequent emergency hospitalization, mostly for respiratory emergencies and seizures. Availability of emergency equipment and medications varied. All offices stocked albuterol to open up the airways, but only two had racemic epinephrine in case the albuterol did not help, and seven out of eight had an oxygen source

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Pediatric offices

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with a flow meter. However, only half the offices had a fast-acting anticonvulsant, and one-fourth had no anticonvulsant. Three offices lacked bag-mask (manual) resuscitators with all appropriate sized masks, and three offices lacked suction. Four offices had written guidelines for actions to be taken for medical emergencies occurring in the office. Only one office required staff to participate in mock emergency codes. The study was supported in part by the Agency for Healthcare Research and Quality (HS09166).

See "Preparedness of selected pediatric offices to respond to critical emergencies in children," by Genevieve Santillanes, M.D., Marianne Gausche-Hill, M.D., and Bernardo Sosa, M.D., in the November 2006 *Pediatric Emergency Care* 22(11), pp. 694-698. ■

State Children's Health Insurance Programs have improved access to care for previously uninsured children

A study of the Georgia and Alabama State Children's Health Insurance Programs (SCHIPs) recently examined the impact on children's healthcare use of very different SCHIP structures in the two States. Many low-income children who were previously insured by Medicaid shifted to SCHIP when they lost Medicaid eligibility, while others were previously uninsured. Researchers compared children's use of care in SCHIP and Medicaid-covered populations in two different systems: one where all the children shared the same provider network and primary care case management (PCCM) system with the same Medicaid fee structure, and another where the SCHIP was structured as a fee-for-service (FFS) system using a private insurance provider network and fee schedule.

Researchers found more use of well-child care among Medicaid-covered children in programs where SCHIP and Medicaid Programs shared a PCCM system, but more use of office-based physician care among SCHIP-covered children. Between the Medicaid PCCM-based and the private insurance FFS-based system, they found more use of primary and specialty care in the FFS system. They found more use of well-child care and less use of emergency departments for nonurgent care in the PCCM-based system.

Analysis of other factors affecting use of care revealed that personal characteristics (for example, race, ethnicity, age, and sex), community level poverty, and health care provider proximity also had an independent influence on children's use of health care, no matter what type of health insurance they had. Health insurance is critical to ensure access to health care, but it is not sufficient for ensuring equivalent usage of care across covered populations, concludes Janet M. Bronstein, Ph.D., of the University of Alabama. Her study was supported in part by the Agency for Healthcare Research and Quality (HS10435).

See "SCHIP structure and children's use of care," by Dr. Bronstein, E. Kathleen Adams, Ph.D., and Curtis S. Florence, Ph.D., in the Summer 2006 *Health Care Financing and Review* 27(4), pp. 41-51. ■

Urban influence codes reveal more about children's patterns of health care use and coverage

Studies using the categories Metropolitan Statistical Area (MSA, urban) and Nonmetropolitan Statistical Area (nonMSA, rural) have found differences between urban and rural children in health risks and health care. However, a new study shows that more specific Urban Influence Codes can shed additional light on children's health care patterns, which were not previously evident from the use of MSA/nonMSA categories. Researchers at the Agency for Healthcare Research and Quality (AHRQ) and colleagues analyzed two national health care databases: the 2002 Medical Expenditure Panel Survey and the 2002 Nationwide Inpatient Sample and State Inpatient Databases from the Healthcare Cost and Utilization Project.

County urbanicity is defined in both data sets by Urban Influence Codes that distinguish among children residing in and hospitals located in large metropolitan (metro) counties, small metro

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counties, micropolitan (large rural) counties, and noncore (small rural) counties. Based on these codes, greater percentages of children in large metro counties were Hispanic or black than in the other three counties. In micropolitan and noncore counties, higher proportions of children were below 200 percent of the Federal poverty level than in large metro and small metro counties.

Noncore areas had a greater percentage of children in fair or poor health compared with those in small metro and micropolitan counties. Most hospitals were located in large and small metro areas. Hispanic children residing in large metro counties were more likely to be uninsured than those in small metro counties. The proportion of children with medicine prescribed was generally lower in large metro areas compared with all other areas. Children in noncore areas were more likely to have a hospital stay and emergency department use than children in large metro areas. Children in large metro counties had longer average hospital stays and higher hospital charges per day compared with all other children. Over half of hospitalizations for noncore children occurred outside of noncore counties.

More details are in "Health care for children and youth in the United States: Annual report on patterns of coverage, utilization, quality, and expenditures by a county level of urban influence," by Frances M. Chevarley, Ph.D., Pamela L. Owens, Ph.D., Marc W. Zodet, M.S., and others, in the September 2006 *Ambulatory Pediatrics* 6(5), pp. 241-264. Reprints (AHRQ Publication No. 06-R079) are available from AHRQ.*

Editor's Note: In a brief commentary, AHRQ researcher Denise Dougherty, Ph.D., and colleagues Lisa A. Simpson, M.B., B.Ch., M.P.H., and Marie C. McCormick, M.D., Sc.D., note that an analysis of data from AHRQ by urban influence code in Chevarley, et al., suggests that children living in rural areas are disproportionately poor, rely on public insurance, and have patterns of health care use that point to barriers to care access. The data also suggest that rural children have differing levels of care quality depending on the type of care assessed. Rural children may be particularly vulnerable to recent changes in Medicaid, which reduce benefits and increase copayments and cost-sharing for low-income families, note the authors. They suggest that improving care access to rural children should take an innovative approach, using health information technology to provide and coordinate care to children, perhaps using public health departments as hubs for care and care monitoring. See "Rural areas and children's health care coverage, use, expenditures, and quality: Policy implications," by Drs. Dougherty, Simpson, and McCormick, in the September 2006 *Ambulatory Pediatrics* 6(5), pp. 265-267. ■

Chronic Disease

Stimulation of the subthalamic nucleus of the brain improves quality of life for patients with advanced Parkinson's disease

Patients with advanced Parkinson's disease (PD) eventually have difficulty walking, talking, or completing simple tasks, with some having very limited or no mobility. According to a new study, however, patients with PD who underwent brain stimulation surgery reported improved quality of life. Up to 18 months after surgery, the patients had improvements in mobility, ability to carry out daily activities, and emotional well-being. They also felt less social stigma due to obviously rigid and unbalanced movements and less bodily discomfort.

The surgery, stimulation of the subthalamic nucleus (STN) of the brain, is accomplished by implanting a thin electrode into the brain. Small electrical pulses from a device similar to a cardiac pacemaker stimulate the brain and block brain signals that cause Parkinson's symptoms. This surgery is usually performed when patients' symptoms have failed to respond to anti-Parkinsonian medications or if they cannot tolerate side effects such as tics or hallucinations, notes Andrew Siderowf, M.D., M.S.C.E., of the University of Pennsylvania School of Medicine.

Dr. Siderowf and fellow researchers examined the responses of 18 patients with advanced PD to the Parkinson's Disease questionnaire-39 (PDQ-39), a general health status survey, and the EuroQol visual analogue scale (VAS) before surgery, 6 months after

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Parkinson's disease

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surgery, and 18 to 57 months after surgery. The VAS and all but three symptom domains of the PDQ-39 showed marked improvements at 6 months after surgery. At the long-term followup, there was a 63 percent sustained improvement in the VAS and—based on the PDQ-39—20 percent improved mobility, 29 percent improved ability to carry out activities of daily living, 26 percent improved emotional well-being, 43 percent fewer feelings of social stigma, and a 35 percent decline in bodily discomfort. Early improvement was strongly linked to long-term improvement. The study was supported by the Agency for Healthcare Research and Quality (HS00004).

See "Long-term effects of bilateral subthalamic nucleus stimulation on health-related quality of life in advanced Parkinson's disease," by Dr. Siderowf, Jurg L. Jaggi, Ph.D., Sharon X. Xie, Ph.D., and others in the June 2006 *Movement Disorders* 21(6), pp. 746-753. ■

One-third of U.S. veterans suffer from arthritis, perhaps due to orthopedic injuries sustained in the military

About one-third of U.S. veterans suffer from arthritis, according to a new study. For some, the arthritis may have resulted from orthopedic injuries they sustained while in the military. Military training and service often involve situations that place personnel at greater risk for orthopedic injuries. For example, soldiers deployed to the Persian Gulf during Operation Desert Storm often wore Kevlar helmets and heavy battle gear while riding in trucks over desert terrain. These soldiers commonly reported extreme posterior neck pain. Screening individuals entering military service for predisposing factors for orthopedic injury, such as skeletal malalignment, may help reduce these injuries. Use of foot orthotics, supportive shoes, bracing, and individualized stretching and strengthening programs may also reduce the risk of injury to veterans, suggest the Duke University Medical Center investigators.

They found that 32 percent of veterans surveyed in 36 States had been diagnosed with arthritis, compared with 22 percent of nonveterans. Also, 43 percent of veterans using the Veterans Affairs (VA) health care system (who tend to have more disabilities and poorer health) had been diagnosed with arthritis compared with 30 percent of veterans who did not use VA health care.

Veterans were twice as likely as nonveterans to report chronic joint symptoms and activity limitations, as were veteran users of VA health compared with veterans who did not use VA health care. The findings were based on responses from 123,395 veterans and nonveterans to the arthritis survey of the 2000 Behavioral Risk Factor Surveillance System. The study was supported in part by the Agency for Healthcare Research and Quality (HS00079).

See "Arthritis prevalence and symptoms among U.S. non-veterans, veterans, and veterans receiving Department of Veterans Affairs healthcare," by Kelli L. Dominick, Ph.D., Yvonne M. Golightly, P.T., M.S., and George L. Jackson, Ph.D., in the February 2006 *Journal of Rheumatology* 33(2), pp. 348-354. ■

Specific primary care office systems and quality improvement strategies may substantially affect the cost of diabetes care

Some primary care office system and improvement strategies substantially increase future health care costs for people with diabetes, while others significantly decrease them, according to a new study. For example, the use of databases to monitor patient laboratory test results was associated with $2,439 higher costs over a 3-year period. Yet clinics with regular clinician meetings to discuss patient care problems and clinics that used diabetes registries to prioritize patients based on cardiovascular risk were associated with $3,962 and $2,916 lower 3-year costs, respectively.

Physician meetings can contribute to anticipating and sometimes avoiding hospitalization, especially when a moderately ill patient sees a series of providers in a single episode of illness. Such meetings may also

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Primary care office systems

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provide a forum for physician-nurse communication that benefits care, explains Patrick J. O'Connor, M.D., M.P.H., of HealthPartners Research Foundation.

Researchers also found that quality improvement strategies, which focused on resource use related to diabetes care or heart disease care, were associated with $2,883 and $3,228 lower costs, respectively. However, quality improvement strategies that emphasized pharmacy use for patients with heart disease or depression resulted in $3,059 and $2,962 higher short-term costs, respectively. The findings were based on a prospective study of 1,628 adults who received care for diabetes in 84 clinics within 18 medical groups of a large health care organization. The researchers examined medical claims for these patients over a 3-year period, Medicare records, and surveys of patients, clinic medical directors, and managers. The study was supported by the Agency for Healthcare Research and Quality (HS09946).

See "Impact of office systems and improvement strategies on costs of care for adults with diabetes," by Todd P. Gilmer, Ph.D., Dr. O'Connor, William A. Rush, Ph.D., and others, in the June 2006 *Diabetes Care* 29(6), pp. 1242-1248. ■

Factors such as disease status and sex affect adherence to drug prescribing guidelines for hypertension

Current guidelines recommend the use of diuretics or beta blockers—which are less expensive than other medications—as the first choice antihypertensive agents. Yet a new study found that fewer than 40 percent of patients received a diuretic or beta blocker, even though they had access to health care and prescription drug benefits. Certain clinical and nonclinical factors were associated with adherence to prescribing guidelines for hypertension among 5,789 patients with hypertension of a large New England managed care organization.

Women were 63 percent more likely than men to receive diuretics or beta blockers, which may be accounted for by several factors. Doctors may perceive that men are concerned about the sexual dysfunction that often occurs with these medications. Doctors also may preferentially treat men who have both hypertension and benign prostatic hypertrophy with alpha blockers to treat both conditions. A disproportionately larger number of men than women suffer from heart failure and, therefore, may be treated with angiotensin converting enzyme (ACE) inhibitors. Patient age was not a significant correlate of guideline adherence.

Patients with diabetes were 47 percent less likely than patients without diabetes to receive diuretics or beta blockers. To prevent the kidney complications of diabetes, most people with diabetes and hypertension are treated with an ACE inhibitor or angiotensin receptor blocker, which are now considered initial therapy for patients with both conditions. Compared with HMO coverage, Medicare coverage was associated with 38 percent greater guideline adherence. Fee-for-service coverage was associated with 34 percent less guideline adherence (perhaps because prescribers are less constrained by drug formularies). The study was supported in part by the Agency for Healthcare Research and Quality (HS10391 and HS12019).

See "Clinical and nonclinical correlates of adherence to prescribing guidelines for hypertension in a large managed care organization," by Philip C. Skelding, M.P.H., Sumit R. Majumdar, M.D., M.P.H., Ken Kleinman, Sc.D., and others, in the June 2006 *Journal of Clinical Hypertension* 8, pp. 414-419. ■

Emergency departments with physician residents are less effective in determining which children require hospital admission

More than 30 million children are treated in U.S. hospital emergency departments (EDs) each year. EDs staffed with physician residents in training are less effective in determining which children require hospital admission and which can be safely released, concludes a new study. EDs with residents admitted children at a rate nearly 14 times higher than expected compared with nonresident hospitals, after adjusting for children's illness severity. EDs with residents also had far more children returning to the ED within 72 hours after discharge, an indicator that they were discharged from the ED prematurely.

Volume of patients and physician specialist status were not associated with hospital admissions or return to the ED within 72 hours. These results are consistent with the known liabilities of care by less experienced physician residents. For example, use of pediatric residents has been associated with higher rates of ED medication errors, higher mortality rates, and longer stays in the intensive care unit (ICU). The findings were based on an examination of 3 ED care factors for 16 hospitals with pediatric ICUs: annual pediatric volume, presence or absence of pediatric emergency medicine specialists, and presence or absence of ED residents.

A Pediatric Risk of Admission Score measured illness severity. The researchers compared observed with predicted (based on illness severity) hospital admissions and returns to the ED within 72 hours for 11,664 children. Compared with nonresident hospitals, resident hospitals had about 18 times more children than expected either admitted to the hospital or returned within 72 hours (35.5 vs. 1.9 per 1,000 patients). The study was supported by the Agency for Healthcare Research and Quality (HS10238).

See "Association of emergency department care factors with admission and discharge decisions for pediatric patients," by James M. Chamberlain, M.D., Kantilal M. Patel, Ph.D., and Murray M. Pollack, M.D., M.B.A., in the *Journal of Pediatrics* 149, pp. 644-649, 2006. ■

A color-coded tape helps EMTs calculate the correct epinephrine dose for children in cardiopulmonary arrest

Children who suffer cardiopulmonary arrest outside the hospital are three times more likely to receive the correct dose of epinephrine from emergency medical technicians (EMTs) when EMTs are required to use a color-coded tape that helps calculate the correct medication dose, according to a new study. In 2001, the Los Angeles County Emergency Medical Services Agency mandated that, as part of its LA Kids Program, paramedics would use the Broselow tape to quickly identify the correct medication dose to give to children in emergencies. The Broselow tape measures a child's height in color zones that correlate with body weight. In this way, the tape helps EMTs to rapidly estimate a child's body weight, calculate weight-based drug doses (children's doses are based on body weight), and choose the correct size of resuscitation equipment for children.

The Agency also provided EMTs with precalculated drug dosing charts organized according to the same color zones as the tape. EMTs were required to report the color zones to trained personnel at hospital bases, who relayed back the proper drug dose. However, paramedics could administer the first dose of epinephrine before hearing from the hospital. The researchers examined the epinephrine dosing of children 12 years or younger who suffered prehospital cardiopulmonary arrest and received prehospital epinephrine treatment by paramedics from 1994 to 1997 (pre-LA Kids) and 2003 to 2004 (post-LA Kids).

Only 29 of 104 children in the 1994-1997 group received the correct dose of epinephrine, and 46 of 104 children received a first dose within 20 percent of the correct dose. During the 2003-2004 period, children were three times more likely to receive the correct dose of epinephrine: 21 of 37 children received the correct dose of epinephrine, and 24 of 37 received a dose within 20 percent of the correct dose. The study was supported in part by the Agency for Healthcare Research and Quality (HS09166).

More details are in "Emergency medical services system changes reduce pediatric epinephrine dosing errors in the prehospital setting," by Amy H. Kaji, M.D., M.P.H., Marianne Gausche-Hill, M.D., Heather Conrad, M.D., and others, in the October 2006 *Pediatrics* 118(4), pp. 1493-1500. ■

Study provides national time averages for transporting trauma patients by ambulance and helicopter

A new study, supported in part by the Agency for Healthcare Research and Quality (HS10914), and conducted by researchers at the University of Pennsylvania, provides the first average national prehospital care intervals. This is the average time it takes ambulances and helicopters to transport trauma victims to the hospital. The findings will allow policymakers to compare individual Emergency Medical Service (EMS) systems to national norms and will enable EMS systems to compare their times to national and regional averages. Average prehospital transport times will also provide the basis for rational conversations with the public, which demands quick, sometimes unrealistic, response times for trauma victims.

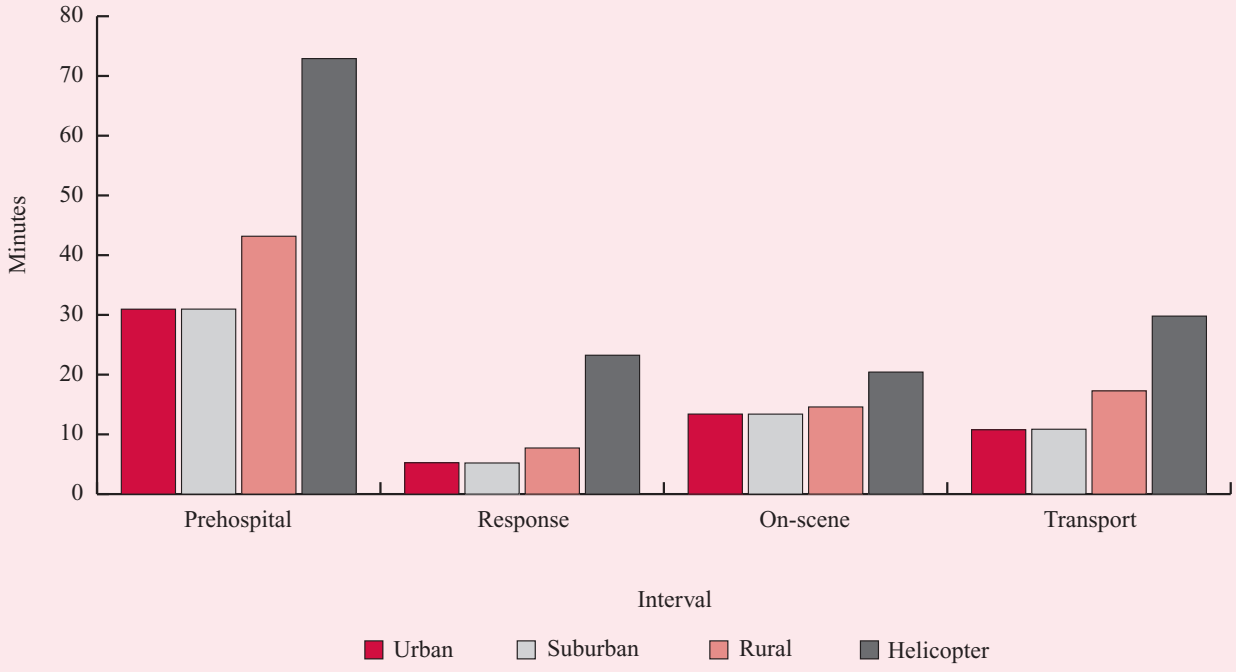
The researchers performed a meta-analysis of 49 articles that reported prehospital times (the amount of time from notification until delivery of the patient at the hospital) for trauma patients transported by helicopter and ground ambulance over a 30-year period. The studies examined activation time, response time, on-scene time, and transport time. The data were drawn from 20 States in all 4 U.S. Census Regions and represented the prehospital experience of 155,179 patients.

As shown in the Figure, the average duration in minutes for urban, suburban, and rural ground ambulances for the total prehospital interval were 30.96, 30.97, and 43.17; for the response interval were 5.25, 5.21, and 7.72; for the on-scene interval were 13.40, 13.39, and 14.59; and for the transport interval were 10.77, 10.86, and 17.28. Average helicopter ambulance times were prehospital 72.91 minutes, response 23.25 minutes, on-scene 20.43 minutes, and transport 29.80 minutes.

The researchers note that the prehospital intervals can help guide clinical decisionmakers in better allocating trauma system resources. The results of this study emphasize a need for a standardized method of gathering prehospital time intervals to accurately compare trauma systems and to facilitate more precise research on trauma outcomes.

See "A meta-analysis of prehospital care times for trauma," by Brendan G. Carr, M.D., M.A., Joel M. Caplan, M.A., E.M.T., John P. Pryor, M.D., and Charles C. Branas, Ph.D., in the April 2006 *Prehospital Emergency Care* 10(2), pp. 198-206. ■

Figure. Average duration in minutes for ground and helicopter ambulance by intervals of response



Guidelines can help paramedics select which drugs to use to facilitate prehospital endotracheal intubation

Paramedics sometimes have to use medication to facilitate endotracheal intubation (ETI) of awake or unrelaxed patients. ETI is difficult in these patients either due to the gag reflex, resistance, seizures, or other problems. Drug-assisted intubation (DAI) encompasses rapid-sequence intubation (RSI), the use of neuromuscular blocking with or without sedative agents to rapidly facilitate ETI, as well as other techniques. Properly trained and prepared emergency medical service (EMS) rescuers may use DAI to facilitate ETI in selected patients. However, they should follow standard protocols, suggest Henry E. Wang, M.D., M.P.H., of the University of Pittsburgh, and colleagues in a new resource document on the topic.

They recommend that prehospital RSI programs receive medical direction from physicians who have substantial clinical experience with RSI. Paramedics generally cannot perform prehospital RSI safely in circumstances that don't allow adequate access to the patient's airway, patients with contraindications to RSI medications, and, depending on operator skill and experience, patients with difficult airway anatomy (for example, severe facial trauma, short neck, or morbid obesity).

As an alternative to RSI, many EMS services use single or combination benzodiazepines, opioids, or induction agents, without the use of neuromuscular blocking agents. This technique is widely used because these agents are commonly carried by EMS services for other applications. However, benzodiazepines and opioids are not ideal agents for facilitating prehospital ETI, because they may dangerously lower a patient's blood pressure. ETI facilitated by topical anesthesia is also not recommended. This study was supported by the Agency for Healthcare Research and Quality (HS13628).

See "Drug-assisted intubation in the prehospital setting (Resource document to NAEMSP position statement)," by Dr. Wang, Daniel P. Davis, M.D., Robert E. O'Connor, M.D., and Robert M. Domeier, M.D., in the April 2006 *Prehospital Emergency Care* 10(2), pp. 261-271.

Editor's note: A related AHRQ-supported study concludes that the operating room ETI training available to paramedic students is limited compared with that available to other ETI providers. Paramedics from one-third of programs reported a recent reduction in operating room access. For more details, see Johnston, B.D., Seitz, R., and Wang, H.E. (2006, October). "Limited opportunities for paramedic student endotracheal intubation training in the operating room." (AHRQ grant HS13628). *Academic Emergency Medicine* 13(10), pp. 1051-1055. ■

Women's Health

Intimate partner abuse has no age limit

When 370 elderly women age 65 and older enrolled in a large West Coast health care delivery system were surveyed, more than a quarter reported being physically or psychologically abused by intimate partners during their adult life. Over 2 percent reported abuse within the past year, and 3.5 percent reported being abused within the previous 5 years, according to a new study supported by the Agency for Healthcare Research and Quality (HS10909).

These findings highlight the fact that partner violence, which is typically thought to be a problem only in younger women, actually can happen to women at any age. Half the women were 65 to 74 years of age and half were age 75 and older. Intimate partners in the study included spouses, nonmarital partners, former marital partners, and formal nonmarital partners.

About 18 percent of the women said that they suffered sexual abuse or physical abuse, and 22 percent were victims of nonphysical abuse, including being threatened, called names, or having their behavior controlled by an intimate partner. The duration of abuse ranged from 3 years for forced sexual contact to 10 years of being put down, called names, or having their behavior controlled. About 60 percent of the victims of physical violence and 71 percent of the women who were subjected to psychological abuse and threats rated the abuse as severe. Only 3 percent of the women said that they had been asked by a health care provider about physical or sexual violence by an intimate partner since age 18. These findings suggest a need for increased efforts to address partner violence in older women.

See "Intimate partner violence in older women," by Amy E. Bonomi, Ph.D., M.P.H., Melissa L. Anderson, M.S., Robert J. Reid, M.D., Ph.D., and others in the March 2007 *Gerontologist* 47(1), pp. 34-41. ■

Older adults' psychological and health characteristics influence their use and timing of online health information searches

An estimated 20 to 50 percent of U.S. adults use the Internet to seek health information. The psychological and health characteristics of older adults influence the use and timing of online health information searches, according to a new study. For example, individuals with more education and who were open to new experiences were more likely to use the Internet to look for health information in general, irrespective of the timing of searches in relation to doctor visits. "Health-minded" or otherwise anxious individuals generally used the Internet to garner information before a doctor's visit. This may be to prepare for a visit or it may have even prompted the visit.

Conversely, sicker individuals, especially those with cancer, tended to use the Internet to gather information after doctor visits, perhaps to assist in processing health information, explains Kathryn E. Flynn, Ph.D., of Duke University. Dr. Flynn and colleagues analyzed the responses of 6,279 predominantly white respondents (aged 63 to 66 years) to the 2004 surveys of the Wisconsin Longitudinal Study.

One-third of respondents had searched online for information about their own health or health care. Half of them searched for health information unrelated to their last doctor visit, while one-third searched after a visit, and one-sixth searched before the visit. Attitudinal and personality factors were also related to seeking health information online. For example, those who preferred having many treatment choices were more likely to use the Internet for health information. The study was supported in part by the Agency for Healthcare Research and Quality (HS15544).

See "When do older adults turn to the Internet for health information: Findings from the Wisconsin longitudinal study," by Dr. Flynn, Maureen A. Smith, M.D., M.P.H., Ph.D., and Jeremy Freese, Ph.D., in the December 2006 *Journal of General Internal Medicine* 21, pp. 1295-1301.

Editor's note: Another AHRQ-supported study by the same researchers concludes that the majority of older adults want to be given treatment options and have their physician know everything about their medical history. However, they differ substantially in how they want to be involved in discussing and selecting treatments. For more details, see Flynn, K.E., Smith, M.A., and Vanness, D. (2006). "A typology of preferences for participation in healthcare decision making." (AHRQ grant HS15544). *Social Science & Medicine* 63, pp. 1158-1169. ■

Use of the pain reliever propoxyphene is associated with a higher risk of hip fracture among the elderly

Propoxyphene, which is no more effective than acetaminophen for relieving pain, is widely prescribed for elderly patients, even though it is considered inappropriate for this group. Like other opioids, propoxyphene often causes dizziness and sedation, increasing the risk of falling. A new study found a two-fold higher risk of hip fracture among elderly patients using propoxyphene compared with patients not using analgesics. Sachin J. Kamal-Bahl, Ph.D., of the University of Maryland, Baltimore, and colleagues prospectively studied Medicare claims data from 1999 and 2000 for 362,503 elderly patients to identify propoxyphene users and nonusers in the 14 days before each hip fracture.

During a 15-month followup, about 10 percent of the sample had at least 1 propoxyphene prescription filled and about 1 percent sustained a hip fracture. Propoxyphene users had a two-fold higher risk for hip fracture compared with nonusers of analgesics. Following adjustment for multiple factors affecting hip fracture risk, elderly patients who used low-dose propoxyphene (260 mg or less) had a 26 percent greater risk of hip fracture, and those on the high dose (more than 260 mg) had double the risk. Other opioid analgesics also doubled the risk for hip fracture.

However, nonopioid analgesics, which provide better or similar efficacy for pain as propoxyphene, were not associated with higher fracture risk. Thus, patients with mild to moderate pain should receive an appropriate nonopioid analgesic rather than propoxyphene. On the other hand, patients being treated with propoxyphene for severe pain may be switched to more effective

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Propoxyphene

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narcotic agents. However, the researchers note that clinicians should still weigh the risk of hip fracture with other narcotics against potential benefits when prescribing them to older adults. Their study was supported by the Agency for Healthcare Research and Quality (HS13551).

See "Propoxyphene use and risk for hip fractures in older adults," by Dr. Kamal-Bahl, Bruce C. Stuart, Ph.D., and Mark H. Beers, M.D., in the September 2006 *American Journal of Geriatric Pharmacotherapy* 4(3), pp. 219-220. ■

Reducing turnover of registered nurses and certified nursing assistants will help maintain nursing home staffing levels

Nursing homes have historically suffered from high staff turnover rates. Some research suggests this has adverse effects on both staffing levels and resident outcomes. A new study found that high turnover rates of registered nurses (RNs) and certified nursing assistants (CNAs) significantly reduced RN and CNA staffing levels. However, licensed vocational nurse (LVN) staffing levels were not affected by LVN turnover, but were influenced by market factors such as availability of LVNs in the county and women in the labor force.

Nursing homes should focus on management initiatives that reduce RN and CNA turnover and ultimately result in higher nurse staffing levels, suggests Bita A. Kash, M.B.A., of Texas A&M University. She and colleagues analyzed data on 1,014 Texas nursing homes from the 2002 Texas Nursing Facility Medicaid Cost Report as well as market data from the 2003 Area Resource File.

They calculated an average staffing level of 0.25 RN hours, 0.86 LVN hours, and 2.12 CNA hours, totaling 3.23 hours of direct care per resident day at the Texas nursing homes. Staff turnover rates were relatively high at 133 percent for RNs, 108 percent for LVNs, and 160 percent for CNAs. All three types of nursing staff levels were lower with for-profit ownership, higher percentage of Medicaid days, and higher wages. Higher occupancy rates were associated with lower RN and LVN staffing, but with higher CNA staffing levels. Higher reimbursement rates were associated with higher staffing levels for all three types of staff, confirming the resource dependency of staffing decisions. The study was supported by the Agency for Healthcare Research and Quality (HS16229).

See "Effect of staff turnover on staffing: A closer look at registered nurses, licensed vocational nurses, and certified nursing assistants," by Ms. Kash, Nicholas G. Castle, Ph.D., George S. Naufal, B.A., and Catherine Hawes, Ph.D., in the October 2006 *Gerontologist* 46(5), pp. 609-619. ■

Outcomes/Effectiveness Research

Higher-than-recommended doses of antipsychotic medications may not benefit people with schizophrenia and may increase side effects

About 40 percent of people with schizophrenia insured through Medicaid in Massachusetts took daily doses of antipsychotic medications that were well above the range recommended by clinical guidelines. Higher-than-recommended dose levels were not related to better outcomes, but may have increased disturbing side effects ranging from blurred vision to muscle spasms. High dose levels had no relationship to the patient's baseline symptoms, according to a study supported in part by the Agency for Healthcare Research and Quality (HS10303). Doctors who believe that higher doses of antipsychotics are more therapeutic for schizophrenic patients need to demand studies that show the benefits of higher doses versus the risk of side effects and other clinical costs, suggest the study authors.

The researchers used Medicaid pharmacy claims data to examine the relationship between antipsychotic medication dose and patient-reported health status, medication side effects, and

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Antipsychotic medications

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perception of care among 329 acutely ill adults with schizophrenia. These patients had been evaluated for hospital admission by one of eight psychiatric emergency screening teams. The researchers collected claims data on presenting symptoms and problems, referral source, and living situation at the time of the visit, as well as history of prior psychiatric treatment costs and hospitalizations.

During the study period, about 60 percent of the patients in the study received daily standardized doses within the recommended range of 300 to 1,000 chlorpromazine (CPZ) units (median dose, 611 CPZ units). Doses above the recommended guideline ranged from 1,025 to 6,067 CPZ units (median dose, 1,764 CPZ units). After adjustment for sociodemographic and clinical factors, patient health status measures were largely unrelated to guideline dose adherence. Patients rated their treatment as good regardless of dose level, yet about one-fourth of patients suffered from movement disorders, including tardive dyskinesia (involuntary movements of the mouth, trunk, or legs), and more than half had at least one medication side effect. Patients in the high-dose group had more non-movement-related side effects than others.

See "Associations between adherence to guidelines for antipsychotic dose and health status, side effects, and patient care experiences," by Barbara Dickey, Ph.D., Sharon-Lise T. Normand, Ph.D., Sue Eisen, Ph.D., and others, in the September 2006 *Medical Care* 44(9), pp. 827-834. ■

Use of needle biopsy to diagnose lung nodules does not increase the risk of dying from localized nonsmall cell lung cancer

Needle biopsy of the lung is commonly used to evaluate single lung nodules for suspected cancer. The goal is to diagnose existing cancer and to spare patients without malignant nodules from unnecessary surgery. Although uncommon, percutaneous transthoracic needle biopsy (PTNB) can spread cancer cells along the needle track into the lungs. However, a new study confirms that cancer spread due to PTNB is indeed a rare event, and that this procedure does not increase the risk of dying from localized lung cancer. The researchers examined 8,607 cases of surgically resected stage 1 nonsmall cell lung cancer diagnosed between 1991 and 1999 from the Surveillance, Epidemiology, and End Results (SEER) registry, which they linked to Medicare records. They compared overall and lung cancer-specific survival of patients who had and did not have PTNB.

About one-third (36 percent) of patients underwent diagnostic PTNB. Overall survival and survival of specific lung cancers did not differ in patients that underwent PTNB as part of their cancer diagnostic workup and those who did not, even more than 5 years after diagnosis. Since the estimated time to local recurrence after PTNB is 6 to 26 months, these data strongly suggest that lung cancer dissemination after PTNB is a rare event having no significant impact on lung cancer curability or clinical outcomes, concludes Juan P. Wisnivesky, M.D., M.P.H., of Mount Sinai School of Medicine.

PTNB was not associated with an increased risk of death, even after accounting for other factors affecting risk of death, such as tumor histology and size, type of treatment received, coexisting medical conditions, age, race, income, and access to care. These findings suggest that PTNB can be safely used for the workup of pulmonary nodules when there is a suspicion of lung cancer. The study was supported by the Agency for Healthcare Research and Quality (HS13312).

See "Diagnostic percutaneous transthoracic needle biopsy does not affect survival in stage 1 lung cancer," by Dr. Wisnivesky, Claudia I. Henschke, Ph.D., M.D., and David F. Yankelevitz, M.D., in the September 2006 *American Journal of Respiratory and Critical Care Medicine* 174(6), pp. 684-688. ■

HIV-infected women receive worse quality of care than HIV-infected men

Critical health care for women infected with HIV continues to lag behind HIV-infected men. Researchers found that women with HIV infection were less likely than HIV-infected men to receive medications to prevent opportunistic infections and to be on highly active antiretroviral therapy (HAART). They were also more likely to have emergency room visits. Differences in care site did not underlie these gender disparities.

Researchers examined the critical care of men and women at Ryan White Comprehensive AIDS Resources Emergency (CARE) Act-funded clinics, which ensure provision of HIV primary care and support services for vulnerable populations such as women, minorities, and the uninsured or underinsured. During the study period, care was provided to 9,015 patients at 69 clinics undergoing a quality improvement initiative. After adjusting for patient characteristics, women were less likely than men to receive HAART (78 vs. 82 percent). Women were also less likely to receive *Pneumocystis jiroveci* pneumonia (PCP) prophylaxis when eligible (65 vs. 75 percent) or to have their hepatitis C virus status known (87 vs. 88 percent).

However, these gender disparities in HIV critical care cannot be attributed to lower quality care at clinics that serve many women or to lower access to providers. For example, women were seen at the clinic more regularly (in at least three of the four quarters studied) than men (69 vs. 66 percent). Also, clinics serving higher percentages of women provided equal or better quality of care than other clinics. They also provided more services to address needs more common in women. For example, these clinics had more support services, such as case management and onsite obstetrician-gynecologists, and provided more Pap smears than other clinics. Therefore, the disparities in critical HIV care observed may be due to other factors not measured in studies to date. The study was supported in part by the Agency for Healthcare Research and Quality (HS10227 and HS10408).

See "Gender differences in quality of HIV care in Ryan White CARE Act-funded clinics," by Lisa R. Hirschhorn, M.D., M.P.H., Keith McInnes, M.S., Bruce E. Landon, M.D., M.B.A., and others, in the May-June 2006 *Women's Health Issues* 16, pp. 104-112. ■

Dysthymia may contribute to the disparity in use of antiretroviral therapy between men and women

Dysthymia, a chronic low-level daily depression that lasts at least 2 years and is relatively prevalent among women and minorities, may be a barrier to minority women's use of highly active antiretroviral therapy (HAART). In particular, the feelings of hopelessness, indecision, and mental inflexibility that commonly occur in persons with dysthymia could prevent these patients from either being offered or accepting HAART, notes Barbara J. Turner, M.D., M.S.Ed., of the University of Pennsylvania, and John A. Fleishman, Ph.D., of the Agency for Healthcare Research and Quality (AHRQ).

They analyzed data on the use of HAART in 1997 among 1,982 HIV-infected adult patients in the national HIV Cost and Services Utilization Study, which is supported by AHRQ (HS08578). Overall, 63 percent of patients received HAART. However, treatment varied significantly by gender and race. White men were the most likely to receive HAART (69 percent), while Hispanic women (53 percent) and black women (55 percent) were least likely.

Compared with white men without dysthymia, black and Hispanic women with dysthymia were less likely to receive HAART. Among patients with depression and no dysthymia, minority women had HAART use similar to white men. Thus, dysthymia, an underrecognized condition, may contribute more than depression to the gender disparity in HAART use, conclude the researchers. They found that dysthymia was more prevalent among women than men, and that major depression was greater among whites than minorities.

See "Effect of dysthymia on receipt of HAART by minority HIV-infected women," by Drs. Turner and Fleishman, in the December 2006 *Journal of General Internal Medicine* 21, pp. 1235-1241. Reprints (AHRQ Publication No. 07-R021) are available from AHRQ.* ■

The financial burden of health care for people under age 65 increased between 1996 and 2003

From 1996 to 2003, the financial burden of health care in the United States for people less than 65 years of age increased, especially among the poor and those with job-related and public insurance coverage. By 2003, there were 48.8 million individuals (19 percent) living in families who spent more than 10 percent of family income on medical care, an increase of 11.7 million people since 1996. Of those, 18.7 million individuals (7 percent) lived in families spending more than 20 percent of family income on medical care.

An estimated 17.1 million people younger than 65 years were underinsured in 2003, including 9.3 million people with private employment-related insurance, 1.3 million people with private nongroup policies, and 6.6 million people with public coverage. People with nongroup plans were nearly three times as likely to bear high total burdens as individuals in any other insurance category. Others at higher-than-average risk of incurring financial burdens were poor and low-income people, the nonelderly, those in fair or poor health, those with a limitation in functioning, people suffering from a chronic medical condition, or those living in a nonmetropolitan area.

High out-of-pocket burdens (for all health care services, including insurance premiums) were associated with delaying or foregoing medical care for financial reasons. For example, about 5 percent of people with a 20 percent total health care financial burden in 2003 reported that they were unable to receive treatment for financial reasons compared with 2.1 percent of people with lower burdens. Similarly, 4.4 percent of people with 20 percent total burdens compared with 2 percent of people with lower burdens reported that they delayed receiving treatment for financial reasons. This behavior can have severe consequences for those in poor health, note Jessica S. Banthin, Ph.D., and Didem M. Bernard, Ph.D., of the Agency for Healthcare Research and Quality. Their findings were based on analysis of data from the Medical Expenditure Panel Surveys in 1996 and 2003 of noninstitutionalized, nonelderly people.

See "Changes in financial burdens for health care: National estimates for the population younger than 65 years, 1996-2003," by Drs. Banthin and Bernard, in the December 13, 2006 *Journal of the American Medical Association* 296(22), pp. 2712-2719. Reprints (AHRQ Publication No. 07-R022) are available from AHRQ.* ■

Forty percent of families who leave welfare for work have no health insurance 19 months later

Welfare reform, implemented nearly 10 years ago, limits the time that families can stay on welfare to a maximum of 5 years. When families leave welfare for work, they typically obtain jobs that provide low pay and few benefits such as health insurance, but which nevertheless disqualify them for Federal aid. Automatic Medicaid insurance stops one transitional year after leaving welfare. An Oregon statewide study recently found that 40 percent of families who left welfare for work had no health insurance 19 months later, 7 months after the year of transitional Oregon Medicaid coverage expired.

Oregon's experience may suggest what is occurring in other States, as families leave welfare for work and the transitional Medicaid benefits expire, note Karen Seccombe, Ph.D., and colleagues at Portland State University. They surveyed 637 recent Temporary Assistance to Needy Families (TANF) or welfare recipients by telephone 7 months after they left TANF (wave 1), when continued Medicaid was considered automatic. They reinterviewed 552 of these families a year later (wave 2) about their health, insurance coverage, and access to health care for themselves and their children.

Eleven percent of those surveyed were uninsured at wave 1. A year later, 40 percent were uninsured. Few persons received health insurance from their employers, and most could not afford to purchase private benefits. The percentage of those surveyed who reported a delay in getting needed care increased from 21 to 32 percent from wave 1 to wave 2. These individuals had poorer health than others, after controlling for other factors. The researchers

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Welfare reform

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recommend that Medicaid coverage should continue beyond 1 year after leaving TANF and that the income requirements to qualify for State Medicaid programs should be raised so that the growing numbers of working poor have health coverage. The study was supported by the Agency for Healthcare Research and Quality (HS11322).

See "Access to health care and welfare reform," by Dr. Seccombe, Jason Newsom, Ph.D., and Kim Hoffman, B.A., in the Summer 2006 *Inquiry* 43, pp. 167-178. ■

Acute Care/Hospitalization

Some patients on mechanical ventilation fare worse at low-volume hospitals

It has been suggested that adult critical care services be regionalized at high-volume hospitals, similar to trauma and neonatal intensive care. A new Canadian study of critical care patients on mechanical ventilation suggests that ventilated surgical intensive care unit (ICU) patients do not necessarily fare better at high-volume hospitals. However, mechanically ventilated medical ICU patients at low-volume hospitals, which do not routinely transfer them to higher volume hospitals, may benefit from regionalization of critical care services. These differences may be due to variation in critical care practice in Ontario or other factors. For example, Ontario hospitals commonly have a single mixed medical-surgical ICU, while specialty-focused ICUs for trauma or cardiac surgery are uncommon.

Nevertheless, larger studies are needed to determine whether this finding is significant, caution the researchers. They examined the relationship between hospital volume of ventilated patients and the chances of dying within 30 days of initiation of mechanical ventilation among 13,846 medical and 6,373 surgical patients receiving mechanical ventilation for more than 2 days between 1998 and 2000 in Ontario, Canada.

There was no effect of volume on mortality for surgical patients. Among medical patients, those treated at the lowest-volume hospitals (less than 100 ventilation episodes per year) had a nonsignificant increase in mortality compared with patients treated at the highest-volume hospitals (700 or more episodes per year). Within the lowest-volume hospitals, the proportion of patients transferred to larger hospitals was 81 percent for hospitals with less than 20 episodes treated per year and only 32 percent for hospitals with 20 to 99 episodes treated per year. The study was supported in part by the Agency for Healthcare Research and Quality (HS11902).

See "Hospital volume and mortality for mechanical ventilation of medical and surgical patients: A population-based analysis using administrative data," by Dale M. Needham, M.D., Ph.D., Susan E. Bronskill, Ph.D., Deanna M. Rothwell, M.Sc., and others, in the September 2006 *Critical Care Medicine* 34(9), pp. 2349-2354. ■

Regionalization of high-risk surgeries may not result in loss of patients or revenue from small rural hospitals

To improve the quality of surgery in the United States, patients undergoing high-risk surgeries are often sent to regional hospitals that perform a high volume of such surgeries. Concerns that this regionalization of high-risk surgeries might have a negative impact on small rural hospitals may be unfounded, according to a study of hospitals in New York. Small (less than 50 beds) rural New York hospitals gained only 2 percent of net revenue from 9 high-risk surgeries, most of which was due to colectomy surgery (removal of part or all of the colon). Thus, regionalization of colectomy would only have a small impact on the inpatient volume and revenue of rural hospitals, note the researchers.

They used data from the Healthcare Cost and Utilization Project to identify all admissions from 1998 to 2001 to small rural hospitals in New York that performed nine high-risk surgeries: abdominal aortic aneurysm repair, aortic valve replacement, carotid

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High-risk surgeries

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endarterectomy (removal of plaque from the carotid artery), colectomy, coronary artery bypass graft surgery, and surgeries to remove all or part of the bladder (cystectomy), esophagus (esophagectomy), pancreas (pancreatectomy), and lungs (pulmonary resection). They calculated total charges related to each admission and source of payment.

Together, these small rural hospitals performed a total of 643 colectomies and 55 carotid endarterectomies during the 3-year period, and performed a total of only 2 to 14 of the other high-risk surgeries during that time. Colectomy accounted for an average of nearly 2 percent of total inpatient revenue compared with less than 0.2 percent for the remaining high-risk procedures evaluated in the study. The study was supported in part by the Agency for Healthcare Research and Quality (HS00044).

See "Small rural hospitals and high-risk operations: How would regionalization affect surgical volume and hospital revenue?" by Andre R. Chappel, B.A., Randall S. Zuckerman, M.D., F.A.C.S., and Samuel R. Finlayson, M.D., M.P.H, F.A.C.S., in the November 2006 *Journal of the American College of Surgeons* 203, pp. 599-604. ■

Agency News and Notes

Grant final reports now available from NTIS

The following grant final reports are now available from the National Technical Information Service (NTIS). Each listing identifies the project's principal investigator, his or her affiliation, grant number, and project period and provides a brief description of the project. Records of documents archived at NTIS—including many AHRQ documents and final reports from all completed AHRQ-supported grants—can now be searched on the new NTIS Web site. For information about findings from the projects described here, please access the relevant final reports at the NTIS Web site. Also, all items in the database from 1997 to the present can be downloaded from the NTIS Web site. Go to www.ntis.gov for more information.

Editor's Note: In addition to these final reports, you can access information about these projects from several other sources. Most of these researchers have published interim findings in the professional literature, and many have been summarized in *Research Activities* during the course of the project. To find information presented in back issues of *Research Activities*, go to www.ahrq.gov, select "*Research Activities,*" and select "Search *Research Activities*." To search for information, enter either the grant or contract number or the principal investigator's last name in the query line. A reference librarian can help you find related journal articles through the National Library of Medicine's PubMed®.

Best Practices in Nurse-Managed Health Centers Conference. **Tine Hansen-Turton, M.G.A., National Nursing Centers Consortium. AHRQ grant HS15633, project period 9/30/04-12/31/04.**

This project provided support for the National Nursing Centers Consortium's 2004 Annual Conference which focused on best approaches to eliminating health disparities and producing strong health outcomes through research, policy, and practice. Sessions included data collection, funding streams, access to services, and best practices. Best practice sessions addressed primary health issues such as diabetes, asthma, hypertension, and cardiovascular disease. The conference also explored effective ways to implement clinical practice guidelines for chronic diseases and health disparities to ensure better quality of care. Abstract and final report (NTIS accession no. PB2007-102722; 6 pp, $14.00 paper, $14.00 microfiche) are available from NTIS.**

BBA Effects on Geographic Variation in Post-Acute Care. **Wen-Chieh Lin, Ph.D., University of Missouri-Columbia. AHRQ grant HS13422, project period 9/1/03-8/31/04.**

This project examined how geographic regions responded to the initial Medicare post-acute care (PAC) payment reforms enacted by the Balanced Budget Act (BBA) of 1997. Researchers found that regions responded differently to the BBA changes and the consequential redistribution of services among PAC settings also varied across regions. Changes in early hospital readmission were similar across regions. Abstract and final report (NTIS accession no. PB2007-102720; 17 pp, $26.50

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Grant final reports

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paper, $14.00 microfiche) are available from NTIS.**

Evaluating Diagnostic Decisions for Deep Vein Thrombosis. **Daniel L. Riddle, P.T., Ph.D., Virginia Commonwealth University. AHRQ grant HS13059, project period 7/1/02-6/30/04.**

The purpose of this project was to determine the accuracy of orthpaedists' and orthopaedic physical therapists' estimates of the probability of proximal lower extremity deep vein thrombosis (PDVT). In addition, researchers also determined whether orthopaedists' planned use of diagnostic tests and therapists' decisions regarding referral were the same or different from evidence-based recommendations in the general medical literature. Abstract and final report (NTIS accession no. PB2006-109765; 12 pp, $26.50 paper, $14.00 microfiche) are available from NTIS.**

Surgical Volume Matters – Helping Patients Pick Hospitals. **John D. Birkmeyer, M.D., Dartmouth College. AHRQ grant HS13049, project period 7/1/02-6/30/04.**

The purpose of this project was to learn how Medicare patients currently choose hospitals for surgery and determine how best to inform Medicare beneficiaries about the relative quality of surgical providers. Patients rated good reputations of their hospitals or surgeons as the most influential factors in deciding where to have surgery. The next most influential factors were having had prior care at the hospital or the recommendations of family and friends. When asked how much various factors would influence advice they would give to a friend choosing where to go for major surgery, surgeon reputation was the most influential, followed by the hospital having "nationally recognized surgeons," surgeon volume, nurse-patient ratios, hospital volume, and hospital operative mortality rates. Abstract and final report (NTIS accession no. PB2006-109041; 16 pp, $26.50 paper, $14.00 microfiche) are available from NTIS.**

"Fair?" A Study of Physicians' Responses to Restricted Formularies. **Paul Adler, University of Southern California. AHRQ grant HS13038, project period 9/30/02-9/29/04.**

This study explored whether the fairness of formulary restrictions affects the impact of these restrictions on hospitals costs. Drawing on organizational justice theory, researchers examined the role of procedural fairness in shaping the cost effectiveness of bureaucratic standardization, and argue that the payoff to drug formularies depends on whether the process of setting and implementing formulary policies is fair. Results indicate that the cost effectiveness impact of drug standardization depends on the procedural fairness of the standardization process, controlling for patient, hospital, and hospital market factors. Abstract and final report (NTIS accession no. PB2006-114009; 30 pp, $26.50 paper, $14.00 microfiche) are available from NTIS.** ■

Announcements

Task Force recommends against use of aspirin and nonsteroidal anti-inflammatory drugs to prevent colorectal cancer

People who are at average risk for colorectal cancer, including those with a family history of the disease, should not take aspirin or nonsteroidal anti-inflammatory drugs (NSAIDs) to try to prevent the disease, according to a new recommendation from the U.S. Preventive Services Task Force. This is the first time the Task Force has made a recommendation related to taking medicines to prevent colorectal cancer. After reviewing the latest evidence on the topic, the Task Force found that the potential harms of taking more than 300 mg per day of aspirin or NSAIDs—which can include increased risks for stroke, intestinal bleeding, or kidney failure—outweigh the potential benefits of colorectal cancer prevention.

Meanwhile, patients taking aspirin to prevent other conditions such as heart disease should continue to discuss the benefits with their clinicians, according to Task Force Chair Ned Calonge, M.D., who is also Chief Medical Officer and State Epidemiologist for the Colorado Department of Public Health and Information. The Task Force found good evidence that taking low doses of aspirin (usually less than 100 mg) can reduce risk for heart disease but does not reduce the rate of colorectal cancer. In 2002, the Task Force

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Colorectal cancer

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strongly recommended that clinicians should screen men and women age 50 and older for colorectal cancer and discuss the use of aspirin as a preventive medication with adults at increased risk for heart disease. Those discussions should address the potential benefits and harms of aspirin therapy.

The Task Force based its conclusions on a report from a research team led by David Moher, M.D., at AHRQ's Evidence-based Practice Center at the University of Ottawa in Canada. The recommendation is published in the March 6, 2007 issue of the *Annals of Internal Medicine*.

Editor's note: The U.S. Preventive Services Task Force is an independent panel of experts in prevention and primary care. The Task Force conducts rigorous, impartial assessments of the scientific evidence for the effectiveness of a broad range of clinical preventive services, including screening, counseling, and preventive medications. Its recommendations are considered the gold standard for clinical preventive services. AHRQ provides technical and administrative support, but the recommendations of the panel are its own. Recommendations and materials for clinicians are available on the AHRQ Web site at www.ahrq.gov/clinic/uspstf. Print copies of Task Force recommendations, summaries of the evidence and related materials are also available from AHRQ.* ■

Research Briefs

Baily, M.A., Bottrell, M., Lynn, J., and Jennings, B. (2006, July). "The ethics of using QI methods to improve health care quality and safety." (AHRQ grant HS13369). *The Hastings Center Report* 36(4), pp. S1-S40.

The authors of this report discuss the ethics of using quality improvement (QI) methods to improve health care quality and safety. They point out that QI is appropriate and vital to health care, and obligatory for both professionals and patients, but QI can pose risks to some patients. However, not undertaking QI in the face of recognized quality deficiencies in care also puts patients at risk. QI itself should be implemented ethically and low-risk QI should have the same review and standards as routine health delivery. Higher-risk QI should undergo review by an advisory group or other arrangement. Projects that are both QI and research involving human subjects should meet the review requirements for protection of human subjects in research.

Basu, J. and Friedman, B. (2006, December). "A re-examination of distance as a proxy for severity of illness and the implications for differences in utilization by race/ethnicity." *Health Economics*, available online at www.interscience.wiley.com.

This study analyzed the hospitalization patterns of elderly residents to examine whether the relation between distance traveled for care and severity of illness was uniform across racial/ethnic subgroups. The authors examined hospital discharge data for New York residents from the Healthcare Cost and Utilization Project, which they linked to other data files. They found that minorities had to be more severely ill than whites before they sought distant hospital care. However, these conclusions depended on the type of medical condition. If costly elective services were regionalized to take advantage of high volume for both cost and quality of care, some extra outreach efforts might be needed to reduce disparities in appropriate care, conclude the authors. Reprints (AHRQ Pub No. 07-R029) are available from AHRQ.*

Clancy, C.M. (2006, November). "Getting to 'smart' health care." *Health Affairs*, pp.w589-w591 (available online at www.healthaffairs.org).

Comparative effectiveness research is tightly linked with health care delivery in the Information Age, notes the Director of the Agency for Healthcare Research and Quality in this paper. She points out that advances in biomedicine and health information technology present exciting opportunities to provide timely, relevant information about the comparative effectiveness of health care services. However, successful growth will require a transparent, participatory approach and new partnerships between the public and private sectors to achieve the goal of producing valid evidence for decision making. Reprints (AHRQ Pub No. 07-R025) are available from AHRQ.*

Clancy, C.M. (2006, November). "Care transitions: A threat and an opportunity for patient safety." *American Journal of Medical Quality* 21(6), pp. 415-417.

Developing strategies to improve the care of patients during transitions from one care site to another is one of several priorities of AHRQ-

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supported research in 2007, notes the Director of the Agency for Healthcare Research and Quality in this paper. She points out that care transitions, or "handoffs," almost always involve passing critical medical information through multiple individuals in different settings. The Director cites an emergency department (ED) case that illustrates the oversights that can happen when a patient is transitioned from the ED to another hospital service. She also summarizes some of the more promising strategies identified by researchers for improving transitions in EDs. Reprints (AHRQ Pub No. 07-R026) are available from AHRQ.*

Croyle, R.T., Barger, S.D., Loftus, E.F., and others. (2006). "How well do people recall risk factor test results? Accuracy and bias among cholesterol screening participants." (AHRQ grant HS06660). *Health Psychology* 25(3), pp. 425-432.

The authors of this study assessed how accurately 496 community residents recalled results of cholesterol screening 1, 3, or 6 months after screening. Only 38 percent of participants accurately recalled their exact cholesterol levels, but 89 percent correctly recalled their cardiovascular risk category. Recall errors showed a systematic bias. Individuals who received the most undesirable test results were most likely to remember their cholesterol scores and cardiovascular risk categories as lower (that is, healthier) than those actually received. The findings suggest that recall of self-relevant health information is susceptible to self-enhancement bias.

Dickison, P., Hostler, D., Platt, T.E. and Wang, H.E. (2006). "Program accreditation effect on paramedic credentialing examination success rate." (AHRQ grant HS13628). *Prehospital Emergency Care 10*, pp. 224-228.

In the future, only paramedics who graduate from nationally accredited paramedic programs may be eligible for national certification. This study found that students who attended an accredited paramedic program were 58 percent more likely to achieve a passing score on a national paramedic credentialing examination than those in nonaccredited programs, after accounting for other factors. The findings were based on analysis of data from 12,773 students who completed the National Registry Paramedic Certification Examination for 2002. The researchers call for studies to identify the aspects of program accreditation that lead to improved examination success.

Dinh, P. and Zhou, X-H. (2006, June). "Nonparametric statistical methods for cost-effectiveness analyses." (AHRQ grant HS13105). *Biometrics* 62, pp. 576-588.

Two measures often used in cost-effectiveness analysis are the incremental cost-effectiveness ratio (ICER) and the net health benefit (NHB). The authors of this article derived the Edgeworth expansions for the studentized t-statistics expansions to study the theoretical performance of existing confidence intervals based on normal theory and to derive new confidence intervals for the ICER and NHB. They conducted a simulation study to compare their new intervals with several existing methods such as Taylor's interval, Fieller's interval, the bootstrap percentile interval, and the bootstrap bias-corrected acceleration interval. They found that their new intervals gave good coverage accuracy and were narrower than the current recommended intervals.

Herman, P.M., Sherman, K.J., Erro, J.H., and others. (2006, July). "A method for describing and evaluating naturopathic whole practice." (AHRQ grant HS09565 and HS08194). *Alternative Therapies in Health and Medicine* 12(4), pp. 20-28.

Most research on complementary and alternative medicine (CAM) has focused on single therapies, even though CAM is generally practiced as distinct systems of medicine. This paper presents a proposed method to measure treatment criteria for three conditions (menopausal symptoms, bowel dysfunction, and fatigue/fibromyalgia) in studies of the naturopathic medical system. The researchers defined a set of meaningful, measurable treatment criteria based on the naturopathic practice principles, which could have generated 82 to 93 percent of treatment prescriptions given at visits for these conditions. Several treatment criteria components were common across all three conditions studied and might be appropriate for all visits to doctors of naturopathy. Others were specific to each condition.

Jaana, M., Ward, M.M., Pare, G., and Sicott, C. (2006, October). "Antecedents of clinical information technology sophistication in hospitals." (AHRQ grant HS15009). *Health Care Management Review* 31(4), pp. 289-299.

The authors of this study developed and tested a model for assessing the organizational antecedents of hospital innovativeness with regard to clinical information technology (IT) applications. They surveyed a sample of 74 U.S. hospitals to assess 3 dimensions of clinical IT sophistication. A significant 45 to

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61 percent of the variance in clinical IT sophistication was explained, mostly by leadership and knowledge-sharing capacities. In particular, IT tenure and technical knowledge resources were significantly related to clinical IT sophistication. Financial resources and structural capacity did not play an important role.

Just, S., Scheper, G., Piotrowski, M.M., and others. (2006, July). "Improving the safety of intravenous admixtures: Lessons learned from a Pentostam® overdose." (AHRQ grant HS11540). *Journal on Quality and Patient Safety* 32(7), pp. 366-372.

This article describes the case of a young soldier diagnosed with cutaneous leishmaniasis who, despite several processes in place to prevent medication errors, received a 10-fold intravenous (IV) overdose of Pentostam®, a rarely used drug. Weaknesses were identified in staff communication, quality assurance checks, and product labeling. Also, nurses and pharmacists had less than adequate information about new or unusually dosed medications. Based on the lessons learned from this case, the hospital developed a form to accompany the preparation of complex IV drugs. In addition, the pharmacy service developed information sheets for 12 high-risk drugs frequently used in IV admixtures.

Katz, D.A., Aufderheide, T.P., Bogner, M., and others. (2006, November). "The impact of unstable angina guidelines in the triage of emergency department patients with possible acute coronary syndrome." (AHRQ grant HS10466). *Medical Decision Making* 26, pp. 606-616

Researchers examined triage decisions for 1,140 adults with suspected acute coronary syndrome (ACS, unstable angina or heart attack), both before and after emergency physicians were trained in use of the Agency for Healthcare Research and Quality Unstable Angina Practice Guideline. They observed no significant difference in physician triage decisions before and after the guideline intervention. Physicians' risk ratings showed superior discrimination in identifying patients with confirmed ACS compared to the guideline-defined risk groups. Physicians disagreed with the triage recommendation of the guideline algorithm 25 to 34 percent of the time. They routinely considered variables that were not included in the guideline such as tempo of angina and cardiac enzymes, which have since been incorporated into the American College of Cardiology/American Heart Association guidelines for unstable angina. Strict adherence to guideline recommendations would have resulted in hospitalizing 9 percent more non-ACS patients without lowering the rate of missed ACS. When used alone, the ACS risk groups defined by the guideline had relatively low sensitivity for identifying emergency department patients with ACS. In the very low-risk group, about 2 percent of patients had confirmed ACS.

Kaul, D.R., Flanders, S.A., Beck, J.M., and Saint, S. (2006, November). "Incidence, etiology, risk factors, and outcome of hospital-acquired fever." (AHRQ grant HS11540). *Journal of General Internal Medicine* 21, pp. 1184-1187.

Limited information is available to guide an evidence-based approach to hospital-acquired fever, this study concludes. The authors systematically reviewed studies on hospital-acquired fever conducted from 1970 to 2005. Of over 1,000 studies reviewed, only 7 met the criteria for inclusion. The incidence of hospital-acquired fever ranged from 2 to 17 percent and the etiology of fever was infection in 37 to 74 percent of cases. Rates of antibiotic use for patients with a noninfectious cause of fever ranged from 29 to 55 percent for a mean duration of 6.6 to 9.6 days. Studies varied widely in their methodology and the patient population studied.

Krein, S.L., Olmsted, R.N., Hofter, T.P., and others. (2006). "Translating infection prevention evidence into practice using quantitative and qualitative research." (AHRQ grant HS11540). *American Journal of Infection Control* 34, pp. 507-512.

There is no current reliable information about which infection prevention practices are being used in U.S. hospitals to prevent common device-related infections, note the authors of this paper. The reasons why hospitals are or are not using some preventive practices must be explored more fully in order to understand how best to translate research into practice. This paper provides a framework for proposed research to promote the successful translation of proven infection prevention practices (related to the use of urinary catheters, central venous catheters, and mechanical ventilation) to decrease healthcare-associated infections.

Raab, S.S., Grzybicki, D.M., Sudilovsky, D., and others. (2006). "Effectiveness of Toyota process redesign in reducing thyroid gland fine-needle aspiration error." (AHRQ grant HS13321). *American Journal of Clinical Pathology* 126, pp. 585-592.

These researchers compared the diagnostic error frequency of a thyroid aspiration service before and

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after implementation of error reduction initiatives consisting of adoption of a standardized diagnostic terminology scheme and an immediate specimen interpretation service. A total of 2,424 patients underwent thyroid gland fine-needle aspiration. Following terminology standardization, the false-negative rate decreased from 42 to 19 percent. The specimen nondiagnostic rate increased from 6 to 20 percent, and the sensitivity increased from 70 to 91 percent. Cases with an immediate specimen interpretation had a lower noninterpretable specimen rate than those without immediate interpretation.

Talcott, J.A., Clark, J.A., Manola, J., and Mitchell, S.P. (2006, October). "Bringing prostate cancer quality of life research back to the bedside: Translating numbers into a format that patients can understand." (AHRQ grant HS08208). ***The Journal of Urology*** **176, pp. 1558-1564.**

Using symptom indexes to define levels of function produces a quality of life metric that is valid and may be more useful to patients, concludes this study. The researchers surveyed men with clinically localized prostate cancer before treatment and at several intervals thereafter. Based on the men's responses to distress measures, the authors defined three levels of function: normal—no abnormal symptom; intermediate—any abnormal symptom, but none severely abnormal; and poor—any severely abnormal symptom. They compared average symptom distress scores in patients at each symptom level and found that large differences in distress scores separated patients at successive levels in all symptom indexes. A table of 24-month outcomes, based on pretreatment symptom level and treatment, provides a useful tool for patients considering treatment choices.

Wang, M.C., Hyun, J.K., Harrison, M.I., and others. (2006, November). "Redesigning health systems for quality: Lessons for emerging practices." ***Journal on Quality and Patient Safety*** **32(11), pp. 599-611.**

Successful health system redesign requires coordinating and managing a complex set of changes across multiple levels rather than isolated projects, concludes this study. The researchers analyzed interviews with 16 health care providers and researchers at organizations involved in system redesign. They also reviewed research studies and discussions from a national meeting of experts, identifying many promising and innovative examples of redesign. Providers reported four success factors as crucial in overcoming redesign barriers, ranging from directly involving top- and middle-level leaders to strategically aligning and integrating improvement efforts with organizational priorities. Reprints (AHRQ Pub No. 07-R030) are available from AHRQ.*

Wetterneck, T.B., Skibinski, K.A., Roberts, T.L., and others. (2006, August). "Using failure mode and effects analysis to plan implementation of smart I.V. pump technology." (AHRQ grant HS14253). ***American Journal of Health Systems Pharmacy*** **63, pp. 1528-1538.**

Misuse of intravenous (IV) pumps and other parenteral delivery systems is a common cause of medication error. A new type of IV infusion pump, the smart IV pump, has been developed to decrease pump programming errors by providing a medication dose double-check at the bedside. A drug library imbedded into the software alerts when the pump is programmed above or below the recommended drug dose limit, which can improve patient safety. However, the new pump also introduces changes to the IV pump programming process and user interaction with the pump, note the authors of this study. They found that failure mode and effects analysis can identify potential problems when users begin to use new smart IV pumps.

Zeng, F., O'Leary, J.F., Sloss, E.M., and others. (2006, October). "The effect of Medicare health maintenance organizations on hospitalization rates for ambulatory care-sensitive conditions." (AHRQ grant HS10256). ***Medical Care*** **44(10), pp. 900-906.**

This study found that members of Medicare HMO plans had at least 14 percent lower hospitalization rates and fewer total inpatient days for 15 ambulatory-care-sensitive conditions (ACSCs) than members of Medicare fee-for-service (FFS) plans. Researchers estimated the effect of HMO enrollment on hospitalization for ACSCs by linking California Medicare enrollment data to State hospital discharge data for 1996. They analyzed hospitalization for ACSCs for a total of 10,488 HMO members and 11,803 FFS members. Based on a selection model, they estimated that the rate of ACSC hospitalizations among FFS beneficiaries would decline from 51.2 to 44.2 per 1,000 members and mean total inpatient days would shrink from 7.5 to 5.1 days, if all FFS beneficiaries joined an HMO. The study found no impact of Medicare HMOs on the hospitalization rate for non-ACSCs. ■

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