



# RESEARCH ACTIVITIES

U.S. Department of Health and Human Services • No. 362, October 2010

## Highlights

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## Health care-associated infections greatly increase the length and cost of hospital stays

Adults who developed health care-associated infections (HAIs) due to medical or surgical care while in the hospital in 2007 had to stay an average of 19 days longer than adults who didn't develop an infection (24 days vs. 5 days), according to the latest *News and Numbers* from the Agency for Healthcare Research and Quality (AHRQ).

For patients with an HAI, the rate of death in the hospital, on average, was six times as high as the rate for patients without an HAI (9 percent vs. 1.5 percent). Also, on average, the cost of a hospital stay of an adult patient who developed an HAI was about \$43,000 more expensive than the stay of a patient without an HAI (\$52,096 vs. \$9,377).

AHRQ also found that:

- In 2007, about 45 percent of patients with HAIs were 65 or older, 33 percent were 45 to 64, and 22 percent were aged 18 to 44. However, the 45- to 64-year-old group had the highest rate of HAIs.
- The top three diagnoses in hospitalized adult patients who developed HAIs were septicemia (12 percent), adult respiratory

failure (6 percent), and complications from surgical procedures or medical treatment (4 percent).

- The rate of infections among medical and surgical discharges peaked in 2004 and 2005 at 2.3 per 1000 stays, then declined to 2.03, a rate similar to the year 2000.

This AHRQ *News and Numbers* is based on data in *Adult Hospital Stays with Infection Due to Medical Care, 2007* ([www.hcup-us.ahrq.gov/reports/statbriefs/sb94.pdf](http://www.hcup-us.ahrq.gov/reports/statbriefs/sb94.pdf)). The report uses statistics from the 2007 Nationwide Inpatient Sample, a database of hospital inpatient stays that is nationally representative of inpatient stays in all short-term, non-Federal hospitals. The data are drawn from hospitals that comprise 90 percent of all discharges in the United States and include all patients, regardless of insurance type, as well as the uninsured.

For other information, or to speak with an AHRQ data expert, please contact Jennifer Felsher at [jennifer.felsher@ahrq.hhs.gov](mailto:jennifer.felsher@ahrq.hhs.gov) or call (301) 427-1859. ■

## Quality improvement initiative successful in sustaining reduction in bloodstream infections caused by catheters

A project that significantly reduced catheter-related central line bloodstream infections in Michigan intensive care units (ICUs) over an 18-month period appears to have staying power, according to a new study. In fact, when the initiative was extended for an additional 18 months, participating hospitals found that their infection rates remained very low.

Peter J. Pronovost, M.D., Ph.D., of Johns Hopkins University, and colleagues led the quality improvement initiative for reducing the infection rates by stressing hand washing, using full-barrier precautions (cap, mask, sterile gown, and gloves and sterile drape covering the patient), cleaning the skin with chlorhexidine, avoiding the femoral artery, and removing

unnecessary catheters. As a result, average rates of catheter-related bloodstream infections among the 103 ICUs that participated in the initial 18-month intervention declined from 7.7 to 1.3 per 1,000 catheter days. At the end of an 18-month followup period, the 90 ICUs that participated had average rates of 1.1 per 1,000 catheter days, suggesting that the reduction in catheter-related bloodstream infections is indeed sustainable.

The authors note that several factors contributed to successfully sustaining the project's reduced infection rates. Factors included ensuring that team members received feedback on infection data and saw reducing infection rates as a goal not a competition. Keys to hospitals' success in keeping infection rates low also entailed

improving the safety culture, believing that these types of infections are preventable, and involving senior leaders who could provide teams with needed resources. This study was funded in part by the Agency for Healthcare Research and Quality (HS14246).

See "Sustaining reductions in catheter related bloodstream infections in Michigan intensive care units: Observational study," by Dr. Pronovost, Christine A. Goeschel, R.N., M.P.A., M.P.S., Elizabeth Colantuoni, Ph.D., and others in the February 3, 2010 *British Medical Journal* 340, pp. c309-c315. ■ *KFM*

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

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## Timely followup remains an issue with abnormal lab results in electronic health records

One of the areas in outpatient practices subject to error is the followup of abnormal lab results. Missed test results lead to delays in diagnosis and potential adverse events as well as subjecting clinicians and practices to legal liability. Use of electronic health records (EHRs) facilitates transmission of abnormal outpatient laboratory test results to clinicians through “alerts.” However, safety concerns remain when it comes to the followup practices of clinicians, concludes a new study.

Researchers focused on four abnormal test alerts in EHRs: hemoglobin A1c, frequently used to monitor diabetes; positive hepatitis C antibody, used to diagnose hepatitis C infection; prostate-specific antigen that may predict prostate cancer; and thyroid stimulating hormone, used to diagnose thyroid dysfunction. Alerts were tracked to determine if the provider acknowledged the alert by clicking on and opening up the message about the abnormal lab results within a 2-week period. After 30 days, medical records were reviewed and providers contacted to see if any followup actions took place, such as contacting the patient about the abnormal lab result and/or implementing treatment.

During a 10-month period, a total of 78,158 tests for the four measurements were performed. Of these, 1.48 percent were transmitted to the providers as alerts in the EHR. While 10.2 percent of the alerts were not acknowledged by the provider, lack in the timely followup was seen in 6.8 percent of all alerts after 30 days. Alerts related to redundant tests were more likely to receive followup. Alerts issued for conditions that indicated a new diagnosis were more likely to lack timely followup compared with alerts for pre-existing conditions. More research and interventions are needed to improve the human-computer interface and to monitor followup actions by providers, suggest the researchers. Their study was supported in part by the Agency for Healthcare Research and Quality (HS17244).

See “Notification of abnormal lab test results in an electronic medical record: Do any safety concerns remain?” by Hardeep Singh, M.D., M.P.H., Eric J. Thomas, M.D., M.P.H., Dean F. Sittig, Ph.D., and others in the March 2010 *The American Journal of Medicine* 123(3), pp. 238-244. ■ KB

## Parents continue to weigh vaccine benefits with adverse effects when deciding to vaccinate their children

As newer vaccines focus on preventing illness rather than death, concerns about vaccine safety have become prominent. The number of parents refusing to vaccinate their children continues to grow as perceptions about the risks of vaccination come to outweigh perceived benefits. A Group A Streptococcus (GAS) vaccine is being developed that may protect against strep throat, rheumatic fever, and serious invasive disease (e.g., septic arthritis and toxic shock syndrome) and related deaths. A new study shows that parents prefer to prevent GAS disease in children compared with preventing minor adverse vaccine events. However, preventing vaccine-related problems

remains important to them. Policymakers should consider these parental preferences when implementing new vaccination programs in the United States, suggest the study authors.

They did telephone interviews with 119 parents of children diagnosed with GAS pharyngitis at 2 pediatric practice sites in a large metropolitan area. Parents were asked both willingness-to-pay (WTP) and time tradeoff (TTO) questions about short-term (2 days to 3 weeks) health states associated with GAS disease and vaccination in their child. For each of the listed health states, the WTP question was: “Using money available to you today, think about how much money you would be willing to pay

to prevent your child from having this condition?” The TTO question was “Think about how many hours or days you would be willing to give up from the end of your life in order to prevent your child from having this condition?”

Median WTP and discounted TTO values were local vaccine reaction, \$30, 0.12 days; systemic vaccine reaction, \$50, 0.22 days; impetigo, \$75, 1.25 days; strep throat, \$75, 2.5 days; septic arthritis, \$1,000, 6.6 days; and toxic shock syndrome, \$3,000, 31.0 days. The researchers concluded that parents were willing to trade more time and money to avoid severe health states (e.g., septic arthritis,

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## Vaccines

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toxic shock syndrome) associated with GAS disease compared with mild GAS disease states (e.g., impetigo, strep throat) or minor vaccine adverse events. However, parents were willing to pay more per incremental health gain to avoid

vaccine adverse events (\$60,000 per quality-adjusted life year {QALY}) compared with avoiding health states associated with GAS disease (\$18,000 to \$36,000 per QALY). This study was supported by the Agency for Healthcare Research and Quality (HS13908).

See “Preferences for health outcomes associated with Group A Streptococcal disease and vaccination,” by Grace M. Lee, M.D., M.P.H., Joshua A. Salomon, Ph.D., Charlene Gay, B.A., and James K. Hammitt, Ph.D., in the *Health and Quality of Life Outcomes* 8(28), 2010. ■ MWS

## Health Care Costs and Financing

### Pay-for-performance does not improve care quality in the short term in safety-net settings

A new study questions the effectiveness of pay-for-performance (P4P) programs in improving the quality of care in safety-net settings that predominantly serve Medicaid and uninsured patients. The researchers found no evidence that P4P, financial incentives to providers to improve care quality, led to substantial quality improvements in the short term in two safety-net settings they examined. For example, incentives for well-child visits led to a significant increase in well-child visits at one of the safety-net sites studied. However, a comparable increase was also noted for nephrology visits, which had not received incentives. Conversely, the lack of incentives did not cause physicians to pay less attention to non-incentivized quality measures, which also increased during the study period.

The physicians surveyed from the two safety-net settings were generally comfortable with P4P as a concept, but less certain about its role in directly motivating quality improvement, the researchers found. Also, the safety-net providers generally agreed that the challenges of meeting the needs of their underserved, complex patients competed for clinicians' time and energy to devote to P4P quality goals.

The study was conducted with two safety-net providers in the northeastern United States. At site A, a teaching hospital's Medicaid managed care plan

provided services through a network of community health centers and provided incentives for reaching four quality targets: annual retinal eye exams; annual glycosylated hemoglobin (HbA1c) measurement for patients with diabetes; prescription of controller medications for patients with asthma; and six well-child visits. Site B provided safety-net care through primary care physicians in medical groups owned by the hospital, including three groups that primarily served Medicaid and uninsured patients. The incentive program focused on three quality measures related to diabetes: an annual HbA1c test; an annual low-density lipoprotein check; and an annual foot exam. Data included a survey of provider attitudes among 256 site A physicians and 156 employed by site B, interviews with key leaders at sites A and B, and clinical information on the established quality measures for each site. The study was funded in part by the Agency for Healthcare Research and Quality (Contract No. 290-02-0006).

More details are in “Pay-for-performance in safety net settings: Issues, opportunities, and challenges for the future,” by Gary Young, J.D., Ph.D., Mark Meterko, Ph.D., Bert White, D.Min., and others in the March/April 2010 *Journal of Healthcare Management* 55(2), pp.132-141. ■ DIL

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

## Health plan choices are associated with lower premiums for employees

Employees are often faced with a dizzying array of options when it comes to selecting a health plan at work. When multiple plans are offered by employers, it is usually done to satisfy the employees' need for different services and insurance products. It may also be done to create competition among plans. A recent study has found that employers who do offer health plan choices have lower average premiums, mostly because the employees select less generous plans. In addition, more employees are covered by health insurance when employers offer multiple plans.

Kate Bundorf, Ph.D., of Stanford University School of Medicine, analyzed data from a 1993 health insurance survey of 22,890 public and private employers in 10 States.

The survey asked every employer about the business, the number and types of employees, and information about health benefits offered. Only employers with 25 or more employees were selected for the analysis of 5,153 employers.

Among these employers, 43 percent offered their workers more than one health plan, including 71 percent of firms with more than 250 employees. Of those offering a choice, 21 percent fully subsidized all plans with no employee contribution necessary. Monthly plan premiums were lower for firms offering a choice (\$149) compared with those offering a single plan (\$153). There were also a higher proportion of covered workers at employers who offered choice (0.73) compared with nonchoice companies (0.63).

Employers offering plan choices and paying all premiums had greater average plan generosity and higher rates of coverage compared with firms requiring employee contributions to all plans. Even when Dr. Bundorf controlled for employer and market characteristics, having a choice of health plans was associated with both lower average premiums and higher rates of coverage. The study was supported in part by the Agency for Healthcare Research and Quality (HS11668).

See "The effects of offering health plan choice within employment-based purchasing groups," by Dr. Bundorf in the *The Journal of Risk and Insurance* 77(1), pp. 105-127, 2010. ■ KB

## Most spending on children's health care in Medicaid and CHIP goes for children with chronic health problems

Spending on children's health care in Medicaid and the Children's Health Insurance Program (CHIP) is highly concentrated, particularly among children with chronic health problems, reveals a new study. Among children enrolled for the full year, the top 10 percent of enrollees account for 72 percent of total Medicaid/CHIP spending on children. Two-thirds of children in this highest-spending decile have chronic conditions. The top three deciles, together, account for 90 percent of all Medicaid/CHIP spending on children. At the same time, 30 percent of enrolled children receive little or no care—in some cases despite having special health care needs or chronic conditions. With so little contact with providers, these children are at increased risk of having health problems that go undiagnosed and untreated, notes Thomas M. Selden, Ph.D., of the Agency for Healthcare Research and Quality.

He and colleagues from the Urban Institute examined care spending for Medicaid/CHIP-enrolled children (aged 1–17), basing their findings on pooled data from the Household Component of the Medical

Expenditure Panel Survey, 2002–2005. They find spending among publicly insured children to be more heavily concentrated than either the overall spending distribution for children or the Medicaid/CHIP spending distribution for adults.

The results highlight the importance of strategies that target Medicaid/CHIP spending among children in the upper spending deciles. Of special policy interest are children with chronic conditions, who make up 68 percent of the children in the top spending decile and 84 percent of children who are in the top decile for 2 consecutive years. Because much of the spending for children with chronic health needs goes for hospital stays and emergency room visits, cost savings could come from greater focus on case management and preventive ambulatory care.

The research may also offer insights into why charging even nominal public premiums can be associated with lower take-up of public programs and higher disenrollment rates, particularly for children

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## Spending on children's health care

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with fewer health problems. Given that many children enrolled in Medicaid/CHIP receive few or no services in a given year, families whose children have no chronic health problems or special needs might view public coverage as overly expensive, even at fairly low premium levels.

More details are in “Containing costs and improving care for children in Medicaid and CHIP,” by Genevieve M. Kenney, Ph.D., Joel Ruhter, B.A., and Dr. Selden in *Health Affairs* 28(6), pp. w1025-1036, 2009. Reprints (AHRQ Publication No. 10-R011) are available from AHRQ.\* ■ *DIL*

## For elderly patients with depression, cost-sharing insurance policies reduce drug use without increasing use of care

Many are concerned that patient cost-sharing policies incorporated in the Medicare Modernization Act may have unintended health consequences, if they reduce essential drug use among the elderly. After two cost-sharing insurance policies were introduced in British Columbia in 2002 and 2003, there was a decline in antidepressant initiation among the elderly, but this decline did not lead to adverse consequences indicated by greater use of other health care services, according to a new study. Neither the copayment policy nor the coinsurance/income-based deductible policy had any significant effect on long-term care admissions, hospitalization rates, psychiatrist visits, or physician visits for elderly patients with depression.

The study population included all seniors living in British Columbia, Canada, during the period 1997 to 2005. In this period, the rate of physician visits per 1,000 seniors increased from 14.26 to 14.98. Visits for depression accounted for 1.4 percent of physician visits, which did not change compared with trends in overall physician visits during the study period. In the same period, visits to psychiatrists increased from 4.73 to 5.48 per 1,000 seniors.

Hospitalization rates for seniors in British Columbia dropped from 25.77 per 1,000 to 18.55 in the 1997 to 2005 period.

Approximately 5 percent of total hospitalizations were for depression, which fell from 1.22 to 1.00 per 1,000 seniors. Finally, rates of long-term care admissions fell from 1.89 to 1.5 per 1,000 in

this period. The authors state that although these cost-containment policies may have successfully contained nonessential antidepressant use, undertreatment, not nonessential drug use, is by far the greater public health and public policy concern. Therefore, well-designed prescription drug policies should be coupled with interventions to address undertreatment. The study was partly supported by the Agency for Healthcare Research and Quality (HS10881).

See “Impact of drug cost sharing on services use and adverse clinical outcomes in elderly receiving antidepressants,” by Philip S. Wang, M.D., Dr.P.H., Amanda R. Patrick, M.S., Colin Dormuth, Sc.D., and others in the *Journal of Mental Health Policy and Economics* 13, pp. 37-44, 2010. ■ *MWS*

## Visit the AHRQ Patient Safety Network Web Site

AHRQ's national Web site—the AHRQ Patient Safety Network, or AHRQ PSNet—continues to be a valuable gateway to resources for improving patient safety and preventing medical errors and is the first comprehensive effort to help health care providers, administrators, and consumers learn about all aspects of patient safety. The Web site includes summaries of tools and findings related to patient safety research, information on upcoming meetings and conferences, and annotated links to articles, books, and reports. Readers can customize the site around their unique interests and needs through the Web site's unique “My PSNet” feature. To visit the AHRQ PSNet Web site, go to [psnet.ahrq.gov](http://psnet.ahrq.gov).

### Patients with financial worries or no insurance delay going to the hospital for a heart attack

Persons without health care insurance or who have financial concerns about accessing care despite having insurance are more likely to delay going to the hospital to treat a heart attack than insured persons without financial concerns about accessing care, a new study finds. These delays may compromise patients' chances of optimal outcomes following treatment, note the study authors. They recruited patients who were admitted for an acute heart attack at 24 hospitals throughout the United States that participated in a heart attack registry (TRIUMPH). Of the 3,721 patients who experienced a heart attack, 61.7 percent were insured without financial concerns, 18.5 percent were insured but had financial concerns, and 19.8 percent were uninsured.

The patients most likely to have delays of more than 6 hours in seeking hospital care were those who were uninsured (48.6 percent) and those with insurance who had financial concerns about accessing care (44.6 percent). Insured patients without these financial worries (39.3 percent) were least likely to delay seeking care. Prehospital delays of less than 2 hours were noted most commonly for insured patients without financial concerns (36.6 percent), less commonly for those

insured who had financial concerns (33.5 percent), and least commonly among the uninsured (27.5 percent).

After adjusting for patient characteristics and other confounders, the researchers found that, compared with insured patients who had no financial concerns, uninsured patients had a 38 percent increased likelihood, and the insured who had financial concerns had a 21 percent increased likelihood, of delays in seeking care for their heart attack.

The researchers conclude that efforts to reduce prehospital delays for heart attacks and other emergency conditions will require an integrated approach that combines educational efforts at the patient, community, and national levels, as well as efforts to address the structural issues of access to and affordability of U.S. health care. The study was funded in part by the Agency for Healthcare Research and Quality (HS18283).

More details are in "Health care insurance, financial concerns in accessing care, and delays to hospital presentation in acute myocardial infarction," by Kim G. Smolderen, Ph.D., John A. Spertus, M.D., M.P.H., Brahmajee K. Nallamothu, M.D., M.P.H., and others in the April 14, 2010 *Journal of the American Medical Association* 303(14), pp. 1392-1400. ■ *DIL*

### Rural elderly with dementia are hospitalized more often for conditions that primary care visits might have caught

Seniors who suffer from dementia and live in rural areas are more likely than city dwellers to end up hospitalized for conditions that could have been prevented if better outpatient care were available near their pastoral surroundings, a new study finds. Researchers linked survey data from the 1998 National Longitudinal Caregiver Survey with Medicare and Veterans Affairs claims data from 1,186 U.S. veterans who suffer from dementia. They found that 13 percent of veterans had at least one "ambulatory-care-sensitive

hospitalization." This term refers to a condition in which timely primary care in an outpatient setting would have reduced the need for a hospitalization.

Veterans with dementia who lived in rural areas were at higher risk for an ambulatory-care-sensitive hospitalization than veterans in metropolitan areas (22.6 percent vs. 12.8 percent). When ample community health clinics and primary care providers were available, rural residents' chance of having ambulatory-care-sensitive hospitalizations decreased.

Although public policy initiatives often focus on helping people with dementia age in place for as long as possible, those policies present difficulties for rural residents if they have limited access to primary, specialty, and home health services to help manage their condition. This study's findings highlight the need to bring appropriate care to medically underserved populations to prevent costly, unnecessary hospitalizations by providing better primary care services closer to home. This study was funded in part by the Agency for Healthcare

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## Dementia

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Research and Quality (T32 HS00032).

See “Rural-urban differences in preventable hospitalizations among community-dwelling veterans with

dementia,” by Joshua M. Thorpe, Ph.D., Courtney H. Van Houtven, Ph.D., Betsy L. Sleath, Ph.D., and Carolyn T. Thorpe, Ph.D., in the March 2010 *The Journal of Rural Health* 26(2), pp. 146-155. ■ *KFM*

## Project helps those with spinal cord injury identify community and environmental barriers

Individuals with spinal cord injuries who use wheelchairs encounter a variety of social and environmental barriers in their everyday lives. While rehabilitation professionals try to help them overcome these obstacles, providers do not always know the full extent of these barriers in the community. A new study has found that giving people with spinal cord injury a chance to document existing barriers with a camera helps professionals find solutions to these problems.

Photovoice is a participatory research method that equips individuals with digital cameras to photograph what they experience out in the community. Ten people with spinal cord injury and a center for independent living participated as research partners in the project. All participants received training sessions dealing with camera use, the Photovoice method, and assignments. For each assignment, participants were asked to take at least 10 photos and provide notes for each one. Assignments included taking photos that explained community barriers and facilitators they encountered, as well as creating a photo documentary of a day out in the community.

Interviews with the participants, along with the photos, revealed nearly equal numbers of barriers and

facilitators in the community. Most barriers were land-development related, including parking lots, sidewalks, ramps, and curb cuts. Numerous problems existed with accessible parking opportunities. The second most frequent source of barriers was building design and construction. Participants also reported barriers in medical care, such as inaccessible exam tables. However, participants also indicated support from most health care professionals, peers, colleagues, family, and friends. The group identified problems with accessible parking as a priority issue. The participants used their photos to supplement written testimony presented to South Carolina Senate and House committees in support of a bill to strengthen accessible parking laws in the State. The bill was subsequently signed into law, which went into effect this year. The study was supported in part by the Agency for Healthcare Research and Quality (HS16941).

See “Evidence-based advocacy: Using Photovoice to identify barriers and facilitators to community participation after spinal cord injury,” by Susan D. Newman, Ph.D., R.N., C.R.R.N. and SCI Photovoice Participants, in the March/April 2010 *Rehabilitation Nursing* 35(2), pp. 47-59. ■ *KB*



## Follow AHRQ news on Twitter

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To view all of AHRQ’s social media tools, including e-mail updates, podcasts, and online videos, go to [www.ahrq.gov/news/socialmedia.htm](http://www.ahrq.gov/news/socialmedia.htm).



### Colorectal cancer screening is mostly underused, but problems with overuse and misuse remain

A new systematic review of the professional literature on enhancing the use and quality of colorectal cancer (CRC) screening finds that although tests are underused, particularly among certain subpopulations in the United States, important problems of overuse and misuse also exist. The review considered the factors that influence the use of CRC screening and which strategies increase the appropriate use of CRC screening and followup.

Among factors associated with higher rates of CRC screening are having regular access to care, having a physician recommendation for screening, having effective patient-provider communication, and participating in regular screenings for other types of cancer. Strategies associated with higher levels of screening include eliminating structural barriers by such interventions as mailing fecal occult blood test (FOBT) cards to patients, providing one-on-one

counseling by nonphysician staff to help persons understand CRC screening, and reminding patients when they need screening.

After screening 3,029 titles and abstracts and evaluating 861 full-text articles, the authors included 74 articles addressing factors associated with screening and 22 articles on strategies to increase appropriate screening. The researchers caution that widespread implementation of programs to increase appropriate CRC screening may not be successful unless such programs are both cost-effective from a societal perspective and provide incentives for primary care practices to implement the needed interventions. This study was partly funded by the Agency for Healthcare Research and Quality (Contract No. 290-07-1005).

The most recent recommendation statement on CRC screening by the U.S. Preventive Services Task Force (USPSTF) was issued in 2008. It has recently been

reprinted by *American Family Physician*. See “Screening for colorectal cancer: Recommendation Statement,” by the USPSTF in the April 2010 *American Family Physician* 81(8), pp. 1012-1016.

The same issue includes a screening case study with accompanying questions for review. See “Screening for colorectal cancer,” by Kenneth W. Lin, M.D., and Ruta Sharangpani, M.D., M.P.H., in the April 2010 *American Family Physician* 81(8), pp. 1017-1018. Reprints (AHRQ Publication No. 10-R064) are available from AHRQ.\* For details of the systematic review, see “Systematic review: Enhancing the use and quality of colorectal cancer screening,” by Debra J. Holden, Ph.D. Daniel E. Jonas, M.D., M.P.H., Deborah S. Perterfield, M.D., M.P.H., and others in the May 2010 *Annals of Internal Medicine* 152, pp. 668-676. ■  
MWS

## Outcomes/Effectiveness Research

### Delay in filling a blood-thinner prescription after procedures to implant a drug-eluting stent is risky

Patients who receive a drug-eluting stent to keep a coronary artery open should take the blood-thinner clopidogrel without interruption once they are discharged from the hospital. This drug prevents the formation of blood clots and is usually prescribed for 1 year following drug-eluting stent insertion. Most of the 7,402 patients in the study filled the clopidogrel prescription on the day they were discharged from the hospital. But the 1,210 patients (16.3 percent) who waited more than a day after hospital discharge to fill the prescription, and are

therefore assumed to have an interruption in their clopidogrel therapy, had an increase in death or heart attacks. Patients who filled the blood-thinner prescription promptly had a lower rate of adverse outcomes (7.9 percent) than those who delayed or did not fill the prescription (14.2 percent).

The 54 percent increased risk of adverse events in patients who delayed filling clopidogrel prescriptions remained consistent even after adjusting for delays in

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## Drug-eluting stent

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filling other heart medicines (e.g., statins, beta blockers) and for adherence to these medications. The patients most likely to delay filling their blood-thinner prescription were older than 65 years or had a coexisting condition such as diabetes, a prior heart attack, or kidney disease.

The researchers gathered their patient data from linked clinical registry and administrative data from three integrated health care delivery systems. The primary outcome was all-cause mortality or heart attack after patients had received a drug-eluting stent. Based on their findings, the researchers suggest that patients who receive stents might benefit from talking

with a pharmacist or “transition coach” to review their medications at hospital discharge. The study was funded in part by the Agency for Healthcare Research and Quality (HS16955) to the HMO Research Network Center for Education and Research on Therapeutics (CERT). For more information on the CERTs program, go to [www.certs.hhs.gov](http://www.certs.hhs.gov).

More details are in “Delays in filling clopidogrel prescription after hospital discharge and adverse outcomes after drug-eluting stent implantation: Implications for transitions of care,” by P. Michael Ho, M.D., Ph.D., Thomas T. Tsai, M.D., M.Sc., Thomas M. Maddox, M.D., M.Sc., and others in the May 2010 *Circulation: Cardiovascular Quality and Outcomes* 3, pp. 261-266. ■ DIL

## Patients with adult-onset diabetes with limited health literacy more likely to suffer hypoglycemic episodes

Patients with adult-onset (type 2) diabetes have excessively high blood-sugar levels that often must be controlled with medication. Patients with this condition have more difficulty controlling their blood sugar level if they have limited health literacy, according to a new study. The researchers examined the impact of various health literacy problems on the ability of 14,357 patients recruited from a California diabetes registry to manage their disease.

Of this group, 11 percent reported having a severe episode of low blood sugar (hypoglycemia) during the past year. The risk of hypoglycemia was highest for those using insulin (59 percent). Problems with health literacy were

common among the patients, with 53 percent reporting problems learning about health, 40 percent needing help reading health information materials, and 32 percent saying they did not feel confident filling out medical forms by themselves.

These three health literacy problems remained independently associated with the risk of experiencing significant hypoglycemia, even after the researchers adjusted the findings for demographic factors, clinical factors (e.g., medication type and disease duration), and English proficiency. The adjusted risk was 40 percent higher for patients reporting problems learning about health, and 30 percent higher for

patients reporting either reading problems or lack of confidence filling out forms. The study was funded in part by the Agency for Healthcare Research and Quality (HS17594 and HS17261).

More details are in “Hypoglycemia is more common among type 2 diabetes patients with limited health literacy: The diabetes study of northern California (DISTANCE),” by Urmimala Sarkar, M.D., Ph.D., Andrew J. Karter, Ph.D., Jennifer Y. Liu, M.P.H., and others in the *Journal of General Internal Medicine*, published online May 18, 2010 at <http://dx.doi.org/10.1007/s11606-010-1389-7>. ■ DIL

## Laboratory tests can accurately detect two clotting-factor mutations that raise risk of blood clots

The various laboratory tests to identify specific mutations in two proteins in the human clotting system, factor V Leiden (FVL) and prothrombin G20210A, appear to be accurate, according to a new review of published studies. The presence of these single-base mutations in the factor V or prothrombin genes increases the patient’s risk for deep vein blood clots or fatal and nonfatal pulmonary embolisms. Factor V Leiden refers to a single base change in the

gene (Factor V G1691A) that encodes an amino acid substitution (Arg506Gln), which results in inactivation of factor V at a lower rate. Since active Factor V is involved in clot formation, reducing its rate of inactivation leads to more clot formation. The prothrombin (Factor II) mutation gene, G20210A, is associated with an elevation of prothrombin levels to

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## Blood clots

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about 30 percent above normal in heterozygotes (having one copy) and to 70 percent above normal in homozygotes (having two copies).

Both commercial and experimental tests demonstrated at least 95 percent (and, in many cases, 100 percent) analytical validity (i.e., validity of the test in the laboratory) when compared with a reference standard for each mutation, the researchers found. Three studies looked at quality assurance among laboratories conducting genetic testing, including tests for FVL and prothrombin G20210A. These studies, conducted in the United Kingdom, Australia, and Italy, found most laboratories gave accurate results on known samples carrying these mutations. However, a few laboratories were responsible for many of the mistakes—in one study, 3 of 39 laboratories accounted for 46 percent of the errors.

To determine how accurate the genetic tests for these two mutations were, the researchers reviewed over 7,000 articles about commercial and experimental tests for these mutations published during the years 2000 through 2008. The researchers found 66 papers in which at least 10 patient samples were compared with traditionally accepted reference tests for a mutant (FVL or prothrombin G20210A) allele. Forty-one studies compared at least two methods for FVL detection, 23 studies did the same for prothrombin G20210A, and 12 studies investigated multiple technologies that tested for both alleles at once. The study was funded in part by the Agency for Healthcare Research and Quality (Contract No. 290-2007-1006).

More details are in “Analytic validity of genetic tests to identify factor V Leiden and prothrombin G20210A,” by Ashkan Emadi, M.D., Ph.D., Matthew T. Crim, M.Sc., M.A., Daniel J. Brotman, M.D., and others in the April 2010, *American Journal of Hematology* 85(4), pp. 264-270. ■ *DIL*

## A new study links biomarker of brain injury to microemboli occurring during cardiac surgery

An increase in blood levels of a biochemical marker of neurologic damage (S100) in patients who undergo heart bypass surgery is associated with the number of microemboli (microscopic gaseous, lipid, or thrombus particles) observed in the blood that passes through the cardiopulmonary bypass circuit, a new study finds. Neurologic injury, ranging from subtle behavioral symptoms to stroke, is known to be a complication of cardiac surgery. The formation of microemboli is considered the principal mechanism in causing such damage, according to the researchers. They detected microemboli in blood leaving the bypass circuit in 67 of the 71 patients studied, with a mean of 707 and a median of 341 emboli.

Most of the patients had increased blood levels of S100 after surgery, with the postoperative level of the marker higher for patients in the middle than the lowest third (tercile) in terms of microemboli count, and higher again for patients in the top tercile. Three percent of the patients died after surgery while in the hospital, 1 percent experienced a transient ischemic attack (or mini-stroke), and 1 percent suffered a stroke.

The study enrolled 71 patients undergoing coronary artery bypass surgery at a single hospital between October 2004 and December 2007. Measurement of serum levels of S100 were taken before and within 48 hours after surgery. Doppler ultrasound was used to measure the number of microemboli exiting the

cardiopulmonary bypass circuit. Based on their findings, the researchers suggest that redesign of the cardiopulmonary bypass circuit to prevent microemboli from leaving the circuit may reduce the risk of neurologic injury. The study was funded in part by the Agency for Healthcare Research and Quality (HS15663).

More details are in “Microemboli from cardiopulmonary bypass are associated with a serum marker of brain injury,” by Robert C. Groom, M.S., Reed D. Quinn, M.D., Paul Lennon, M.D., and others in the March 2010 *The Journal of Extra-Corporeal Technology* 42(1), pp. 40-44. ■ *DIL*

## The role of hospital care in general medical care has declined over time

Not long ago, general medicine physicians, such as general internists and family practitioners, usually cared for their patients when they were hospitalized. Since the mid-1990s, however, dedicated hospital physicians known as hospitalists have increasingly replaced the role of these generalists in providing hospital care. A new study has found that other factors—and not the arrival of hospitalists—are responsible for the declining role of inpatient care in general medical practice. These include reduced length of stay in the hospital and an increase in the number of generalist physicians.

Researchers examined hospital discharge data taken from the National Hospital Discharge Survey during the period from 1980 to 2005. Other data that were analyzed included information on physician office visits and physician manpower. During the study period, admissions and inpatient encounters by generalist physicians declined steadily. The biggest decline occurred from 1980 to 1994 before hospitals began using hospitalists. The total inpatient encounters by generalists decreased 35 percent during the prehospitalist era.

During this same period, the number of generalists increased from less than 100,000 to more than 200,000. Inpatient generalist encounters declined by

half as a result of this dramatic increase in the generalist workforce. Shorter length of stays, but not decreased hospital admissions, was also responsible for these declining inpatient encounters. During the study period, generalist office visits resulting in hospital admission decreased from 1.34 percent to 0.77 percent. The researchers conclude that the declining inpatient activity of generalists is not the result of hospitalists “crowding them out,” but rather due to declines in length of stay and increase in the generalist workforce. They note that the cost of maintaining skills in inpatient medicine and traveling to the hospital to see a declining number of hospitalized patients may make less hospital activity economically attractive to many generalists. The authors also suggest that a model in which generalist physicians provide both ambulatory and inpatient care for a subset of patients at high risk of hospitalization might provide a viable and beneficial model of general medical care that deserves study. This study was supported in part by the Agency for Healthcare Research and Quality (HS16967).

See “U.S. trends in hospitalization and generalist physician workforce and the emergence of hospitalists,” by David O. Meltzer, M.D., Ph.D. and Jeanette W. Chung, Ph.D., in the *Journal of General Internal Medicine* 25(5), pp. 453-459, 2010. ■ KB

## Health Information Technology

### Decision support in the electronic record improves asthma care

National Asthma Education and Prevention Program (NAEPP) guidelines, developed by the National Heart, Lung, and Blood Institute, inform clinicians about the best practices in asthma care and management. Despite the availability of these guidelines, physicians do not always adhere to them. Providing clinical decision support (CDS) as part of electronic health records (EHRs) improves adherence to the NAEPP guidelines, particularly

when used at the point of care, finds a new study.

For the 1-year study, researchers used 12 primary care sites at both urban and suburban locations, where children with asthma were seen on a regular basis. Prior to the study, each practice engaged in an educational program on asthma management. The 12 sites then received an asthma control tool as part of their EHR system. Six of the 12 practices had CDS alerts imbedded in the EHR. These alerts were based on NAEPP guidelines

and designed to guide clinicians to the various asthma tools built into the system.

The researchers found a significant increase in controller-medication prescriptions (often used to prevent asthma episodes) in urban practices receiving the CDS intervention (7 percent) compared with urban practices without alerts (1 percent). There was also an increase in the use of asthma care plans in suburban practices with the

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## Asthma care

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intervention (14 percent) compared with suburban practices without the intervention (11 percent). The use of spirometry (to determine lung function/capacity and treatment effects) increased over time in both suburban (from 8 to 14 percent) and urban practices (from 15 to 24

percent). Spirometry declined in the nonintervention suburban group from 8 to 1 percent. Given these findings, the researchers suggest that CDS embedded in the EHR may shorten the time period between clinicians accepting asthma guidelines and actually implementing them in their practices. The study was supported in part by the Agency for

Healthcare Research and Quality (HS14873).

See “Electronic health record-based decision support to improve asthma care: A cluster-randomized trial,” by Louis M. Bell, M.D., Robert Grundmeier, M.D., Russell Localio, Ph.D., and others in the April 2010 *Pediatrics* 125(4), pp. e770-e777. ■ KB

## Use of certain electronic health record features is associated with improved primary care quality measures

**A**lthough studies have shown the benefit of electronic health records (EHRs), most of these have only examined the adoption of EHRs as a whole and not focused on specific features within these systems. Recently, a study was conducted that specifically looked at the relationship between various features of EHRs and health care quality. It found that the availability and use of certain features by primary care physicians were associated with better performance on key quality measures such as colon cancer screening.

Researchers conducted a statewide survey of primary care physicians in Massachusetts. A total of 1,345 responded to questions related to their use of EHRs, including features dealing with test results and order entry. Participants were asked if each feature was available to them and how often they used it. Physicians' responses were compared with information on quality measures obtained from the Healthcare Effectiveness Data and Information Set (HEDIS).

The final sample included 507 physician users of EHRs. Interestingly, the majority of physicians who responded (71.6 percent) did not use an EHR. There was no significant association between using an EHR

overall and the primary care physician's performance on any of the HEDIS outcome measures. Further analysis, however, showed a significant association between the use of a number of specific EHR features and HEDIS measures. These associations were the strongest for measures of women's health, colon cancer screening, and cancer prevention. Specifically, the use of electronic medication lists had a positive association with colon cancer screening and cancer prevention. Electronic prescribing was positively associated with not only colon cancer screening and cancer prevention, but also with well-child care performance. The researchers conclude that just having an EHR is not sufficient to improve care quality. Quality is only significantly affected when specific features are part of the system and used on a regular basis by the clinician. The study was supported in part by the Agency for Healthcare Research and Quality (HS15397).

See “Relationship between use of electronic health record features and health care quality,” by Eric G. Poon, M.D., M.P.H., Adam Wright, Ph.D., Steven R. Simon, M.D., M.P.H., and others in the March 2010 *Medical Care* 48(3), pp. 203-209. ■ KB

## Regional health information exchanges must do more to attract small practices

**H**ealth information exchanges (HIEs) allow health care providers in a region to exchange information about patients. A study of small primary care practices in Minnesota found that, unlike hospitals and larger health systems, small practices do not have the means or motivation to participate fully in HIEs. Both the

Federal Government and States such as Minnesota have enacted laws in recent years to encourage health care organizations to adopt health information technology such as electronic health records (EHRs) and join regional HIEs.

During 2008 and 2009, when the researchers surveyed nine small practices in the geographic regions

served by three established HIEs, they found eight practices using EHRs. Seven of the EHRs were proprietary systems, and the other was developed by the practice using it. All nine practices shared immunization data with the Minnesota Department of Health

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## HIEs

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through a secure, comprehensive Web-based registry. Some form of direct electronic receipt of laboratory information was reported by eight practices. Several of the practices imported lab results from commercial laboratories into their EHR, and one practice had programmed an interface with the

hospital laboratory information system.

None of the practices reported sharing electronic data with nonaffiliated practices, such as competing primary care groups, specialists, or hospitals. The surveyed practices identified cost and lack of interoperability as key barriers to wider HIE involvement. The study was funded in part by the Agency for Healthcare Research

and Quality (Contract No. 290-07-1001).

More details are in “Health Information Exchange. Participation by Minnesota primary care practices,” by Patricia Fontaine, M.D., M.S., Therese Zink, M.D., M.P.H., Raymond G. Boyle, Ph.D., M.P.H., and others in the April 12, 2010 *Archives of Internal Medicine* 170(7), pp. 622-629. ■ *DIL*

## Pharmaceutical Research

### More than a quarter of patients do not fill prescriptions for new medications

Studies show that many patients cease taking medications after filling their first prescription. Now a new study finds that many prescriptions are never filled at all. This practice, called primary nonadherence, can increase the risk of continued illness and even death, especially when the unfilled prescriptions control chronic conditions like high blood pressure, diabetes, and high cholesterol.

Researchers in Boston used a year’s worth of data from an electronic prescribing system to track the number of electronic prescriptions issued and then examined pharmacy insurance claims to see how many were actually filled. Of the 195,930 e-prescriptions issued, 22.5 percent went unfilled. What’s more, of the 82,245 prescriptions issued for new medications, 28 percent were never filled.

Prescriptions to treat the chronic conditions of high blood pressure, diabetes, and high cholesterol were least likely to be filled, especially when they were newly prescribed. The researchers assert that interventions to improve primary nonadherence should be targeted toward those who may have trouble paying for medications. That’s because studies show that high cost-sharing requirements can delay treatment for chronic conditions. This study was funded in part by the Agency for Healthcare Research and Quality (HS15175).

See “Primary medication non-adherence: Analysis of 195,930 electronic prescriptions,” by Michael A. Fischer, M.D., M.S., Margaret R. Stedman, Ph.D., Joyce Lii, M.S., M.A., and others in the April 2010 *Journal of General and Internal Medicine*, 25(4), pp. 284-290. ■ *KFM*

### Acamprosate safe and efficacious in treating alcohol dependence

Acamprosate, a drug that has a similar structure to the neurotransmitter gamma-aminobutyric acid, appears useful in helping persons with alcohol dependence to maintain abstinence, according to a new review of studies on the topic. The researchers examined the evidence for this approved use of the drug, as well as what is known about its pharmacokinetics, interactions with

other drugs, safety, and tolerability. In three European studies, the drug was evaluated as an adjunct to psychotherapy in 998 patients who had undergone detoxification and were no longer using alcohol. The studies found that acamprosate was more effective than placebo in maintaining abstinence from alcohol. Studies in the United States, which involved patients who were not detoxified and abstinent

before they were randomly assigned to receive the drug or a placebo, failed to show the same degree of efficacy for acamprosate, perhaps because the studies included patients who abused multiple substances. The shorter duration of abstinence required before treatment may also have selected patients who were less likely to maintain long-term abstinence.

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## Treating alcohol dependence

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Patients in one U.S. study who had a goal of total abstinence from alcohol and were highly motivated toward this goal had better outcomes with acamprosate than with placebo, despite an overall inability to demonstrate efficacy of acamprosate in this study. Studies involving comparison of acamprosate with naltrexone had widely mixed results, but acamprosate was never found to be superior to naltrexone in primary efficacy comparisons. Combination therapy using both drugs was more

efficacious than acamprosate alone, but was not shown to be superior to naltrexone only.

Clinical trials and postmarketing surveillance showed that acamprosate is safe and well-tolerated. Combining data from 11 studies that used self-report of adverse events that occurred during treatment, similar rates occurred with acamprosate (61 percent) and placebo (56 percent). Most of the acamprosate adverse events, such as diarrhea, disappeared with time and were mild-to-moderate in severity. Withdrawal rates from short-term (<26 weeks) or longer-term (>48 weeks) studies were similar for

patients receiving acamprosate or placebo, ranging from 6 to 8 percent. The review was funded in part by the Agency for Healthcare Research and Quality through the Centers for Education and Research on Therapeutics (CERTs) program (HS16094). More information on the CERTs program can be found at [www.certs.hhs.gov](http://www.certs.hhs.gov).

More details are in “Acamprosate,” by William Klugh Kennedy, Pharm.D., Megan Leloux, Pharm.D., Eric C. Kutscher, Pharm.D., and others in *Expert Opinion on Drug Metabolism and Toxicity* 6(3), pp. 363-380, 2010. ■ *DIL*

## How community pharmacies decide how and whether to provide immunization services

Community pharmacies, including chain and supermarket pharmacies, usually begin offering immunization services by bringing in outside groups to provide the service. A new study has identified some of the factors that influence a pharmacy to bring these services in-house, continue to outsource immunizations, or drop such services. Among the 119 pharmacies surveyed, 56 “fence sitters” continued to outsource their immunizations, 24 “backward movers” had dropped offering immunizations, and 26 “forward movers” had brought the services in-house. Pharmacy ownership type appeared to influence which group the pharmacy belonged to—the majority of independent stores (52 percent) were backward movers, while both chain/mass merchant and supermarket pharmacies were primarily fence sitters (50 percent and 67 percent, respectively). Supermarkets were the least likely to be backward movers (4 percent) and most likely to be forward movers (29 percent).

When comparing outsourced and in-house immunization services, fence sitters perceived in-

house services to be more technically beneficial in terms of profitability, but less compatible with their pharmacy’s operations and more complex to put into practice. Forward movers saw greater technical benefit, social benefit (in terms of impact on the community and profession), and compatibility with the pharmacy’s operations from in-house services.

The researchers chose pharmacies in Washington State, which has been a leader in permitting trained pharmacists to deliver immunizations. The researchers analyzed responses of 106 of the 244 pharmacies that received survey packets about their perceptions of outsourced and in-house immunization services. The study was funded in part by the Agency for Healthcare Research and Quality (HS14512).

More details are in “Forward and backward transitions in pharmacy-based immunization services,” by Salisa C. Westrick, Ph.D., in the March 2010 *Research in Social and Administrative Pharmacy* 6(1), pp. 18-31. ■ *DIL*

### Pandemic, disaster could overwhelm U.S. critical care capacity in certain regions

A new study finds that a pandemic or disaster that affects a small portion of the population could overwhelm critical care capacity in some parts of the United States while leaving capacity unused in other areas. Using the Dartmouth Atlas hospital referring regions (HRRs), Brendan G. Carr, M.D., M.S., and colleagues at the University of Pennsylvania determined there were 67,357 critical care beds in the United States in 2007. Available intensive care unit (ICU) beds ranged from 1.01 to 5.95 beds per 10,000 individuals in each of the 306 HRRs, with a median of just 2.77 available beds per 10,000.

A simultaneous episode of critical illness in a small percentage of the population would exceed regional resources in a substantial number of HRRs, with greater effect in the more urban areas in the Northeastern and Western United States, note the researchers. For example, they calculated that if a crisis affected .02 percent of the more than 2 million people living in Portland, Oregon, 400 critical care beds would be needed. The .02 percent of the population affected in Tampa, Florida, would require 200 critical care beds.

The authors caution that their findings do not signal a need for additional ICU beds. There is little consensus about the optimal

number of ICU beds per capita. The findings do, however, highlight the need for comprehensive national health care planning to ensure critical care capacity is coordinated across HRRs so that hospitals are neither overwhelmed nor underutilized in a disaster. This study was funded in part by the Agency for Healthcare Research and Quality (HS17960).

See “Variation in critical care beds per capita in the United States: Implications for pandemic and disaster planning,” by Dr. Carr, Daniel K. Addyson, B.S., and Jeremy M. Kahn, M.D., M.S., in the April 14, 2010, *JAMA*, 303(14), pp. 1371-1372. ■ *KFM*

## Women's Health

### Live or Web-based training improves clinical estimates of blood loss during childbirth

Training labor and delivery personnel to visually estimate blood loss, either live or via the Web, can improve the accuracy of blood loss estimation in postpartum hemorrhage, concludes a new study. Visually estimating the volume of blood lost during delivery is routinely used to evaluate the seriousness of maternal bleeding, but can overestimate small volumes of blood and underestimate large ones. Postpartum hemorrhage, defined as >500 mL blood loss for a vaginal delivery or >1,000 mL for a cesarean delivery, is seen in 1–5 percent of all deliveries in the United States, and is a leading cause of maternal mortality in the United States and worldwide. It can lead to shock, disseminated intravascular coagulation, or even death, if not diagnosed and treated early.

The training program involved all labor and delivery unit providers at a Chicago hospital, as part of the

hospital's quality initiative. Of the 372 providers participating in the study, 231 underwent live training and 141 underwent Web-based training. In the live training, participants took a pretest by going to a room with five stations with premeasured small- and large-volume blood spills and writing down an estimate for each station. The participants then reviewed an educational slide presentation with one of the study investigators. The presentation included the volume of common containers of different sizes, the saturation capacities of different sponges, and methods to estimate the volume of floor spills and blood loss on the delivery bed. Another room held a five-station posttest using different blood volumes.

Participants who took the Web-based training were asked to estimate the blood loss from photographs of

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## Blood loss during childbirth

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the pretest stations, went through the educational training online, and estimated the blood loss using photographs of one of the posttest station sets used in the live training. Posttraining estimates of blood loss improved by a significant 34 percent compared with pretraining estimates. This did not differ significantly between live- and Web-based sessions. The study was

funded in part by the Agency for Healthcare Research and Quality (T32 HS00078).

More details are in “The effect of live and web-based education on the accuracy of blood-loss estimation in simulated obstetric scenarios,” by Paloma Toledo, M.D., Robert J. McCarthy, Pharm.D., Carol A. Burke, M.S.N., R.N.C., A.P.N., and others in the April 2010, *American Journal of Obstetrics & Gynecology* 202(4), pp. 400.e1-400.e5. ■ *DIL*

## Agency News and Notes

### Risks, benefits of emerging heart valve replacement technique not fully understood

A newer, less invasive method of heart valve replacement shows promise and may be appropriate for patients who cannot tolerate traditional open heart surgery. However, research is needed to understand its potential risks and benefits, according to a new study funded by the Agency for Healthcare Research and Quality (AHRQ).

The report finds that percutaneous heart valve replacement, a procedure in which a replacement valve is implanted through a catheter rather than by open heart surgery, is a realistic option for some patients with heart valve disease, especially older or sicker patients. The report found that percutaneous heart valve replacement may be a safe and effective alternative to open heart surgery, especially in the short term, for those patients. However, information is lacking on the potential long-term benefits and risks of this procedure, particularly compared with open heart valve replacement surgery. The report did not conclude that any of the seven valves studied is safer or more effective than another.

The report was produced by the Duke Evidence-based Practice Center for AHRQ, a leading

Federal agency conducting comparative effectiveness research. Results of the report were recently published online in the *Annals of Internal Medicine*. Heart valve disease—a narrowing of the heart valve—is blamed for approximately 20,000 deaths a year.

“As the U.S. population ages, the number of patients with heart valve disease will increase, so more Americans will need options for safe, effective heart valve replacement,” said AHRQ Director Carolyn M. Clancy, M.D. “This report identifies what is known about this emerging procedure and where the research is lacking to give patients more options about their treatment.”

Conventional heart valve replacement is a well-established procedure, with approximately 95,000 open heart surgeries performed per year for patients with severe narrowing of the heart valve. However, as many as one-third of patients with severe heart valve disease are considered too high risk for open heart surgery, in which patients typically are under general anesthesia for 3 to 6 hours, are hospitalized for 5 to 6 days, and require recovery time of 12 weeks. These patients would likely benefit from a less invasive option.

The report found that percutaneous heart valve replacement is a good option for patients at high risk for traditional surgery because of advanced age or illness. Approximately 92 percent of patients who received a percutaneous valve survived the procedure; of those, 86 percent survived for at least 30 days, the report found.

Catheter-based valve implantation was first reported in 2002. Just one device, the Medtronic Melody Transcatheter Pulmonary Valve and Ensemble Delivery System, currently has approval from the U.S. Food and Drug Administration. This device was approved in January 2010 under the Humanitarian Device Exemption program. Percutaneous heart valve replacement surgery has been available in Europe for nearly 2 years.

*Percutaneous Heart Valve Replacement* is the newest technical brief from AHRQ’s Effective Health Care Program. Technical briefs are rapid turnaround reports that summarize key issues regarding emerging treatments, highlighting where more research is needed, and where research may be sufficient to warrant a full systematic

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## Heart valve replacement

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comparative effectiveness review. The Effective Health Care Program represents a leading Federal effort to compare alternative treatments for health conditions and make the

findings public to help doctors, nurses, pharmacists, and others work together with patients to choose the most effective treatments.

In conjunction with the new report, AHRQ will soon publish plain-language summary guides

about heart surgery for patients, clinicians, and policymakers. Summary guides on numerous clinical topics and other information and background on the Effective Health Care Program can be found at [www.effectivehealthcare.ahrq.gov](http://www.effectivehealthcare.ahrq.gov). ■

## Treating Americans with diabetes cost hospitals \$83 billion

U.S. hospitals spent \$83 billion in 2008 caring for people with diabetes, according to the latest News and Numbers from the Agency for Healthcare Research and Quality (AHRQ). In that year, nearly one of every five hospitalizations involved a person with diabetes.

This amount is 23 percent of what hospitals spent overall to treat all conditions in 2008. The expenditure included costs associated with more than 540,000 hospital stays specifically for diabetes and roughly 7.2 million stays for patients who had other conditions in addition to diabetes. For example, a person with diabetes may be admitted primarily for heart disease, kidney damage, infection, or foot or leg amputation.

AHRQ's analysis also shows that:

- On average, hospital stays for people with diabetes cost hospitals 25 percent more than stays for people who did not have diabetes (\$10,937 versus \$8,746, respectively).

- Medicare paid 60 percent of the hospital stays of people with diabetes; private insurance, 23 percent; and Medicaid, 10 percent. Some 4 percent of patients were uninsured.
- About 42 percent of hospital stays for congestive heart failure, 38 percent for hardening of the arteries, 34 percent for heart attack, 31 percent for chronic obstructive pulmonary disease, and 29 percent for chest pain with no specific cause involved patients who also had diabetes.
- The West had the lowest hospitalization rate for diabetes, 1,866 per 100,000 persons, while the South had the highest rate, 2,829 per 100,000 people.

This AHRQ News and Numbers is based on data in *Hospital Stays for Patients with Diabetes, 2008* ([www.hcup-us.ahrq.gov/reports/statbriefs/sb93.pdf](http://www.hcup-us.ahrq.gov/reports/statbriefs/sb93.pdf)). The report uses statistics from the 2008 Nationwide Inpatient Sample, a part of AHRQ's Healthcare Cost and Utilization Project. ■

## Potentially avoidable hospitalizations for heart failure lowest in mountain States

The mountain States region of the United States reported the lowest average rate of potentially avoidable hospitalizations for heart failure in the nation in 2006, at just 266 admissions per 100,000 people, according to the latest *News and Numbers* from the Agency for Healthcare Research and Quality (AHRQ). The States included in this region are Montana, Wyoming, Idaho, Utah, Nevada, Colorado, Arizona, and New Mexico.

AHRQ's analysis of regional potentially avoidable heart failure

hospitalization rates found that the following regions had the next lowest rates:

- Pacific States (California, Oregon, Washington, Alaska) had the second-lowest average rate, at 316.5 admissions per 100,000 people.
- West North Central region (North Dakota, South Dakota, Nebraska, Iowa, Missouri, Minnesota, Kansas), 362 admissions at 100,000 people.
- New England (Connecticut, Rhode Island, Massachusetts,

New Hampshire, Vermont, Maine), 364 admissions per 100,000 people.

The regions with the highest rates were:

- East South Central region (Alabama, Mississippi, Tennessee, Kentucky) with a rate of 583 admissions per 100,000 people.
- East North Central region (Wisconsin, Michigan, Illinois, Indiana, and Ohio), 502 admissions per 100,000 people.

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## Hospitalizations for heart failure

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- West South Central (Texas, Oklahoma, Arkansas, Louisiana), 496 admissions per 100,000 people.
- Southeast (Florida, Georgia, North Carolina, South Carolina, Virginia, West Virginia, Maryland, Delaware), 460 admissions per 100,000 people.

- Mid-Atlantic (New Jersey, New York, Pennsylvania), 430 admissions per 100,000 people.

Potentially avoidable hospitalizations are admissions for inpatient care of chronic illnesses that could be averted if the patients had good quality outpatient care. Without such care, the risk of complications requiring hospitalization is greater.

This AHRQ News and Numbers is based on information in the AHRQ *State Snapshots*

(<http://statesnapshots.ahrq.gov/snapshots09/index.jsp>), which provide State-specific health care quality information, including strengths, weaknesses, and opportunities for improvement. The goal is to help State officials and their public- and private-sector partners better understand health care quality and disparities in their State. For other information, or to speak with an AHRQ data expert, please contact Bob Isquith at [bob.isquith@ahrq.hhs.gov](mailto:bob.isquith@ahrq.hhs.gov) or call (301) 427-1539. ■

## Southeastern and mid-Atlantic States have highest rate of sepsis-related deaths

Infections may lead to death by triggering systemic inflammation (sepsis), which, in turn, can lead to organ dysfunction and shock. Sepsis results in 570,000 emergency department (ED) visits and approximately 200,000 deaths each year in the United States. A new study has identified a group of contiguous States with an increased adult death rate from sepsis that is comparable with the “stroke belt” for deaths from cerebrovascular disease. These States had an estimated 8,500 excess adult sepsis deaths annually over that expected from the national average. This finding of regional variation in sepsis deaths may lead to identifying populations more vulnerable to sepsis and needing more attention to sepsis prevention or geographic regions needing improved sepsis care in the ED or hospital, note the researchers.

From 1999 to 2005, there were slightly over 1 million deaths in the United States due to sepsis among persons at least 15 years old, giving a national age-adjusted mortality rate of 65.9 deaths per 100,000 persons. Excluding the District of Columbia, there was a twofold variation in age-adjusted sepsis mortality by State (41 to 88.6 deaths per 100,000

people annually for Minnesota and Maryland, respectively, with a median of 60.8 deaths per 100,000). The researchers identified a cluster of 11 adjacent States in the Southeastern and mid-Atlantic regions with the highest infection death rates (29 percent higher, overall, than the rest of the country).

They used information from the National Center for Health Statistics’ Compressed Mortality Files for 1999 through 2005, which gave both death incidence and geographic distribution by State for different disease groups, together with U.S. Census Bureau population estimates. The study was funded in part by the Agency for Healthcare Research and Quality (HS13628).

More details are in “National variation in United States sepsis mortality: A descriptive study,” by Henry E. Wang, M.D., M.S., Randolph S. Devereaux, M.S.P.H., Donald M. Yealy, M.D., and others in the February 15, 2010 *International Journal of Health Geographics*, available online at [www.ij-healthgeographics.com/content/9/1/9](http://www.ij-healthgeographics.com/content/9/1/9). ■ *DIL*

## Oregon and Vermont show fewest hospitalizations for children with asthma

Oregon and Vermont reported the nation's lowest rates of avoidable hospitalizations for asthma in children aged 2 to 17 in 2006, according to the latest News and Numbers from the Agency for Healthcare Research and Quality. Oregon reported the lowest rate of potentially avoidable hospitalizations, at 44 per 100,000 children, followed by Vermont at 46 admissions per 100,000 children.

Other States that reported low rates of potentially avoidable asthma hospitalizations per 100,000 children aged 2 to 17 are:

- New Hampshire—62

- Iowa—66
- Utah—74
- Nebraska—75
- Maine—78

Asthma is a chronic respiratory disease that is controllable with appropriate outpatient treatment, including control of the risk factors that can cause attacks such as smoke and environmental allergens, use of controller medications, patient and parent education, and assessment and monitoring.

This AHRQ News and Numbers is based on information from the 2009 *AHRQ State Snapshots*

(<http://statesnapshots.ahrq.gov/snaps09/index.jsp>), which provides State-specific health care quality information, including strengths, weaknesses, and opportunities for improvement. The goal is to help State officials and their public- and private-sector partners better understand health care quality and disparities in their State. For other information, or to speak with an AHRQ data expert, please contact Bob Isquith at [bob.isquith@ahrq.hhs.gov](mailto:bob.isquith@ahrq.hhs.gov) or call (301) 427-1539.



## Study recommends disclosure of medical mistakes that affect multiple patients

Health care organizations should disclose medical mistakes that affect multiple patients, even if patients were not harmed by the event, according to a study funded by the Agency for Healthcare Research and Quality and published in the September 2 *New England Journal of Medicine*. Medical mistakes that affect multiple patients, known to researchers as large-scale adverse events (LSAEs), are incidents or a series of related incidents that harm or could potentially harm multiple patients. These events, which can include incompletely sterilized surgical equipment, poor laboratory quality control, and equipment malfunctions, are often identified after care has been provided and can affect thousands of patients.

“It’s clear that health care organizations face a dilemma regarding disclosure of large-scale adverse events—whether these events lead to patient harm or not,” said AHRQ Director Carolyn M. Clancy, M.D. “It’s not always clear how to do that in a way that minimizes risk to the patient and the organization, but this research can help.”

According to researchers from the University of Washington, Seattle, disclosure policies for adverse events that affect individual patients are becoming more common among health care organizations, but often fail to address how to disclose LSAsEs that could have affected many patients. Researchers weighed

ethical considerations of whether to disclose such events. For instance, is disclosure ethical if patients were unlikely to have been physically harmed by the event, but could be harmed psychologically by the disclosure? The authors reviewed instances in which health care institutions disclosed an LSAsE and analyzed the method of disclosure and existing disclosure policies. They concluded that, in most cases, these events should be disclosed and offered these recommendations:

- Develop an institutional policy. Organizations should have a clear set of procedures for managing the disclosure process, notifying patients and the public, coordinating followup diagnostic testing and treatment, and responding to regulatory bodies.
- Plan for disclosures. Disclosures should be made proactively, unless a strong, ethically justifiable argument can be made not to do so. The method of disclosure may depend on the event, but patients should be informed personally and all at the same time.
- Communicate with the public. Organizations should assume that media coverage of a large-scale adverse event is inevitable. To build public trust, media responses should demonstrate the organization’s commitment to honesty and transparency.

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## Medical mistakes

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- Plan for patient followup. Organizations should provide followup diagnostic testing and treatment to patients affected by the LSAE and address any

anxiety caused by the disclosure. Patients who have suffered physical harm due to an event resulting from a preventable error or system failure should be compensated. ■

## Announcements

### AHRQ launches healthy men Web site

The Agency for Healthcare Research and Quality's (AHRQ) new Healthy Men Web site ([www.ahrq.gov/healthymen](http://www.ahrq.gov/healthymen)) is packed with key information for men on the importance of preventive health, not only for them but also for the well-being of their families and loved ones. This information includes

recommended tests by the U.S. Preventive Services Task Force, tips on talking with doctors, a 10-question preventive health quiz for men, and a "Get Dad to the Doc" Web page for sending a health e-card to fathers or other men to remind them to get a preventive medical test. The Web site also includes 15- and 30-second videos developed from a new nationwide

public service campaign by AHRQ and the Advertising Council. AHRQ data shows that men are 24 percent less likely than women to visit a doctor at least once a year and 30 percent more likely to be hospitalized for potentially preventable conditions such as congestive heart failure and complications from diabetes. ■

### AHRQ seeks new topic nominations for U.S. Preventive Services Task Force

The Agency for Healthcare Research and Quality (AHRQ) invites individuals and organizations to nominate primary and secondary prevention topics pertaining to clinical preventive services that they would like the United States Preventive Services

Task Force to consider for review. For complete information and directions please review the August 5 *Federal Register* at <http://edocket.access.gpo.gov/2010/2010-19117.htm>. ■

### Two courses added to HCUP Online Tutorial Series

The Agency for Healthcare Research and Quality (AHRQ) has added two new courses to the Healthcare Cost and Utilization Project (HCUP) Online Tutorial Series ([hcup-us.ahrq.gov/tech\\_assist/tutorials.jsp](http://hcup-us.ahrq.gov/tech_assist/tutorials.jsp)). The Load and Check HCUP Data tutorial provides instructions on how to unzip (decompress) HCUP data, save it on a computer, load the data into a standard statistical software

package, and verify that the data have loaded correctly.

The Producing National HCUP Estimates tutorial is designed to help users understand how the three nationwide databases—the *Nationwide Inpatient Sample*, *Nationwide Emergency Department Sample*, and *Kids' Inpatient Database*—can be used to produce national and regional estimates.

HCUP is a family of health care databases and related software tools developed through a Federal-State

partnership to build a multi-State health data system for health care research and decisionmaking. The HCUP Online Tutorial Series provides users with information about HCUP data and tools, as well as training on technical methods for conducting research with HCUP data. For more information about HCUP products and services, please visit HCUP-US at [www.hcup-us.ahrq.gov](http://www.hcup-us.ahrq.gov). You can also contact HCUP User Support at [hcup@ahrq.gov](mailto:hcup@ahrq.gov). ■

**Clancy, C. M. (2010, March/April). “Comparative effectiveness research: Promising area of study for pharmacists.” *Journal of the American Pharmacists Association* 50(2), pp. 131-133. Reprints (AHRQ Publication No. 10-R065) are available from AHRQ.\***

Comparative effectiveness research (CER) has generated a lot of interest in the health care policy community lately. The author, director of the Agency for Healthcare Research and Quality (AHRQ), defines and explains CER and elucidates AHRQ’s leading role in CER through its Effective Health Care Program. Initiated in 2005, the program uses current unbiased information to make head-to-head comparisons of treatment alternatives, including drugs. This program has been greatly expanded by the 2009 American Recovery and Reinvestment Act. Its implications for pharmacists are explained by contrasting CER with traditional Phase III randomized controlled trials (RCTs) that have long been used in the drug approval process. In contrast with RCTs, CER asks “Does the drug work in normal practice and how does it compare with therapeutic alternatives?” AHRQ looks forward to working with the full pharmacy community to apply CER to health care quality improvement efforts.

**Clancy, C. (2010). “Focusing the research enterprise on the patient.” *NCI Cancer Bulletin* 7(8), pp. 1-2. Reprints (AHRQ Publication No. 10-R066) are available from AHRQ.\***

The essence of patient-centered care is that it is of high quality only

when the ultimate needs of the patient are met. To illustrate, the author presents a case study of a woman treated for stage III melanoma, who died 7 years after the initial diagnosis. Her story had elements of suboptimal quality of care and poor patient adherence. In general, statistics tracked by the Agency for Healthcare Research and Quality (AHRQ) indicate that the quality of cancer care in the United States could be much better. Comparative effectiveness research is built on the question “What is the best treatment for me?” Through its research on comparative effectiveness, AHRQ is working to improve the quality of care. AHRQ’s Effective Health Care Program has cancer as one of its priority areas and has produced several reports on cancer-related topics such as particle beam radiation therapy, a comparison of tamoxifen and other medicines for breast cancer, and a comparison of therapies for clinically localized prostate cancer.

**Clancy, C. M. (2010, March/April). “Preventing healthcare-associated infections: Initiating promising solutions and expanding proven ones.” *Patient Safety & Quality Healthcare*, pp. 6-8. Reprints (AHRQ Publication No. 10-R067) are available from AHRQ.\***

As part of a comprehensive Federal strategy to prevent and reduce all types of health care-associated infections (HAIs), the Agency for Healthcare Research and Quality (AHRQ) has launched a \$17 million national initiative to fight HAIs by expanding earlier projects in hospital settings and

funding new efforts to find other promising solutions to reduce and prevent HAIs in ambulatory and long-term care settings. Earlier work had led to the introduction of five specific interventions in hospital surgical intensive care units that reduced central line associated bloodstream infections to zero. The program that resulted from those interventions is known today as CUSP. The article describes its successful implementation in Michigan and its subsequent expansion to 10 States.

**DeVoe, J. E., Ray, M., Krois, L., and Carlson, M. J. (2010, February). “Uncertain health insurance coverage and unmet children’s health care needs.” (AHRQ grants HS14645 and HS16181). *Family Medicine* 42(2), pp. 121-132.**

Forty percent of children in the United States are covered by Medicaid or State children’s insurance programs. When parents are uncertain whether or not their child is insured, it increases the child’s risk of having unmet health care needs, according to a new study. Researchers identified children whose parents were uncertain about their coverage from data on 2,691 low-income families living in Oregon. In 13.2 percent of cases, the parents were uncertain whether their child had public health insurance or not. These children had greater odds of having unmet medical needs compared with children whose parents were sure of their health insurance status. Uninsured children had the highest odds of experiencing unmet health care needs.

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**Glance, L. G., Mukamel, D. B., Meredith, W., and Dick, A. W. (2009, December). "Hospital performance in caring for injured patients." (AHRQ grant HS16737). *Archives of Surgery* 144(12), pp. 1121-1126.**

Trauma centers rely on overall risk-adjusted mortality measures to increase their quality improvement (QI) efforts. However, categorizing mortality measures by the type of patient trauma would help trauma centers better target QI efforts, suggests this study. Researchers customized the Trauma Mortality Probability Model by creating separate injury-specific models for patients treated at trauma centers for blunt trauma, gunshot wounds, pedestrian trauma, or motor vehicle accident trauma. They used these new models to analyze data from the National Trauma Data Bank on hospitals with 250 or more trauma admissions per year. The study found that there was poor-to-fair agreement between hospital quality measures (high, intermediate, and low quality) when hospital quality was based on outcomes for all trauma patients vs. specific subgroups of trauma patients. The researchers conclude that quality improvement data on specific trauma injuries may provide additional opportunities to improve patient care based on a particular injury.

**Greene, S. K., Kulldorff, M., Lewis, E. M., and others. (2010, January). "Near real-time surveillance for influenza vaccine safety: Proof-of-concept in the Vaccine Safety Datalink Project." (AHRQ grant HS13908). *American Journal of Epidemiology* 171(2), pp. 177-188.**

As the threat of H1N1 loomed large in 2009, a vaccine to combat

pandemic influenza was swiftly approved and deployed in the United States alongside a vaccine for seasonal influenza. This widespread vaccination effort brought the issue of vaccine safety into the spotlight. Employing three approaches to determine patients' risk of experiencing adverse events, this study found that vaccine safety surveillance can be accomplished in near real-time.

As a result of the surveillance, the research team found that the 1,195,552 doses children received and the 4,773,956 doses adults over 18 received resulted in no elevated risk of adverse events. The authors suggest that these findings may serve to bolster public confidence in the safety of the influenza vaccine.

**Hansen, R. A., Dusetzina, S. B., Dominik, R. C., and Gaynes, B. N. (2010). "Prescription refill records as a screening tool to identify antidepressant non-adherence." (AHRQ grant T32 HS00032). *Pharmacoepidemiology and Drug Safety* 19, pp. 33-37.**

Since more than three-fourths of patients with depression discontinue treatment within 3 months, better ways are needed to identify patients who are at highest risk of not taking their antidepressants. Using insurance records from a large health plan, researchers identified 4,545 patients with newly diagnosed major depression. They looked for gaps in prescription refills during the first 90 days of acute treatment. The researchers determined that a maximum continuous gap of 14 days had a sensitivity level of 87 percent for predicting later discontinuation of prescribed antidepressant medication. Four of every five patients at risk for discontinuing can be accurately identified by using this method and criteria. Physicians could benefit

from a system in place that alerts them to when such refill gaps occur.

**Holden, D. J., Jonas, D. E., Porterfield, D. S., and others. (2010). "Systematic review: Enhancing the use and quality of colorectal cancer screening." (AHRQ Contract No. 290-2007-1005). *Annals of Internal Medicine* 152, pp. 668-676.**

The purpose of this systematic review is to summarize evidence on factors that influence colorectal cancer screening (CRC) and strategies that increase the appropriate use and quality of CRC screening. A total of 116 publications met inclusion criteria for the full report. The review confirmed that important problems exist in the underuse, overuse, and misuse of CRC screening. It also found underuse and low quality of discussion between patients and health professionals about CRC screening, even though national guideline groups recommend such discussion. There was a lack of research on the problems of overuse, including assessing the net benefit of attempts to identify and remove all polyps. Very few studies focused on misuse. The researchers believe that there should be less emphasis on developing new screening tests and more emphasis on implementing existing effective tests.

**Jegier, B. J., Meier, P., Engstrom, J. L., and McBride, T. (2010). "The initial maternal cost of providing 100 mL of human milk for very low birth weight infants in the neonatal intensive care unit." (AHRQ grant HS16012). *Breastfeeding Medicine* 5(2), pp. 71-77.**

Human milk (HM) feeding reduces the risk of costly and

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handicapping morbidities in a dose-response manner during the early postbirth period for very-low-birth weight (VLBW) infants. This study examined the initial cost for 111 mothers to provide 100 mL of HM for their VLBW infants during the early postbirth period in the neonatal intensive care unit (NICU). The researchers compared this cost to alternative donor milk and commercial formula. They calculated costs for the breast pump rental fee, the breast pump collection kit, and the maternal opportunity cost, a measure of the value of maternal time. The mean cost of providing 100 mL of HM varied from \$2.60 to \$6.18 when maternal opportunity cost was included and from \$0.95 to \$1.55 when it was excluded. The researchers concluded that human milk for VLBW infants costs less than donor milk and less than many types of commercial formula used in NICUs.

**Jiang, H. J. (2010, March/April). “Enhancing quality oversight.” *Healthcare Executive* 25(2), pp. 80-83. Reprints (AHRQ Publication No. 10-R068) are available from AHRQ.\***

In the past 10 years, hospitals have paid increasing attention to quality improvement. A recent survey is evidence that hospital boards are continuing to fulfill this responsibility. The Governance Institute’s 2009 survey provides updates on the extent to which boards have adopted the 13 recommended quality oversight practices. Ninety percent of hospitals and health systems surveyed have adopted 4 of the 13 practices, including annual reviews of patient satisfaction scores. Five other practices have shown

significantly increasing adoption rates. Among these practices are having a standing quality committee and requiring the organization to report its quality/safety performance to the general public. After comparing this survey’s results to hospital quality performance measures, this study found that better quality performance was significantly associated with the existence of a board quality committee and the adoption of six particular governance practices.

**Kattah, J. C., Talkand, A. V., Wang, D. Z., and others. (2009, November). “HINTS to diagnose stroke in the acute vestibular oculomotor examination more sensitive than early MRI diffusion-weighted imaging.” (AHRQ grant HS17755). *Stroke* 40(11), pp. 3504-3510.**

Acute vestibular syndrome (AVS)—dizziness combined with nausea and vomiting, gait unsteadiness, intolerance for head movements, and rapid eye movements (nystagmus)—is a cause of many emergency department visits annually in the United States. Previous research suggests that 25 percent or more of AVS cases represent strokes in the brainstem. The researchers found that a simple, 1-minute bedside test of abnormal head and eye movements appears to be more sensitive than early magnetic resonance imaging in identifying strokes in patients who go to the emergency department for rapid-onset dizziness. The brief three-test battery is termed HINTS, for Head-Impulse/Nystagmus/Test-of-Skew. Using the HINTS battery could potentially replace complete neurological workups and brain imaging without loss of diagnostic

accuracy, conclude the researchers. The study included 101 patients with AVS and at least 1 risk factor for stroke seen at an urban academic hospital.

**Khwaja, A. (2010). “Estimating willingness to pay for Medicare using a dynamic life-cycle model of demand for health insurance.” (AHRQ grant HS10574). *Journal of Econometrics* 156, pp. 130-147.**

The author estimates the willingness to pay (WTP) for Medicare benefits using a dynamic random utility model in a life-cycle human capital framework with endogenous production of health. The model accounts for the feature that the demand for health insurance is derived through the demand for health. The WTP measure incorporates the effects of Medicare insurance on medical expenditures, medical utilization, and health outcomes. The change in lifetime expected utility resulting from delaying the age of Medicare eligibility to 67 was estimated to be \$24,947 (in 1991 dollars) on average. However, the less educated have a higher WTP to avoid a policy change that delays availability of Medicare benefits, notes the author.

**Kumar, R., Korthuis, P. T., Saha, S., and others. (2010, June). “Decision-making role preferences among patients with HIV: Associations with patient and provider characteristics and communication behaviors.” (AHRQ grant HS13903). *Journal General Internal Medicine* 25(6), pp. 517-23.**

Some patients prefer that their doctor make all the decisions, others want to share that responsibility with their doctor, and yet others want to make the final

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call after hearing all the options their doctor presents. A new study finds that doctors should discuss decisionmaking preferences with their patients who have HIV, because although some patients say they want to participate, their communication styles may not reflect this desire. The study of 45 providers and 434 patients with HIV found that 72 percent of patients preferred to share decisionmaking duties with their provider, 23 percent wanted their provider to make decisions on their behalf, and 5 percent wanted to make their own decisions. Patients who were depressed and patients who were not very satisfied with provider-patient communications were more inclined to have their provider make decisions for them.

**Landon, B. E., Gill, J. M., Antonelli, R. C., and Rich, E. C. (2010, May). "Prospects for rebuilding primary care using the patient-centered medical home." (AHRQ grant HS17995). *Health Affairs* 29(5), pp. 827-834.**

There is wide agreement that the current U.S. primary care system is failing, and that a revitalized primary care system will be needed if we are to realize the goal of improving quality and patients' experiences while also controlling cost growth. The patient-centered medical home shows promise as the policy strategy for the long-overdue reinvigoration of U.S. primary care, note these authors. It can provide a financing platform for traditional primary care that fee-for-service has failed to support. It can also promote enhanced primary care services enabled by 21st century information technology and measurement tools. The authors analyze potential barriers to implementing the medical home

model for policymakers and practitioners. Among others, these include developing new payment models, as well as the need for up-front funding to assemble the personnel and infrastructure required by an enhanced non-visit-based primary care practice.

**Liu, L., Strawderman, R. L., Cowen, M. E., and Shih, Y-C. T. (2010). "A flexible two-part random effects model for correlated medical costs." (AHRQ grant HS10730). *Journal of Health Economics* 29, pp. 110-123.**

Medical cost data are frequently right-skewed, involve a substantial portion of zero values, and may exhibit heteroscedasticity. To account for correlated medical cost data, the authors propose a new two-part model that incorporates correlated random effects. The primary novelties are the use of the very flexible generalized gamma regression model and the incorporation of heteroscedasticity into Part II of the model. The proposed model simultaneously takes into account the presence of true zeros, right-skewness, and heteroscedasticity of positive-response values. It further permits cluster-level correlation between the odds of observing a positive response and the actual level of this response. The resulting model encompasses a substantial subset of the parametric models for semicontinuous data previously proposed in the literature, providing a useful framework in which competing models can be evaluated.

**M'ikanatha, N. M., Gasink, L. B., Warren, K., and Lautenbach, E. (2010, April). "Child care center exclusion policies and directors' opinions on the use of antibiotics." (AHRQ grant HS10399). *Infection Control and***

***Hospital Epidemiology* 31(4), pp. 408-411.**

Child care center directors are required by State regulations to exclude children with specific communicable diseases from their centers. Children in child care centers may be at increased risk for inappropriate antibiotic prescriptions. Not only are children at increased risk for acute infectious illnesses, but center directors may influence antibiotic misuse by enforcing exclusion policies unnecessarily or by inappropriately referring children to physicians. To guide public health interventions, the researchers surveyed 135 center directors regarding exclusion policies and opinions regarding antibiotic use. Almost all of them reported writing policies on exclusion of children for acute illnesses. Although 52.4 percent of respondents agreed that children are prescribed antibiotics unnecessarily, 89.1 percent believed that parents pressure physicians to prescribe unnecessary antibiotics. They also found that many center directors believe that antibiotics are necessary for treatment of viral illnesses and that centers often exclude ill children until antibiotics are prescribed.

**Onega, T., Duell, E. J., Shi, X., and others. (2010). "Influence of place of residence in access to specialized cancer care for African Americans." (AHRQ grant T32 HS00070). *Journal of Rural Health* 26, pp. 12-19.**

Blacks who live in rural areas may not be getting the level of cancer care enjoyed by urban residents regardless of race, according to a new study. This suggests that racial disparities in access to specialized cancer care may be affected by place of residence.

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Using 2000 Census data, researchers calculated the travel times to specialized cancer centers, including National Cancer Institute (NCI) centers, and oncologists for all Zip code areas. Overall, the proportion of blacks living less than 30 minutes from a cancer center or oncologist was greater than that observed for whites. Rural blacks, however, were found to have the longest travel times to NCI centers. They were 58 percent less likely to attend these national centers compared with rural white patients. The researchers suggest ways of bringing sophisticated cancer care to rural residents, such as telemedicine, offering transportation support, and improving cancer care at the local level.

**Owens, D. K., Lohr, K. N., Atkins, D., and others. (2010). “AHRQ series paper 5: Grading the strength of a body of evidence when comparing medical interventions—Agency for Healthcare Research and Quality and the Effective Health-Care Program.” *Journal of Clinical Epidemiology* 63, pp. 513-523. Reprints (AHRQ Publication No. 10-R070) are available from AHRQ.\***

These authors sought to establish guidance on grading strength of evidence for comparative effectiveness reviews produced by the Evidence-based Practice Center (EPC) program of the Agency for Healthcare Research and Quality (AHRQ). They reviewed authoritative systems for grading strength of evidence, identified domains and methods that should be considered when grading bodies of evidence in systematic reviews, considered public comments, and discussed their approach with

representatives of the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) working group. The EPC approach to rating the strength of evidence is conceptually and substantively similar to GRADE. The authors recommend that EPCs rate strength of evidence based on a core group of domains that include risk of bias, consistency, directness, and precision. EPCs and the GRADE working group will continue to collaborate to facilitate consistency across grading systems.

**Peterson, E. D., Dai, D., DeLong, E. R., and others. (2010, May 4). “Contemporary mortality risk prediction for percutaneous coronary intervention.” (AHRQ grant HS16964). *Journal of the American College of Cardiology* 55(18), pp. 1923-1932.**

The researchers sought to create contemporary models for predicting percutaneous coronary intervention (PCI) mortality risk for different subpopulations. They used the National Cardiovascular Data Registry (NCDR) CathPCI database to study 181,775 procedures performed between January 2004 and March 2006 together with 2 prospective validation cohorts (the first with 121,183 procedures and the second 285,440 procedures). Three separate models were developed: a full model including all candidate variables; a second “pre-cath” model excluding NCDR angiographic data; and a third “limited” pre-cath model including only those variables with the strongest explanatory power. They found that overall PCI in-hospital mortality was 1.27 percent, ranging from 0.65 percent in elective PCI, to 4.81 percent in elevated ST-segment heart attack patients. Each of the three models had excellent predictive accuracy throughout the

full spectrum of patient risk, and important patient subgroups.

**Rassen, J. A., Choudhry, N. K., Avorn, J., and Schneeweiss, S. (2009). “Cardiovascular outcomes and mortality in patients using clopidogrel with proton pump inhibitors after percutaneous coronary intervention or acute coronary syndrome.” (AHRQ grant HS18088). *Circulation* 120, pp. 2322-2329.**

Clopidogrel is a blood-thinning drug often used for cardiac patients to prevent further heart attacks following percutaneous coronary intervention or hospitalization for acute coronary syndrome. However, in some patients, it causes bleeding, which is counteracted by using proton pump inhibitors (PPIs). Some researchers have raised questions about the safety of combining clopidogrel and PPIs. In a recent study of clopidogrel users, a team of researchers from Brigham and Women’s Hospital and Harvard Medical School found that clopidogrel patients who used a PPI had a 2.6 percent rate of hospitalization for a heart attack, compared with a 2.1 percent rate for those who did not. These data suggest that if there is a true clopidogrel/PPI interaction, its effect is modest and unlikely to exceed a 20 percent risk increase, note the researchers. The current study looked at 18,565 community-dwelling, elderly clopidogrel users, who lived in Pennsylvania, New Jersey, and British Columbia between 2001 and 2005.

**Rathore, S. S., Ketcham, J. D., Alexander, G. C., and others. (2009). “Influence of patient race on physician prescribing decisions: A randomized on-line experiment.” (AHRQ grant**

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**HS15699).** *Journal of General Internal Medicine* 24(11), pp. 1183-1191.

Prior research has demonstrated that blacks receive poorer quality of care than whites in management of their hypertension, diabetes, and high cholesterol. However, in a Web-based survey taken by 716 primary care physicians, race did not appear to influence the decision to prescribe a new medication. The survey consisted of three clinical vignettes illustrating patients with high blood pressure, high cholesterol, and diabetes. Race did influence the choice of the specific medication in the vignettes for hypertension. For example, physicians recommended calcium channel blockers more often for black patients (20.8 percent) than white patients (3.2 percent). The researchers suggest that this practice likely reflects racial differences in treatment response cited in current practice guidelines, that is, that whites tend to respond better to angiotensin converting enzyme inhibitors and blacks tend to respond better to calcium channel blockers.

**Routh, J. C., Inman, B. A., and Reinberg, Y. (2010).** “Dextranomer/Hyaluronic acid for pediatric vesicoureteral reflux: Systematic review.” (AHRQ grant T32 HS00063). *Pediatrics* 125, pp. 1010-1019.

Vesicoureteral reflux (VUR) is the abnormal flow of urine from the bladder back up the tubes (ureters) leading from the kidneys. The goal of this systematic review was to evaluate the accumulated literature on the surgical treatment of pediatric VUR by using Dextranomer/Hyaluronic acid (Dx/HA) and to determine the extent to which reported success

rates are influenced by VUR grade, conflicts of interest (COIs), or other underlying patient or study-level factors. After the initial screening of 1157 reports, 47 studies met the review’s inclusion criteria. Study results were markedly heterogeneous, with 87 percent of the total variability in pooled outcomes related to between-study variability. Of 7,303 ureters injected with Dx/HA, 5,633 (77 percent) were successfully treated according to the authors’ definitions. The preoperative VUR grade was the single most important factor affecting the Dx/HA injection success rate. COI was not independently associated with an increased success rate.

**Schmittziel, J. A., Traylor, A., Uratsu, C. S., and others. (2009, December).** “The association of patient-physician gender concordance with cardiovascular disease risk factor control and treatment in diabetes.” (AHRQ grant HS13902). *Journal of Women’s Health* 18(12), pp. 2065-2070.

Patient and physician gender and gender concordance are modestly associated with cardiovascular disease risk factor control and treatment in diabetes, concludes a new study. It found that female patients of female primary care physicians (PCPs) were more likely to have well-controlled diabetes (70 percent) than either women treated by male doctors (68 percent) or men treated by doctors of either sex (66 percent). However, women were less likely to have controlled levels of low-density lipoprotein cholesterol (LDL-C below 100 mg/dL) or systolic blood pressure (SBP below 130 mm Hg), which are risk factors for cardiovascular disease, whether they were treated by male or female doctors. However, no difference in

intensification in diabetes treatment was observed for patients whose diabetes, blood lipids, or blood pressure were over target levels, when analyzed by patient sex, physician sex, or the interaction of these two factors.

**Shah, N. R., and Stewart, W. F. (2010).** “Clinical effectiveness: Leadership in comparative effectiveness and translational research. The 15th annual HMO Research Network conference, April 26-29, 2009 Danville, Pennsylvania.” (AHRQ grant HS18024). *Clinical Medicine & Research* 8(1), pp. 28-29.

The authors report on the Health Maintenance Organization Research Network (HMORN) 2009 conference. HMORN is a consortium of 16 health care delivery systems with integrated research divisions. Expert panels discussed: (1) Federal funding and industry views on comparative effectiveness research (CER), (2) the Agency for Healthcare Research and Quality’s role in CER, and (3) system-level health care innovation and research. There were 2 scientific poster sessions and 20 concurrent sessions with oral abstract presentations across a wide range of topics. Also, there were more than 25 ancillary sessions, most of which reflected new or developing partnerships focused on critical topics such as the Cardiovascular Research Network, child health, the Cancer Research Network, and informatics.

**Shim, J. K. (2010).** “Cultural health capital: A theoretical approach to understanding health care interactions and the dynamics of unequal treatment.” (AHRQ grant HS10582). *Journal of Health and Social Behavior* 51(10), pp. 1-15.

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Cultural health capital (CHC) is the repertoire of cultural skills, verbal and nonverbal competencies, attitudes and behaviors, and interactional styles cultivated by patients and clinicians alike that, when deployed, may result in more optimal health care relationships. The author offers an overview of what CHC is, positing its key elements. She then argues that the concept of CHC helps to account for several issues significant to understanding the social production of unequal treatment that are not fully addressed by the current literature. She believes that the concept of CHC offers a coherent framework for understanding the impact of important changes in the U.S. health care system.

**Sobota, A., Graham, D. A., Heeney, M. M., and others. (2010, January).** “Corticosteroids for acute chest syndrome in children with sickle cell disease: Variations in use and association with length of stay and readmission.” (AHRQ grant T32 HS00063). *American Journal of Hematology* 85(1), pp. 24–28.

Hospitals vary widely in their use of corticosteroids, drugs used to fight inflammation, in the treatment of acute chest syndrome (ACS) in children with sickle cell disease (SCD), according to a new study. This variation is unexplained by medical reasons. ACS is a frequent cause of sickness and death in patients with SCD, and is often due to bacterial infection or obstructed circulation in the lungs. The researchers reviewed records on 5,247 admissions for ACS (representing 3,090 individual patients) at 32 pediatric hospitals in the United States. Corticosteroid use varied dramatically between hospitals, ranging from 10 to 86

percent for all patients with ACS and 18 to 92 percent for patients with asthma. Since systemic corticosteroids are recommended as treatment for acute asthma requiring hospitalization, the fact that on average only half of children with asthma and ACS received them is disturbing, note the researchers.

**Tapp, H., and Dulin, M. (2010).** “The science of primary health-care improvement: Potential use of community-based participatory research by practice-based research networks for translation of research into practice.” (AHRQ grant HS16023). *Experimental Biology and Medicine* 235, pp. 290-299.

The authors describe the background and development of community-based participatory research (CBPR) and practice-based research networks (PBRNs) and the ways in which they currently function and are envisaged to blend in the future. Their analysis is based on a review of key research papers that demonstrate how the two fields can be connected and research successfully implemented. The authors also provide examples of a few common types of research from CBPR and PBRNs as well as studies where community is already a large component of PBRN research. Finally, they discuss ways to set up a PBRN within the community infrastructure. One of the several ways in which CBPR has the potential to significantly advance PBRN research is by allowing rapid translation of results from the study back into clinical practice and the community.

**Taylor, J. A., Geyer, L. J., and Feldman, K. W. (2010, January).** “Use of supplemental vitamin D among infants breastfed for

prolonged periods.” (AHRQ grant HS16029). *Pediatrics* 125(1), pp. 105-111.

Because human breast milk may be low in vitamin D, the American Academy of Pediatrics (AAP) guidelines recommend that all breastfed infants receive at least 400 IU of supplemental vitamin D daily. Yet a new study of breastfed infants reveals that only a minority of these infants receive supplemental vitamin D. The researchers found that only 36.4 percent of 44 pediatricians surveyed routinely recommended supplemental vitamin D for all of their breastfed patients. Of 1,140 infants who were predominantly breastfed for at least the first 6 months after birth, 181 of these children (15.9 percent) were routinely given vitamin D supplements. Even for those children whose pediatricians recommended vitamin D supplements, only 44.6 percent received vitamin D. The factors most significantly associated with the likelihood of supplementation were the parent agreeing that the child’s doctor recommended vitamin D supplements and the parent agreeing that vitamins are important for the child’s overall health.

**Winthrop, K. L. (2010).** “Pulmonary disease due to nontuberculous mycobacteria: an epidemiologist’s view.” (AHRQ grant HS17552). *Future Microbiology* 5(3), pp. 343-345.

Little is known regarding the epidemiology of nontuberculous mycobacterial (NTM) disease. This editorial summarizes the latest developments in pulmonary NTM disease epidemiology, and highlights key areas for future research. In earlier years,

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pulmonary NTM disease had been observed to mostly affect elderly males. However, in the last 20 years, it has generally increased, with more reports of female patients. In a recent study, annual prevalence rates of pulmonary NTM disease were highest among women 70 years and older (9.4/100,000) compared with similarly aged men (7.6/100,000). The assumption is that the disease is acquired from environmental sources such as municipal water, soil, and other potential water exposures. Yet, little scientific work has successfully documented the types of environmental exposures necessary to cause disease. Additional epidemiologic work must be done to ascertain disease risk factors and identify potentially modifiable exposures for those who are at risk.

**Witsil, J. C., Aazami, R., Murtaza, U. I., and others. (2010). "Strategies for implementing emergency department pharmacy services: Results from the 2007 ASHP Patient Care Impact Program." (AHRQ grant HS15818). *American Journal of Health-***

***System Pharmacists* 67, pp. 375-379.**

A higher prevalence of preventable adverse drug events has been reported in emergency departments (EDs) than in other hospital units. Only a small percentage of EDs nationally have dedicated clinical pharmacists. To help provide experiential training to practicing pharmacists looking to establish ED services in their institutions, the American Society of Health-System Pharmacists (ASHP) offered a 6-month patient care impact program in 2007. This article describes the experiences of 19 pharmacist participants in the program, focusing on the challenges of implementing pharmacy services in EDs and the strategies used to address these challenges. Challenges included gaining hospital administration approval and determining how best to define the role of the pharmacist in the ED. The end result of the ASHP program was that all 19 clinical emergency pharmacy programs have been successfully implemented in the participating community, academic, and tertiary care hospitals.

**Wong, S. T., Nordstokke, D., Gregorich, S., and Perez-Stable, E. J. (2010). "Measurement of social support across women**

**from four ethnic groups: Evidence of factorial invariance." (AHRQ grant HS10856). *Journal of Cross-Cultural Gerontology* 25, pp. 45-58.**

Having a social network of valued relationships with others plays a critical role in an individual's health status. Evidence strongly suggests that social support keeps people healthy and helps speed recovery from illness. The purpose of this study was to examine if a multidimensional, self-report social support instrument originally developed for older Chinese and Koreans can be used for meaningful comparisons across four ethnic groups of women (African American, Latino, Chinese, and non-Latino white). The final sample group for the 22-item survey consisted of 1,074 women. Social support items in the survey were divided among three categories: tangible support, informational support, and financial support. After analysis of survey results, the researchers derived a valid and reliable eight-item social support instrument available in English, Spanish, and Chinese. The study provides evidence that mean comparisons of different dimensions of social support can be reported across four different ethnic groups in women. ■



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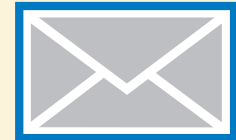
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AHRQ Pub. No. 11-RA001

October 2010

ISSN 1537-0224

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