Agency for Healthcare Research and Quality
Advancing Excellence in Health Care

# RESEARCH ACTIVITIES

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## Disparities Report highlights health care challenges for minorities, underscores importance of Affordable Care Act

The *National Healthcare Disparities Report* released April 20 by the Agency for Healthcare Research and Quality (AHRQ) shows that access to health care did not improve for most racial and ethnic groups in the years 2002 through 2008 leading up to enactment of the Affordable Care Act.

The data contained in the *National Healthcare Disparities Report* and the companion *National Healthcare Quality Report* predate the Affordable Care Act. However, some provisions in the new health care law are aimed at improving health care quality and addressing health care disparities.


The U.S. Department of Health and Human Services (HHS) Action Plan to Reduce Health Disparities, announced in April 2011, outlines goals and actions HHS will take to reduce health disparities among racial and ethnic minorities. The Action Plan builds on important efforts made possible by the Affordable Care Act and other ongoing private-sector and State-led initiatives.

"The health care law's groundbreaking policies will reduce health disparities identified in the report and help achieve health equity," said Carolyn M. Clancy, M.D., director of AHRQ. AHRQ released the report during National Minority Health Month "to raise awareness about the steps being taken to help ensure every American receives safe and appropriate health care to help them achieve their best possible health," Clancy added.

The congressionally mandated disparities and quality reports, which AHRQ has produced annually since 2003, are based on over 40 different national sources that collect data regularly. The 2011 reports, which include about 250 health care measures, show the persistent challenges in access to care faced by most racial and ethnic groups. Fifty percent of the measures that tracked disparities in

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### Highlights

# From the Director

The good news in the 2011 *National Healthcare Quality Report* and *National Healthcare Disparities Report* is that certain areas of care have improved. For example, cardiac care has significantly improved in areas such as reduced hospital admissions for congestive heart failure and fewer hospital deaths due to heart attack. Unfortunately, our Agency reports also show that overall health care improvements continue to progress at a slow rate—only 2.5 percent a year—and disparities in care persist.

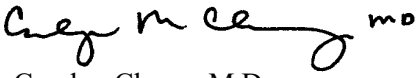
For example, on average people received the preventive services tracked in the reports 60 percent of the time, appropriate acute care services 80 percent of the time, and recommended chronic disease management services 70 percent of the time. On average, Americans report barriers to care 20 percent of the time.

Compared to whites, blacks received worse care for 41 percent of quality measures. Asians and American Indians and Alaska Natives (AI/ANs) received worse care for about 30 percent of quality measures, and Hispanics received worse care for 39 percent of measures. In addition, adults aged 65 and older received worse care than adults aged 18 to 44 for 39 percent of quality measures and poor people received worse care than high-income people for 47 percent of measures. Disparities in access to care also persisted for blacks, Asians, AI/ANs, Hispanics, poor people, and the elderly.

AHRQ is working closely with the Department of Health and Human Services (HHS) to accomplish the goals outlined in the HHS Action Plan To Reduce Racial and Ethnic Health Disparities (http://minorityhealth.hhs.gov/npa/templates/content.aspx?lvl=1&lvlid=33&ID=285) to build on the important efforts made possible the by Affordable Care Act.

Also, for the first time, this year's reports are organized around the priorities outlined in the National Strategy for Quality Improvement in Health Care (www.healthcare.gov/law/resources/reports/nationalqualitystrategy032011.pdf). These priorities range from making care safer and more affordable and ensuring person- and family-centered care to working with communities to promote wide use of best practices to enable healthy living.

The highlights that precede both reports include examples of rich collaboration among stakeholders, so we know that care improvement is possible. AHRQ continues to work with other stakeholders and conduct research to identify innovative strategies that can improve quality of care and reduce disparities. Approaches range from reaching out to disadvantaged and ethnic minority groups with targeted clinical and community interventions to developing tools clinicians can use to improve quality of care in the hospital, nursing home, doctor's office, or ambulatory care site. AHRQ is dedicated to rapidly improving the quality and equity of care for all Americans.



Carolyn Clancy, M.D.

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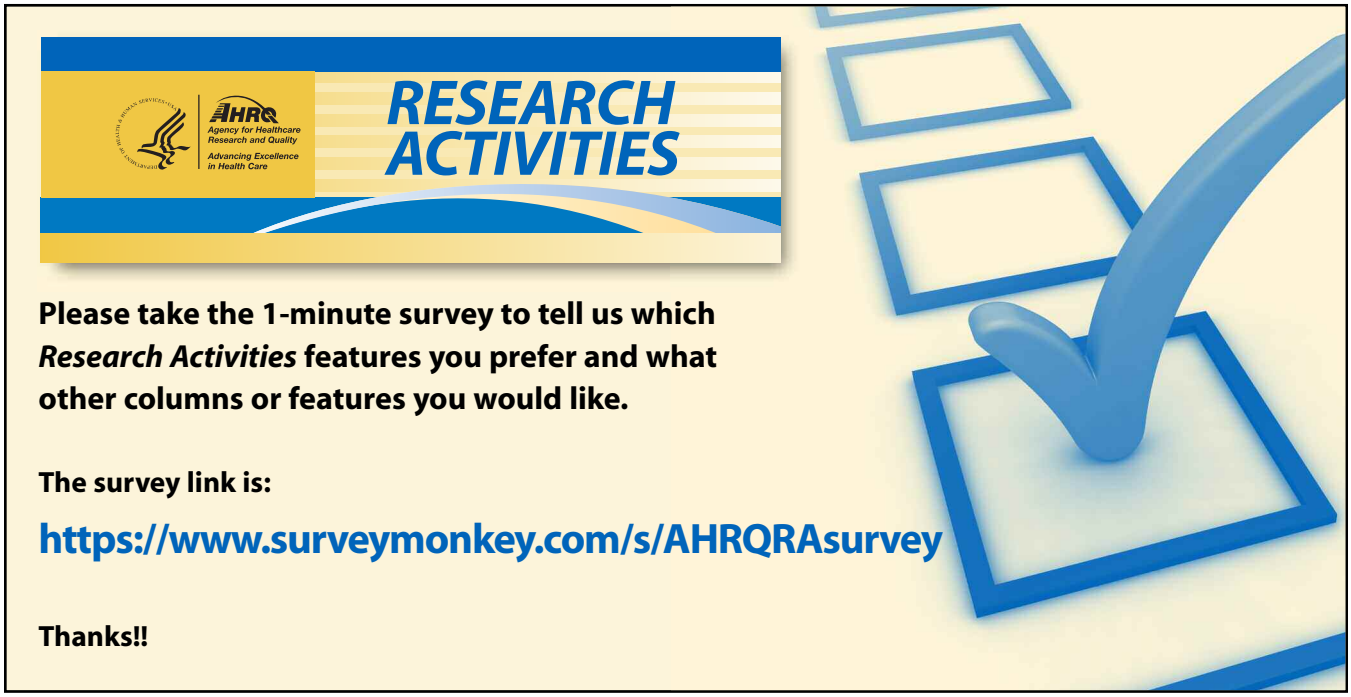


## Health care challenges

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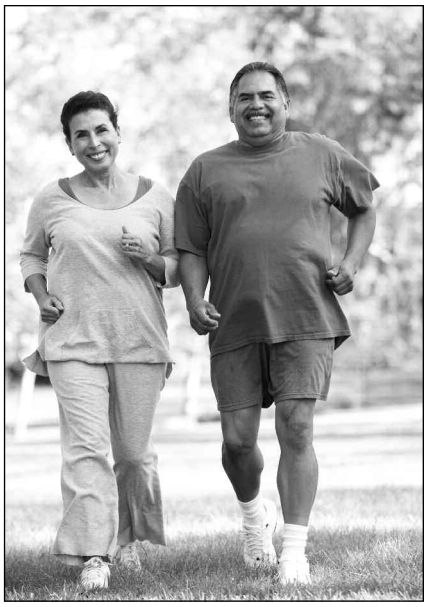
health care access showed no improvement between the years 2002 and 2008, while 40 percent of those measures were getting worse.

Specifically, for 2002 through 2008, Latinos, American Indians, and Alaska Natives experienced worse access to care than whites on more than 60 percent of the access measures, while African Americans experienced worse access on slightly more than 30 percent of the access measures. Asian Americans experienced worse access to care than non-Latino Whites on 17 percent of the access measures.

The 2011 *National Healthcare Quality Report*, also issued April 20, tracks the health care system through quality measures such as the percentage of adult smokers who received advice from a provider to quit or the percentage of children who received recommended vaccinations. Based on the same data and measures used in the disparities report, the congressionally mandated quality report found that overall health care quality improved slowly for the general population between the years 2002 and 2008. Both reports will serve to track progress on the Affordable Care Act in the future.

To view the *National Healthcare Quality Report* and *National Healthcare Disparities Report*, visit www.ahrq.gov/qual/qrdr11.htm. In addition, AHRQ's NHQRDRnet is an online query system that allows you to access national and State data on the quality of, and access to, health care from scientifically credible measures and data sources. To use the interactive tool, visit http://nhqrnet.ahrq.gov.

**Editor's note:** The Affordable Care Act includes provisions that will greatly improve the health of all Americans, including racial and ethnic minorities. The law increases access to affordable health insurance coverage and high-quality care, invests in prevention and wellness, and supports improvements in primary care.



To learn more about the health care law, visit healthcare.gov ■

## Vulnerable populations with heart failure less likely to receive early physician followup after discharge

One-fourth of Medicare patients hospitalized for heart failure (HF) are readmitted within 30 days after discharge. To decrease risk of readmission, early physician followup (within 7 days of hospital discharge) is important. However, only 38 percent of patients receive early followup after discharge from a heart failure hospitalization, according to a recent study.

Women and blacks were less likely to receive early followup. Patients with lower socioeconomic status and patients in rural areas were also less likely to have early followup, while patients living in hospital-referral regions with higher concentrations of physicians were more likely to receive early followup. In addition, patients at high risk for readmission, such as those with kidney disease and chronic obstructive pulmonary disease, were less likely to receive early followup. The reasons for this seemingly paradoxical finding are unclear. The researchers suggest that sicker patients may have more difficulty arranging physician visits or may tend to be referred to specialists with longer wait times for visits.

The study linked patient characteristics with the likelihood of early followup for 30,136 Medicare patients from 225 hospitals during 2003-2006. The researchers concluded that strategies are needed to ensure access among vulnerable populations to this supply-sensitive resource. This study was supported in part by the Agency for Healthcare Research and Quality (HS16964).

See "Associations of patient demographic characteristics and regional physician density with early physician follow-up among Medicare beneficiaries hospitalized with heart failure" by Robb D. Kociol, M.D., Melissa A. Greiner, M.S., Gregg C. Fonarow, M.D., and others in the *American Journal of Cardiology* 108, pp. 985-991, 2011. ■ *MWS*

## Dual Veterans Administration/Medicare users are not hospitalized more for ambulatory care sensitive conditions

Dual-use veterans, i.e., those obtaining care from both Medicare and the Veteran Health Administration (VHA), have the potential for redundant care, health information loss, and fragmented care. Since there was some evidence from prior studies that dual-use veterans have higher morbidity and mortality, a research team decided to investigate the issue by looking at the relationship between ambulatory care sensitive hospitalizations (ACSHs) and dual use among veterans.

ACSH conditions are those for which good outpatient care can prevent hospitalizations. Despite having poor socioeconomic characteristics, health status, and other health risk factors, dual VHA/Medicare users were no more likely than veterans with no VHA use to have any ACSHs, found the researchers.

ACSH conditions include congestive heart failure, bacterial pneumonia, and chronic obstructive pulmonary disease. The study's findings suggest that dual VHA/Medicare users could be using both systems to have enhanced access in order to better manage their conditions.

Data for the study came from the annual Medicare Current Beneficiary Surveys, a nationally representative sample of aged, disabled, and institutionalized Medicare beneficiaries. This study was supported in part by the Agency for Healthcare Research and Quality (HS18622).

See "Dual Medicare and Veteran Health Administration use and ambulatory care sensitive hospitalizations" by Mayank Ajmera, B.Pharm., M.S., Tricia Lee Wilkins, Pharm.D., and Usha Sambamoorthi, Ph.D., in the *Journal of General Internal Medicine* 26(Suppl 2), pp. 669-675, 2011. ■ *MWS*

## A hospital's ability to rescue patients from complications after high-risk surgery determines mortality rates

Hospitals that perform low numbers of a particular surgery typically have higher mortality rates than high-volume centers. These differences in mortality rates are not associated with large differences in complication rates. Instead, they seem to be associated with the ability of a hospital to effectively rescue patients once complications occur, concludes a new study.

Researchers used Medicare data from 2005 to 2007 to identify 37,865 patients who underwent one of three high-risk cancer operations: gastrectomy, pancreatectomy, and esophagectomy. Hospitals were ranked on their average annual volume and divided into quintiles with an equal distribution of patients through each quintile. The researchers also analyzed the incidence of major complications and failure to rescue from complications that do arise.

While patients were of similar age and sex at very high-volume and very low-volume hospitals, low-volume hospitals were found to treat more blacks and sicker patients. The risk-adjusted mortality rate for gastrectomy was 7.5 percent in very high-volume hospitals versus 17.7 percent in very low-volume institutions. It was even more dramatic for pancreatectomy, with a 3.1 percent mortality rate at very high-volume hospitals versus 13.3 percent for very low-volume ones.

Major complication rates remained similar for both types of hospitals, except for pancreatectomy, which had a 1.7-fold difference in major complication rates between very high- and very low-volume hospitals. As a result, patients undergoing this surgery at very low-volume hospitals were 3.2 times more likely to die once complications set in. The researchers also noted marked differences in failure-to-rescue rates for patients undergoing esophageal surgery. Such patients developing complications at very low-volume hospitals had a three-fold increased odds of death compared to their peers at very high-volume hospitals.

The authors call for more research to help all hospitals improve their ability to rescue patients from complications after surgery. The study was supported in part by the Agency for Healthcare Research and Quality (HS17765).

See "Hospital volume and failure to rescue with high-risk surgery," by Amir A. Ghaferi, M.D., M.S., John D., Birkmeyer, M.D., and Justin B. Dimick, M.D., M.P.H., in the December 2011 *Medical Care* 49(12), pp. 1076-1081. ■ *KB*

## Infrequent physician use of implantable cardioverter-defibrillators presents potential risks to patient safety

Implantable cardioverter-defibrillators (ICDs) are used to treat a variety of heart conditions. They detect dangerous rhythm disturbances and can quickly return the heart back to normal rhythm. Their growing use and popularity over the years, however, may be posing potential safety risks to patients, particularly when inexperienced clinicians implant them, concludes a new study. It found that a majority of physicians implant on average one or fewer ICDs per year, which were linked to higher mortality and complication levels.

Researchers reviewed admission data in New York State to identify all ICD implantations from 1997 to 2006. Each patient was followed for 90 days and again at 1 year to determine if they experienced any subsequent hospital admissions. Specifically, the researchers looked to see how many ICDs were being implemented by physicians, 90-day complication rates, and if patients died or needed adjustments within 1 year.

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### Implantable cardioverter defibrillators

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During the study period, 38,992 ICDs were implanted. From 1997 to 2006, the number of these procedures nearly tripled. Out of 2,080 physicians performing these procedures, 73.4 percent were deemed "very-low-volume" physicians in that they implanted 1 or fewer ICDs each year. This group of physicians performed 11 percent of all implantations.

The overall complication rate was 16.5 percent and the 90-day mortality rate was 2.8 percent. However, patients treated by very-low-volume physicians were more likely to die and nearly five times more likely to suffer cardiac complications than patients receiving implants from more experienced physicians. Patients treated at higher-volume hospitals had a lower risk of readmission and all-cause mortality within 90 days and a lower risk of revision surgery within 1 year. The study was supported in part by the Agency for Healthcare Research and Quality (HS16075).

See "Infrequent physician use of implantable cardioverter-defibrillators risks patient safety," by Stephen Lyman, Ph.D., Art Sedrakyan, M.D., Ph.D., Huong Do, M.S., and others in *Heart* 97, pp. 1655-1660, 2011. ■ *KB*

## Patients recovering in the hospital from total knee or hip replacement have increased risk of falls

The risk of in-hospital falls (IFs) for patients recovering from total hip or knee replacement (total hip or total knee arthroplasty—THA or TKA, respectively) is increased for patients of advanced age, male sex, and with more coexisting conditions, according to a new study. Earlier studies found that the occurrence of IFs for patients undergoing short-term hospitalization ranged from 2–17 percent. Up to half of patients who fell sustained a fall-related injury, with 1–10 percent of these injuries classified as serious (including fractures and head injuries).

This study found an overall IF incidence of 0.85 percent in a national estimate of 5.3 million patients undergoing THA or TKA over a 10-year period. The IF rate grew from 0.4 percent to 1.3 percent during that period. Patients who fell had a mean age of 68.2 years versus 66.6 years for those who didn't fall. Men were 7 percent more likely to fall than women, and patients treated at rural hospitals were 16 percent more likely to fall than those at urban hospitals.

When coexisting conditions were evaluated as risk factors, patients with pulmonary circulatory disease had three times the risk of falling than those without the disease. Fall risk rose by at least 40 percent for abnormal clotting, neurologic disease, and electrolyte/fluid imbalance. The findings were based on analysis of annual data on THA and TKA from the National Inpatient Sample of the Agency for Healthcare Research and Quality's (AHRQ's) Hospital Cost and Utilization Project for 1998 through 2007. This study was funded in part by AHRQ (HS16075) to the Center for Education and Research in Therapeutics (CERT) at the Weill Medical College of Cornell University. For more information on the CERTs program, visit www.certs.hhs.gov.

More details are in "In-hospital patient falls after total joint arthroplasty," by Stavros G. Memtsoudis, M.D., Ph.D., Christopher J. Dy, M.D., M.S.P.H., Yan Ma, Ph.D., and others in the November 2011 online *Journal of Arthroplasty*. ■ *DIL*

**Note:** Only items marked with a single (*) asterisk are available from the AHRQ Clearinghouse. 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.

## Contact isolation of new patients reduces adherence to process-of-care quality measures for pneumonia

Hospital patients who are put in contact isolation to prevent the spread of methicillin-resistant *Staphylococcus aureus* (MRSA) or other drug-resistant healthcare-associated infections (HAIs) are less likely to receive all of the required process-of-care quality steps for pneumonia treatment, according to a new study. Contact isolation, first used for patients in intensive care units (ICUs), is often used for non-ICU patients as part of initiatives to prevent MRSA. The researchers looked at the relationship between contact isolation and adherence to quality-of-care processes for patients admitted for heart attack, congestive heart failure (CHF), pneumonia, or the measure for the Surgical Care Improvement Project (SCIP), which included all patients admitted for cardiac surgery, knee and hip replacement surgery, vascular surgery, colon surgery, and hysterectomy.

After adjustment for patient age, length of hospital stay, mortality risk, and initial admittance to the ICU, patients in contact isolation were one-third as likely to meet the pneumonia measure. In contrast, no effect was seen for heart attack, CHF, and SCIP.

The researchers analyzed clinical data on 7,463 patients admitted to a 662-bed urban, acute care teaching hospital from January 2007 through May 2009. The primary outcome of interest was 100 percent adherence to the composite quality-of-care measure for the four admissions groups. This study was funded in part by the Agency for Healthcare Research and Quality (HS18111).

More details are in "The impact of contact isolation on the quality of inpatient hospital care," by Daniel J. Morgan, M.D., Hannah R. Day, Anthony D. Harris, M.D., M.P.H., and others in *PLoS ONE* 6(7), e22190, 2011. ■ *DIL*

## 1 in 10 computer-generated prescriptions include at least one error

In the ambulatory care setting, medication errors and adverse drug events (ADEs) are common. The use of electronic prescribing systems is one way to reduce these errors and events. However, computer-generated prescriptions can introduce new errors, and some systems are better than others. A new study finds that 1 in 10 computer-generated prescriptions contain at least 1 error. The researchers conclude that implementing a computerized prescribing system without comprehensive functionality and processes in place to ensure meaningful use does not decrease medication errors.

They looked at 3,850 computer-generated prescriptions received during a 4-week period by a commercial pharmacy chain with stores in 3 States (Arizona, Florida, and Massachusetts). A panel of independent reviewers examined each prescription for errors. If an error was identified, it was classified by type. Any error having the potential for harm was considered a potential ADE.

A total of 452 prescriptions (11.7 percent) had one or more of 466 errors. Of these errors, 163 (35 percent) were classified as potential ADEs. The rate of prescriptions containing ADEs was 4.2 percent. More than half (58.3 percent) of these ADEs were significant, although none were life-threatening. Errors were most often found with anti-infective prescriptions (40.3 percent), followed by nervous-system drugs and respiratory-system drugs. Nervous-system drugs, however, had the highest rate for potential ADEs (27 percent), followed by cardiovascular drugs, and anti-infectives. Error rates varied widely from 5.1 percent to 37.5 percent among the various computerized systems. Omitted information was the most common cause for errors (60.7 percent) and ADEs (50.9 percent).

The researchers suggest that both computer-based and provider-based interventions are needed to reduce errors associated with computer-generated prescriptions. These include specific drug-decision support, calculators, careful vendor and system selection, and extensive training beyond what the vendor offers. The study was supported in part by the Agency for Healthcare Research and Quality (HS16970).

See "Errors associated with outpatient computerized prescribing systems," by Karen C. Nanji, M.D., M.P.H., Jeffrey M. Rothschild, M.D., M.P.H., Claudia Salzberg, M.S., and others in the *Journal of the American Medical Informatics Association* 18, pp. 767-773, 2011. ■ *KB*

## Magnet® hospitals offer better work environment for nurses than non-Magnet hospitals

Magnet® hospitals, designated on the basis of nurse professionalism and the quality of patient care, have better nursing work environments, staffing levels, and professional outcomes than hospitals without this credential, according to a new study. Magnet® hospital designation was developed in the 1980s to address significant shortages and high turnover of skilled nurses at hospitals, and was based on an analysis of 41 hospitals found to attract and retain nurses more strongly than other hospitals in their labor market.

A large survey of direct-patient-care registered nurses (RNs) in 4 States found that 46 Magnet®-designated hospitals had significantly better work environment scores than 521 non-Magnet hospitals. The Magnet® hospitals also had a significantly higher proportion of nurses with a bachelor's degree or higher in nursing than non-Magnet hospitals. What's more, Magnet® hospitals had a significantly lower average number of patients per nurse than non-Magnet hospitals (5.00 vs. 5.54), excluding California hospitals because of statewide staffing mandates.

The nurses at the two types of hospital did not differ in age, years of experience, proportion of females, or whether educated in the United States. However, proportionately more Magnet® nurses were specialty-certified. Nurses in Magnet® hospitals were also 18 percent less likely to report job dissatisfaction and 13 percent less likely to have high levels of burnout than nurses in non-Magnet hospitals, after adjusting for nurse, hospital, and hospital-level nursing characteristics. The findings were based on a survey of a random sample of RNs licensed in California, Florida, Pennsylvania, or New Jersey in 2006 and 2007 and the hospitals employing them. The study was funded in part by the Agency for Healthcare Research and Quality (HS17551).

More details are in "Nurse outcomes in Magnet® and non-Magnet hospitals," by Lesly A. Kelly, Ph.D, R.N., Matthew D. McHugh, Ph.D., J.D., M.P.H., R.N., C.R.N.P., and Linda H. Aiken, Ph.D., R.N., in the October 2011 *The Journal of Nursing Administration* 41(10), pp. 428-433. ■ *DIL*

***Health Care Costs and Financing***

## Large variations in Medicare payments for surgery underscore savings potential from bundled payment programs

Medicare payments vary dramatically among hospitals for four different inpatient surgeries, concludes a new study. Even after adjusting for differences in hospital geographic location and patient severity of illness, per-episode payments to the highest-cost hospitals were higher than those to the lowest-cost facilities by up to $2,549 for colectomy and $7,759 for back surgery. Also, postdischarge care and discretionary physician services accounted for a large proportion of the variation in payments. These findings suggest the potential savings from bundled payment programs for inpatient surgery, which combine provider reimbursements into a single payment for the entire episode, conclude the researchers. The goal is to improve care coordination and reduce duplicate or unneeded services.

In this study, the researchers found that the difference between the lowest and highest quintiles of total Medicare payments for episodes of hip replacement, coronary artery bypass grafting (CABG), back surgery, or colectomy varied by $2,549 for colectomy to $7,759 for back surgery—even after adjusting for price and patient case mix. Payments also differed greatly for the four components of each of the four procedures: index hospitalization, readmissions, physician services, and postdischarge care.

For example, although the total payment differences between payment quintiles 5 and 1 was $6,909 for hip replacement and $7,435 for CABG, the difference in

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### Bundled payment programs

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index hospitalization cost was $41 for hip replacement and $3,390 for CABG. The postdischarge care payment difference for hip surgery was $5,885, but only $2,332 for CABG.

In its acute care episode demonstration project involving cardiac surgery and joint replacement, the Centers for Medicare & Medicaid Services (CMS) is bundling only payments for hospital and inpatient physician services. Based on the findings of this study, the researchers suggest that the CMS demonstration project could save more by expanding beyond bundling hospital and inpatient physician services to include bundling of postdischarge care. Their findings were based on Medicare fee-for-service data for the selected procedures conducted from January 2005 through November 2007. The study was funded in part by the Agency for Healthcare Research and Quality (HS18346).

More details are in "Large variations in Medicare payments for surgery highlight savings potential from bundled payment programs," by David C. Miller, M.D., Cathryn Gust, M.S., Justin B. Dimick, M.D., and others in the November 2011 *Health Affairs* 30(11), pp. 2107-2115. ■ *DIL*

## Remote intensive care monitoring is cost effective for sickest patients

Treating patients in intensive care units (ICUs) is very expensive, representing nearly a third of all hospital costs in the United States. Such care must be managed by specialty-trained physicians called intensivists, who are in short supply. Telemedicine ICU programs, where patients are monitored by intensivists offsite, are helping to address the shortage of intensivists, but have upfront and operational costs in the millions. A recent study finds that telemedicine ICU programs are cost effective only for the sickest patients.

Researchers compared cost outcomes on 1,913 ICU patients before the tele-ICU was implemented and 2,057 patients cared for under the remote monitoring system. All patients were treated in six ICUs at five hospitals that were part of a large nonprofit healthcare system. Specifically, the researchers analyzed various costs associated with ICU and floor care, as well as the physician and contractor costs associated with the running of the telemedicine ICU.

Hospital daily costs and hospital cost per case increased 24 percent and 43 percent, respectively, after the telemedicine ICU was implemented. The cost per patient also increased 28 percent. The jump in ICU costs accounted for most of these increases. The telemedicine ICU program was not cost effective for the majority of patients but was cost effective for the sickest patients. In the 17 percent of patients who were the sickest, the telemedicine ICU program decreased hospital mortality without a significant boost in costs. It may be more prudent for hospitals to install tele-ICU systems to monitor only the sickest patients rather than putting the program in place for all ICU patients, suggest the authors. Their study was supported in part by the Agency for Healthcare Research and Quality (HS15234).

See "Costs and cost-effectiveness of a telemedicine intensive care unit program in 6 intensive care units in a large health care system," by Luisa Franzini, Ph.D., Kavita R. Sail, Ph.D., Eric J. Thomas, M.D., M.P.H., and Laura Wueste, R.N., M.S.N., in the *Journal of Critical Care* 26(329), pp. e1-e6, 2011. ■ *KB*

## Clinicians find triggers and algorithms in e-prescribing software helpful in avoiding inappropriate medications in older adults

The elderly are particularly at risk for experiencing adverse drug events (ADEs) simply because of the sheer amount of medications they usually take. In addition, there are a number of potentially inappropriate medications (PIMs) prescribed for the elderly that can cause falls and other problems. E-prescribing systems custom designed with various triggers and treatment options may help clinicians avoid PIMs in the elderly by making it easier for them to change decisions at the point of prescribing, concludes a new study. It also found that primary care physicians welcome these triggers and evidence-based treatment algorithms provided they are efficient, trustworthy, and highly focused.

Pharmacists were first asked to review a list of 39 PIMs to identify those most frequently prescribed by their pharmacies. A final list of 15 PIMs was used for this study. In conjunction with an e-prescribing software vendor, the researchers developed treatment algorithms designed to help the primary care physician make alternative medication recommendations. Triggers and alerts were embedded into the e-prescribing system so that physicians did not have to push an extra button to receive PIM information and alternatives. Focus groups of physicians who used e-prescribing software were conducted to obtain their feedback regarding PIMs in the elderly and the triggers and algorithms being developed.

Overall, most physicians agreed that having such triggers and algorithms available to them in e-prescribing software would be useful in their daily practice. However, they requested that these must be carefully designed to be brief, highly focused, and able to be absorbed in 30 seconds or less. The physicians also complained about repetitive alerts or receiving triggers on content they already knew about. They also wanted the data be accurate, useful, and designed to promote efficient information retrieval. The study was supported in part by the Agency for Healthcare Research and Quality (HS17150).

See "Alternatives to potentially inappropriate medications for use in e-prescribing software: Triggers and treatment algorithms," by Anne L. Hume, Pharm.D., Brian J. Quilliam, Ph.D., R.Ph., Robert Goldman, Ph.D., M.A., and others in the *BMJ Quality Safety* 20, pp. 875-884, 2011. ■ *KB*

## Paper previsit reminders for doctors do not add value to electronic reminders from an electronic health record system

Physicians who are lax in following up on electronic health record (EHR) point-of-care reminders about recommended care for patients with chronic diseases generally fail to respond to previsit paper reminders, according to a new study. In an earlier phase of the study, the researchers found that including automatic electronic reminders to doctors significantly improved adherence to 14 of 16 quality-of-care measures, such as reduction in low-density lipoprotein levels for patients with diabetes. However, they found a subset of physicians whose performance had not improved to the same degree.

The second phase of the study tested whether giving clinicians printed lists of quality gaps in a patient's care at the time of the patient's visit would improve the quality of care beyond electronic reminders alone. They found that for all 31 physicians who participated in the study from its beginning, 8 of 15 quality measures improved significantly during phase 2, as they had during phase 1. However, performance for four of the measures that improved during phase 1 declined during phase 2.

The median performance on all measures was 94.2 percent at the end of phase 1 and 95.6 percent at the end of phase 2.

Of the eight physicians with the lowest performance at the end of phase 1, six remained among the bottom eight clinicians at the end of phase 2. Adding the paper reminder—given to the physician just before he or she entered the examining room—did not improve the performance of these low-performing physicians. The study

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### Paper previsit reminders

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involved patients seen by physicians at an academic internal medicine practice in Chicago from February 1, 2007, through February 1, 2010. Phase 1 (using EHR-based electronic reminders) began on February 1, 2008, and ended on February 1, 2009, at which time phase 2 (using both electronic and paper reminders) began. The study was funded in part by the Agency for Healthcare Research and Quality (HS17163 and HS15647).

More details are in "The marginal value of pre-visit paper reminders when added to a multifaceted electronic health record based quality improvement system," by David W. Baker, M.D., M.P.H., Stephen D. Persell, M.D., M.P.H., Abel N. Kho, M.D., and others in the November/December 2011 *Journal of the American Informatics Association* 18(6), pp. 805-811. ■ *DIL*

## Clinical decision support systems are effective but research is needed to promote widespread use

Clinical decision support systems (CDSSs) are effective in improving health care process measures across diverse settings, concludes an AHRQ-funded study. However, it found limited evidence on the impact of CDSSs on clinical and economic outcome measures. The study furthers current knowledge by demonstrating the benefits of CDSSs outside of experienced academic centers. The authors call for more research to promote widespread use of CDSSs and to increase the clinical effectiveness of the systems. The study authors assessed health care process measures and clinical outcome measures associated with commercially and locally-developed CDSSs.

Their study expands on an evidence report from AHRQ, *Enabling Health Care Decisionmaking through Health Information Technology (Health IT)*, which discusses features key to successful implementation of CDSSs.

For more details see, "Effect of Clinical Decision-support Systems: A Systematic Review," by T.J. Bright, A. Wong, R. Dhurjati, and others in the April 24, 2012 online issue of the *Annals of Internal Medicine*. ■

## *Acute Care/Hospitalization*

## Use of pulmonary artery catheters provides no patient benefit and increases costs

Close monitoring of fluid status probably improves the outcome of patients sustaining acute lung injury. One way to achieve this is by inserting a catheter into the pulmonary artery to measure the hydrostatic pressure closest to lung tissue. Recent studies suggest that this approach does not improve hospital outcomes, although clinicians like the real-time data it provides. Now, a new study shows that a pulmonary artery catheter (PAC) has no greater advantage over a central venous catheter (CVC) and actually increases hospital costs.

Researchers compared the costs and long-term outcomes of both catheters using hospital billing information and interviews with patients who survived their injuries. They were interviewed at 2, 6, 9 and 12 months to determine how well they were doing, their quality of life (QOL), and what health care resources they were using after being released from the hospital. Final QOL data were analyzed on 210 patients who received a PAC and 219 patients who received a CVC.

Mortality rates increased from 2 months to 1 year, and survival at 1 year was similar for both groups. Among surviving patients, no differences in QOL were observed based on the type of catheter received. However, health care costs up to 1 year were higher for PAC patients ($61.1K) than for CVC

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**Pulmonary artery catheters**
*continued from page 11*

patients ($45.4K). PAC use had a 75.2 percent probability of being more expensive and less effective. PACs incurred an average increased cost of $14.4K while at the same time yielding an average loss of 0.3 quality-adjusted life years. Overall, health care costs after discharge were significantly higher in PAC patients, with the biggest difference observed for rehabilitation costs. Given these current and past findings, the researchers recommend that PAC use should be restricted to patients with suspected pulmonary hypertension. The study was supported in part by the Agency for Healthcare Research and Quality (HS11620).

See "The effect of pulmonary artery catheter use on costs and long-term outcomes of acute lung injury," by Gilles Clermont, M.D., Lan Kong, Ph.D., Lisa A. Weissfeld, Ph.D., and others in *PLoS One* 6(7) e22512, pp. 1-10, 2011. ■ *KB*

## Decision support may aid emergency physicians in interpreting benign from serious eye movement patterns in dizzy patients

Dizziness or vertigo accounts for an estimated 2.6 million visits to U.S. emergency departments (EDs) annually. Patients with these symptoms are a source of angst for ED doctors, who have ranked decision support for dizziness presentations as a top priority. Dizziness can be caused by a variety of factors, most of which are self-limited (e.g., inner ear infections) but some of which can be life-threatening (e.g., ischemic strokes). An involuntary eye movement called nystagmus is a common feature in dizzy patients. Specific patterns of nystagmus are a key element in distinguishing self-limited from life-threatening causes of dizziness, according to specialists in this area.

A new study found that emergency physicians documented a nystagmus assessment in 81.3 percent of 1,091 visits for dizziness and found nystagmus to be present in 185 instances. However, the details of the nystagmus that were documented by emergency physicians allowed a meaningful inference about the cause of dizziness in only 10 cases.

Certain patterns of nystagmus indicate a brain lesion from causes such as stroke, multiple sclerosis, or tumor. Other patterns are highly characteristic of peripheral vestibular dysfunction typically due to inner ear infection (vestibular neuritis) or benign paroxysmal positional vertigo. The researchers found that key details about the nystagmus were usually lacking, and when details were provided, the information typically did not enable a meaningful inference or even conflicted with the diagnosis rendered.

The researchers conclude that nystagmus assessments should be a target in the efforts to support decisionmaking in cases of acute dizziness. This could include online training modules, screen-based simulations, standardized patients, or charting templates. This study was supported in part by the Agency for Healthcare Research and Quality (HS17775).

See "Nystagmus assessments documented by emergency physicians in acute dizziness presentations: A target for decision support?" by Kevin A. Kerber, M.D., Lewis B. Morgenstern, M.D., William J. Meurer, M.D., and others in the 2011 *Academic Emergency Medicine* 18, pp. 619-626. ■ *MWS*

## Risk of venous thromboembolism low for young trauma patients without a central venous catheter

In the absence of a central venous catheter, the risk of venous thromboembolism (VTE) is low in trauma patients who are age 21 or less due to the high risk of VTE in hospitalized adult trauma patients, administration of the anticoagulant heparin as a preventive measure has become the standard of care for this group.

The term, venous thromboembolism, is used for both pulmonary embolism (a sudden blockage in a lung artery) and deep vein thrombosis (a blood clot in the deep veins of the body, most often in the leg). However, due to the relative rarity of VTE, and the possibility of bleeding from medicine to prevent blood coagulation, it is recommended that only the highest risk trauma patients receive anticoagulants. A new study concludes that the risk of VTE in children, adolescents, and young adults who are hospitalized for trauma is low.

Sarah H. O'Brien, M.D., and Sean D. Candrilli, Ph.D., of Nationwide

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**Venous thromboembolism**
*continued from page 12*

Children's Hospital and The Ohio State University College of Medicine, looked at outcomes of 135,032 patients aged 21 or younger in the National Trauma Data Bank, who spent at least one day in a critical care unit during a trauma admission between 2001 and 2005. They found that VTE was uncommon (6 cases per 1,000 discharges).

The major risk factors for VTE for this population are similar to those for adults: a high injury severity score, older age, and the presence of a central venous catheter (CVC). CVC placement especially was a strong risk factor for VTE in critical care adolescent and young adult trauma patients regardless of injury pattern. The risk of VTE in patients without CVC was extremely low even among older adolescents and young adults.

Overall, the results suggest that the presence of CVC is the most important factor in the development of trauma-related VTE, and the importance of this factor increases with patient age. The researchers concluded that in young patients, "major trauma" needs to be more narrowly defined, and that VTE prophylaxis is to be considered only in critically injured adolescents and young adults with a continuing need for central venous access. This study was supported in part by the Agency for Healthcare Research and Quality (HS17344).

See "In the absence of a central venous catheter, risk of venous thromboembolism is low in critically injured children, adolescents, and young adults: Evidence from the National Trauma Data Bank" by Drs. O'Brien and Candrilli, in *Pediatric Critical Care Medicine* 12(3), pp. 251-256, 2011. ■ *MWS*

## Child/Adolescent Health

## Japanese cultural beliefs linked to increased female infant mortality in 1966, the year of the fire horse

According to Japanese legend, females born in the year of the fire horse, which last occurred in 1966, have a fiery temper and strong will. Parents view these traits as reducing girls' desirability as marriage partners and bearers of grandchildren. The Japanese cultural aversion to "fire-horse women" may reduce parental investment, thus jeopardizing the health of females born in 1966, suggests a new study. "Parental investment" is defined as any expenditure by parents on an individual offspring that reduces their potential to invest in other present and future offspring. The study of Japanese infant mortality data from 1947 to 1976 found that the female infant mortality rate in 1966 was 1.1 deaths per 1,000 live births higher than anticipated. There were 721 excess female infant deaths statistically attributable to the fire-horse year.

Unlike China and many Asian societies, Japan has no apparent cultural preference for male births. It also has one of the lowest infant mortality rates (2.6 deaths per 1,000 live births) in the world. The researchers conclude that, despite the relatively strong governmental involvement and secular improvements in Japanese health and welfare during the post-World War II era, cultural forces in 1966 appear to have reduced parental investment sufficiently enough to increase female infant mortality.

They predict that any burst of public health initiatives for the next fire-horse year (2026) would aim to counteract these cultural forces. This study was supported by the Agency for Healthcare Research and Quality (T32 HS00086).

See "Transient cultural influences on infant mortality: Fire-horse daughters in Japan" by Tim A. Bruckner, Ph.D., Meenakshi Subbaraman, Ph.D., and Ralph A. Catalano, Ph.D., M.R.P., in the *American Journal of Human Biology* 23, pp. 583-591, 2011. ■ *MWS*

## No evidence of serious cardiovascular events in children and young adults using medications for ADHD

Despite some reports of adverse events, including sudden death, heart attack, and stroke among children and young adults who were prescribed medications to treat attention deficit-hyperactivity disorder (ADHD), a new study finds no evidence that current use of an ADHD drug was associated with an increased risk of serious cardiovascular events. These medications, used by more than 2.7 million children in the United States, have been considered to be relatively safe.

The 1,200,438 children and young adults included in the study were from four geographically diverse health plans with more than 2.5 million person-years of follow-up. In this group, there were 81 serious cardiovascular events, including 33 sudden cardiac deaths, 9 heart attacks, and 39 strokes. The overall incidence of serious cardiovascular events was 3.1 per 100,000 person years. Factors associated with these events included older age, current use of an antipsychotic drug, a major psychiatric illness, a serious cardiovascular condition, and chronic illness. This study was funded by the Agency for Healthcare Research and Quality (Contract No. 290-05-0042).

See "ADHD drugs and serious cardiovascular events in children and young adults" by William O. Cooper, M.D., Laurel A. Habel, Ph.D., Colin M. Sox, M.D., and others in the November 17, 2011 *New England Journal of Medicine* 365(20), pp. 1896-1904. ■ *MWS*

***Comparative Effectiveness Research***

## Evidence lacking on effectiveness of antipsychotics for children

A new research review from the Agency for Healthcare Research and Quality (AHRQ) finds that there is little evidence that directly compares the effectiveness or safety of first- and second-generation antipsychotics among children, adolescents, and young adults. Mental health problems affect one in every five young people at any given time, and use of antipsychotics for children and adolescents has increased during the past 20 years.

The comprehensive synthesis of the evidence on the comparative effectiveness of antipsychotics for the treatment of various psychiatric and behavioral conditions found that for the majority of outcomes, data on the relative effectiveness of treatments were sparse and precluded drawing firm conclusions. First- and second-generation antipsychotics were generally found to be superior to placebo on symptom improvement and other efficacy outcomes.

Future high-quality research examining head-to-head antipsychotic comparisons is needed in order to determine the relative effectiveness and safety among various antipsychotics in children, adolescents, and young adults. To that end, this research review is accompanied by a Future Research Needs paper intended to be used by researchers and funders of research to help improve the body of comparative effectiveness evidence that would be useful for decisionmakers.

This review, *First- and Second-Generation Antipsychotics for Children and Young Adults*, and many other evidence-based decisionmaking resources are available on AHRQ's Effective Health Care program Web site at www.effectivehealthcare.ahrq.gov. ■

## Supplemental phenylketonuria therapies may help some

Evidence supports lifelong dietary management of Phenylketonuria (PKU) concludes a new research review from the Effective Health Care Program of the Agency for Healthcare Research and Quality (AHRQ). The report confirms that PKU is a rare metabolic disorder that, if uncontrolled, leads to a toxic buildup of the amino acid phenylalanine (Phe) in the blood. This results in intellectual disability, delayed speech, seizures, and behavioral abnormalities. PKU strikes approximately 1 in 13,500 to 19,000 newborns in the United States.

Standard treatment for PKU is a lifelong diet that restricts intake of Phe to control Phe levels in the blood. The review supports the commonly used blood Phe target of 120 to 360 µmol/L. However, two adjuvant treatments intended to control blood Phe concentrations, sapropterin dihydrochloride (BH4), and large neutral amino acids (LNAAs), have the potential to help patients manage their PKU and possibly eat a less stringent diet.

The review found that the supplemental therapy BH4 is effective in reducing levels of Phe in some patients. However, the long-term effects of BH4 are still unknown, though reported harms were few. Evidence is still lacking on the effectiveness of LNAAs as an adjuvant treatment option for reducing Phe levels or increasing Phe tolerance.

*Adjuvant Treatment for Phenylketonuria (PKU)* summarizes evidence on the effectiveness of adjuvant therapies in individuals with PKU, including pregnant women, in reducing Phe levels in the blood and supporting mental and physical functions and quality of life. The review suggests additional research is needed to investigate the effectiveness of these treatments in a variety of patient populations. To access this review and other materials that explore the effectiveness and risks of treatment options for various conditions, visit AHRQ's Effective Health Care Program Web site at www.effectivehealthcare.ahrq.gov. ■

## Effectiveness of noninvasive diagnostic tests for breast abnormalities depends on woman's history

For noninvasive imaging tests to be useful for evaluating suspected breast abnormalities, a woman must have been previously identified as having a lower risk for breast cancer. In these cases, using noninvasive imaging in addition to standard examination and diagnostic tests may be useful for determining treatment options. However, usefulness is dependent on a clinician's ability to accurately identify women's risk of breast cancer, and such a precise estimate may not be possible. Those are the conclusions of a recent update of a 2006 Effective Health Care Program review by the Agency for Healthcare Research and Quality (AHRQ).

Breast cancer is one of the most common diseases among women, with approximately 200,000 new cases every year in the United States. Screening using mammography can detect abnormalities in the breast, but further imaging or testing is usually needed to determine whether an abnormality is cancerous. Currently, significant numbers of healthy women undergo surgical biopsies based on these screenings. Noninvasive imaging of the breast may be useful in helping women at lower risk for cancer (less than 12 percent)—based on factors such as age, family history, and mammogram results—avoid unnecessary diagnostic surgeries.

This updated report included expanded evidence on emerging imaging technologies and concluded that diagnostic B-mode grayscale ultrasound and MRI appear to more accurate than PET, scintimammography, or Doppler ultrasound for breast cancer imaging. To access the review, *Noninvasive Diagnostic Tests for Breast Abnormalities: Update of a 2006 Review*, and other AHRQ products visit www.effectivehealthcare.ahrq.gov. ■

## Limited evidence prevents firm conclusions on psoriatic arthritis drug therapies

A newly updated research review from the Agency for Healthcare Research and Quality reinforces the current standards of care for drug therapies used to treat psoriatic arthritis (PsA). The review found that there is minimal evidence to compare the effectiveness among and between oral and biologic disease-modifying antirheumatic drugs (DMARDs). Limited evidence does support the efficacy of biologic DMARDs (adalimumab, etanercept, golimumab, and infliximab) for the treatment of PsA. However, evidence is insufficient to draw firm conclusions about the effectiveness, functional status, health-related quality of life, or tolerability of DMARDs for treating PsA.

PsA, which affects less than 1 percent of Americans (approximately 520,000), is one of the most disabling forms of arthritis, and it is associated with the skin disease psoriasis. Symptoms of PsA vary and generally include joint pain and inflammation and progressive joint involvement and damage. Based on 1997 estimates for psoriasis and PsA, annual direct costs are approximately $650 million. Direct costs associated with PsA only are unknown. Patients with arthritis experience decreased quality of life, declining employment rates, and increased direct and indirect costs for care.

These findings can be found in the PsA review *Drug Therapy for Psoriatic Arthritis in Adults: Update of a 2007 Report*. The review adds to AHRQ's growing library of resources for arthritis, one of AHRQ's priority topics. To access this review and other materials from AHRQ's Effective Health Care Program that explore the effectiveness and risks of treatment options for various conditions, visit the Effective Health Care Program Web site at www.effectivehealthcare.ahrq.gov ■

## Glaucoma treatments can lower eye pressure

Treatments for glaucoma—including medication, laser treatment, and surgery—can lower eye pressure, according to a new research review from the Agency for Healthcare Research and Quality (AHRQ). It also finds that trabeculectomy, a common surgery for glaucoma, appears to be superior to other types of treatment, such as laser trabeculoplasty and medications to decrease eye pressure. However, compared to medications, surgery has more risk for complications. The risks related to medication use, most commonly eye irritation, do not cause vision loss. However, potential complications from surgery, such as cataract formation, can result in vision loss.

A second research review summarizes evidence linking glaucoma screening to health outcomes. It finds that there is insufficient evidence to address whether glaucoma screening is effective in improving vision-related outcomes and that more research is needed to address the association between screening and quality-of-life outcomes.

Glaucoma is a leading cause of blindness, affecting over 60 million people worldwide. Open-angle glaucoma, the most common subtype of the disease, affects over 2.5 million people in the United States, with a prevalence of 4.6 percent, and 1.6 percent, among black and white people, respectively. In most cases, glaucoma is caused by increased pressure in the eye, which results in damage to the optic nerve. Glaucoma is an asymptomatic disease that most patients do not notice until the onset of severe vision loss. There is no single test to identify people with glaucoma, which limits the establishment of preventive screening programs.

To view *Screening for Glaucoma: Comparative Effectiveness or Treatment for Glaucoma: Comparative Effectiveness* and other materials that explore the effectiveness and risks of treatment options for various conditions, visit AHRQ's Effective Health Care Program Web site at www.effectivehealthcare.ahrq.gov. ■

## Risks high for elderly patients receiving angioplasty to fix narrowed heart artery

Adverse events are common in patients 65 and older who undergo percutaneous coronary intervention (PCI), or angioplasty, to treat the narrowed unprotected left main coronary artery, according to new research from the Agency for Healthcare Research and Quality (AHRQ). PCI is used to treat less than 5 percent of patients with unprotected left main coronary artery stenosis (ULMCA). The treatment typically is reserved for those who are at high risk for coronary artery bypass graft surgery or in high-urgency situations where survival outcomes are poor. Elderly patients represent 72.6 percent of patients who receive the PCI treatment for ULMCA stenosis.

Trend data, however, indicates that the use of this procedure is slowly increasing, and is being used more often for lower-urgency procedures. Poor health outcomes in elderly ULMCA patients are common and are likely influenced by both patient and procedural factors, including the type of stent used. The study showed 40 percent of elderly patients die within the first three years of followup after the procedure. Researchers concluded that clinical trials are needed to examine the safety and effectiveness of angioplasty in patients with ULMCA disease, with attention to best practices and the generalizability of trial populations. The study was supported by AHRQ (Contract No. 290-05-0032).

More details are in "Characteristics and long-term outcomes of percutaneous revascularization of unprotected left main coronary artery stenosis in the United States," by J. Matthew Brennan, M.D., M.P.H., David Dai, Ph.D., Manesh R. Patel, M.D., and others in the February 14, 2012 issue of the *Journal of the American College of Cardiology* 59(7), pp. 648-654. ■ *KB*

## Several risk factors point to the use of high-risk medications in older veterans

Certain medications are not appropriate for the elderly and may cause more harm than good. These include certain antihistamines, analgesics, muscle relaxants, psychotropics, and cardiac medications. A list of these medications has been established by the National Committee on Quality Assurance to be used as a benchmark by Medicare and other managed care plans. Although use of these high-risk medications showed a modest decline between 2003 and 2006, some medications rose in usage.

The researchers retrospectively looked at medication use by 1,567,467 veterans 65 years of age and older, who received care from 2003 to 2006 from outpatient clinics run by the Department of Veterans Affairs (VA). The veterans' exposure to these high-risk medications decreased from 13.1 percent in 2004 to 12.3 percent in 2006. Significant reductions were found for opioid pain relievers, muscle relaxants, psychotropics, endocrine medications, cardiac drugs, and vasodilator medications.

However, relative increases were discovered for amphetamines (10.3 percent) and ketorolac (8.0 percent), a nonsteroidal anti-inflammatory drug (NSAID). A statistically significant increase in exposure was also found for the antibiotic nitrofurantoin (36.5 percent). Patients more likely to be exposed to these high-risk medications were female, Hispanic, took a higher number of medications, had a coexisting psychiatric problem, and had a high use of primary care. The study was supported in part by the Agency for Healthcare Research and Quality (HS17695).

See "Trends in use of high-risk medications for older veterans: 2004 to 2006," by Mary Jo V. Pugh, Ph.D., Joseph T. Hanlon, Pharm.D., M.S., Chen-Pin Wang, Ph.D., and others in the October 2011 *Journal of the American Geriatrics Society* 59(10), pp. 1891-1898. ■ *KB*

## Drug industry-sponsored patient assistance programs are seldom used by older adults

Despite expanded drug coverage under Medicare Part D, gaps resulting in out-of-pocket expenses remain. This may force some seniors to ration their prescriptions, seek out free samples from their physicians, and enroll in industry-sponsored patient assistance programs (PAPs). A new study found that while seniors take advantage of free samples, they do not take advantage of PAPs, which are strongly linked to doctor-patient communication about them.

The study analyzed data from a 2006 survey of a diverse group of 14,322 Medicare beneficiaries 65 years of age and older living in the community. In the survey, each senior was asked if they received free samples or participated in a PAP. They were also asked a number of questions dealing with doctor-patient communication, for example, how often they discussed drug costs with their physicians and if they had admitted to not filling a prescription due to cost issues.

Just over half (51.4 percent) of all seniors in the study group reported receiving at least one free sample in the last 12 months. Nearly 30 percent obtained samples more than once. Seniors with a regular doctor were more likely to report receiving free samples. In fact, seniors who discussed costs with their doctor had twice the odds of receiving free samples compared with patients who did not. Reported participation in a PAP, however, was dramatically low at only 1.3 percent. Those most likely to participate in a PAP had low incomes, lacked insurance coverage, and had less than a high school education. As with free drug samples, seniors who talked with their doctor about drug costs were more likely to use PAPs than those who did not. The study was supported in part by the Agency for Healthcare Research and Quality (HS17695).

See "Use of prescription drug samples and patient assistance programs, and the role of doctor-patient communication," by Walid F. Gellad, M.D., M.P.H., Haiden A. Huskamp, Ph.D., Angela Li, M.P.H., and others in the *Journal of General Internal Medicine* 26(12), pp. 1458-1464, 2011. ■ *KB*

## Study of Medicare beneficiaries validates Medical Expenditure Panel Survey's prescription drug data

Data on prescription drugs in AHRQ's Medical Expenditure Panel Survey (MEPS) is reasonably accurate compared with insurance claims data, at least for MEPS participants with Medicare Part D coverage for medications. That's the conclusion of a study by researchers at the Agency for Healthcare Research and Quality (AHRQ). This study follows earlier ones that found that data from MEPS respondents on inpatient hospital stays were generally accurate, though reports of ambulatory services were underreported.

In this study, Steven C. Hill, Ph.D., Samuel H. Zuvekas, Ph.D., and Marc W. Zodet, M.S., found that MEPS survey participants tended to underreport the number of different drugs taken, but overreport the number of times each drug was filled. Because the drug underreporting cut across most sociodemographic groups, they believe it does not affect our understanding of the behavioral determinants of medication use and expenditures.

The researchers matched Medicare beneficiaries in the MEPS sample after Medicare Part D began (2006 and 2007) to Medicare administrative data. For each beneficiary, the researchers examined the number of distinct drugs, number of drug prescription fills, total expenditures, and third-party payments.

More details are in "Implications of the accuracy of MEPS prescription drug data for health services research," by Dr. Hill, Dr. Zuvekas, and Mr. Zodet, in the Fall 2011 *Inquiry* 48(3), pp. 242-259. Reprints (Publication No. 12-R026) are available from AHRQ.* ■ *DIL*

## Patients recovering from stroke tend to continue using secondary preventive medications

Nearly 800,000 patients suffer from ischemic strokes in the United States each year. They are currently treated with several different types of medicines (antiplatelet agents, anticoagulants such as warfarin, antihypertension drugs, lipid-lowering medications, and medications for diabetes) to reduce their risk of future strokes. Two studies supported by the Agency for Healthcare Research and Quality (HS16964) found that discontinuation of these medications is uncommon, with no difference among rural and urban residents.

Both studies used the AVAIL (Adherence eValuation After Ischemic stroke-Longitudinal) national patient registry to examine adherence to these stroke-prevention medications nationally and among rural residents. The registry included patients enrolled from July 2006 through July 2008 at 101 hospitals that were participants in the American Heart Association's Get With The Guidelines–Stroke Program. The patients or their proxies (a family member or caregiver) were interviewed at 3 months and 12 months after hospital discharge. The studies are briefly described here.

**Bushnell, C.D., Olson, D.M., Zhao, X., and others. (2011). "Secondary preventive medication persistence and adherence 1 year after stroke."** ***Neurology*** **77(12), pp. 1182-1190.**
The researchers enrolled 2,880 patients from 101 sites, which resulted in a study population of 2,457 patients followed for 12 months. At 12 months, 65.6 percent of the patients persistently took their prescribed medications. Factors associated with regimen persistence included a history of high blood pressure or high blood-lipid levels, fewer medicines prescribed at discharge, having adequate income, and having a followup appointment with a primary care provider. By drug class, the highest 12-month persistence was for antihypertensive medications (87.9 percent), followed by antiplatelet (87.1 percent), diabetes (82.3 percent), and lipid-lowering medications (77.6 percent). Factors associated with adherence, but not persistence, included use of a pillbox, medication insurance, having received medication instructions, being married, and being discharged to home.

**Rodriguez, D., Cox, M., Zimmer, L.O., and others. (2011). "Similar secondary stroke prevention and medication persistence rates among rural and urban patients."** ***The Journal of Rural Health*** **27(4), pp. 401-408.**
The AVAIL investigators analyzed the impact of being a rural or urban resident on persistence and adherence to taking medications to prevent another stroke, because rural residents are known to be less likely to receive optimal care or have good outcomes for serious conditions. There was essentially no difference between the two groups regarding the type of stroke they suffered. Although rural patients were less likely than urban patients (73.0 vs. 77.8 percent) to be given antihypertensive medication at discharge, they were just as likely to show 12-month regimen or drug-class persistence.

The 426 rural patients (ZIP code not part of a metropolitan statistical area) were slightly younger (median age 66 versus 67 years), and were more likely to be white, married, and smokers than the 2,294 urban patients. Rural patients were also less likely to be college graduates (35.2 vs. 43.4 percent). Most rural patients received care at urban hospitals, but they were more likely to be admitted to a smaller hospital and hospitals that treated fewer stroke patients annually. ■ *DIL*

## Inmates remain at risk for HIV and HCV after release from prison

Reentry into society after serving time in prison is no easy task. Former inmates must deal with finding housing, employment, and health care, plus re-establish a social support network. Such challenges may put them at increased risk for acquiring HIV and hepatitis C virus (HCV) infection, suggests a new study. It found that in their post-release period, these individuals had several risk factors for HIV and HCV infection, such as unprotected sex, sex for pay, and drug use. If they already had HIV or HCV infection, these former inmates faced barriers to getting the care and medications they needed.

The researchers interviewed 20 male and 9 female former inmates 18 years of age and older. The average age was 39. All were recruited for this study within 2 months of release from prison. Open-ended questions were used to determine their current drug and alcohol use, safety and health threats, engagement in unprotected sex, and health-care-related issues. Although no one was asked about their HIV or HCV status, seven individuals admitted to having HCV and one to having HIV.

It was common for the former inmates to report about their risky behaviors, such as alcohol and drug abuse, unprotected sex, and injection drug use. Many engaged in such behaviors in the first few days upon release, including engaging in sex for money. There were a number of misconceptions about HIV and HCV expressed by the participants, such as being protected if your partner is on birth control.

Finally, the participants shared numerous challenges when it came to reducing risks, accessing health care, and obtaining necessary medications. These included long wait times, the lack of health insurance, and access to condoms and clean needles. The study authors call for additional prevention efforts and improved coordination to help newly released prisoners prevent HIV and HCV infection and obtain much-needed health care services. The study was supported in part by the Agency for Healthcare Research and Quality (HS19464).

See "HIV risk after release from prison: a qualitative study of former inmates," by Jennifer Adams, M.D., Carolyn Nowels, M.S.P.H., Karen Corsi, Sc.D., M.P.H., and others in the *Journal of Acquired Immune Deficiency Syndrome* 57(5), pp. 429-434, 2011. ■ *KB*

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## Men more likely to be readmitted to hospital after discharge

Men are more likely than women to be readmitted to the hospital within a month after being discharged, according to a new study funded by the Agency for Healthcare Research and Quality (AHRQ). The Boston University School of Medicine researchers found that the risk for returning to the hospital within 30 days is higher among men who are retired, unmarried, screen positive for depression, or don't visit a primary care physician for followup after their hospitalization.

Returning to the hospital within 30 days following discharge occurs frequently and is often linked to complications and longer recovery times. Nearly one in five Medicare patients returned to the hospital within 30 days after discharge from 2003 to 2004 at an estimated yearly cost of $17.4 billion, a 2009 study concluded. Previous research by the Boston University School of Medicine team found that hospital staff could lower the incidence of hospital readmission by 30 percent through specific, coordinated efforts. One approach included providing clear instructions to patients about what they need to do once they leave the hospital and following up with patients after discharge.

In the new study, the only risk factor that predicted whether men and women were likely to be readmitted to the hospital within 30 days was whether they had been hospitalized in the previous 6 months. The article was published in the online open *British Medical Journal* at http://bmjopen.bmj.com/content/2/2/e000428.full.pdf+html. ■



## AHRQ seeks comments on a proposed children's health care quality measures project

The Agency for Healthcare Research and Quality (AHRQ) is soliciting comments on the Agency's intent to request that the Office of Management and Budget approve a project to collect information related to children's health care quality measures. The goal of the Children's Health Insurance Program Reauthorization Act Pediatric Quality Measures Program candidate measure submission form project is to solicit comments on a proposed template for collecting information on the reliability, validity, feasibility, comprehensibility, and other attributes of children's health care quality measures.

AHRQ, in collaboration with the Center for Medicare & Medicaid Services, intends to use the information provided through the standardized data collection form to support review of measures by a subcommittee of AHRQ's National Advisory Committee on Healthcare Research and Quality. These measures will be nominated by the public or developed by the seven Centers of Excellence for potential inclusion in the CHIPRA improved core measure set or for other related purposes. Comments must be received by June 18. You can read the April 18 *Federal Register* notice at www.gpo.gov/fdsys/pkg/FR-2012-04-18/html/2012-9105.htm. ■

**Akincigil, A., Wilson, I.B., Walkup, J.T., and others. (2011). "Antidepressant treatment and adherence to antiretroviral medications among privately insured persons with HIV/AIDS." (AHRQ grant HS16097). *AIDS Behavior* 15, pp. 1819-1828.**
For individuals living with HIV/AIDS, being depressed may have dire consequences if it results in nonadherence to HIV medications and subsequent disease progression. In fact, this study reveals that individuals receiving treatment for depression are more likely to be compliant with their HIV medication regimens than those whose depression is untreated.

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**Alexander, E.L., Morgan, D.J., Kesh, S., and others. (2011). "Prevalence, persistence, and microbiology of *Staphylococcus aureus* nasal carriage among hemodialysis outpatients at a major New York hospital." (AHRQ grant HS18111). *Diagnostic Microbiology and Infectious Disease* 70, pp. 37-44.**
Having *Staphylococcus aureus* present in the nose is a major risk factor for more invasive infection, as well as the spread of the bacteria from one person to another. The purpose of this study was to determine the factors related to *S. aureus* nasal colonization in hemodialysis patients. The researchers found that nasal carriage in dialysis patients was both limited and transient. However, having HIV infection was associated with persistent nasal colonization.

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**Anderson, K.M., Owens, D.K., and Paltiel, A.D. (2011). "Scaling up circumcision programs in southern Africa: The potential impact of gender disparities and changes in condom use behaviors on heterosexual HIV transmission." (AHRQ grant HS17589). *AIDS Behavior* 15, pp. 938-948.**
This study found that even a modest increase in the rates of circumcision in southern Africa can have considerable impact on reducing heterosexual transmission of HIV to the man when the female partner is HIV-positive. For their study, researchers developed a dynamic model for HIV transmission and disease progression. Their model incorporated various characteristics of the HIV epidemic in Africa to include heterosexual transmission, limited knowledge of one's HIV status, and gender differences regarding sexual risk.

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**Bahensky, J.A., Wood, M.M., Nyarko, K., and Li, P. (2011). "HIT implementation in critical access hospitals: Extent of implementation and business strategies supporting IT use." (AHRQ grant HS15009). *Journal of Medical Systems* 35, pp. 599-607.**
Small rural hospitals classified as critical access hospitals (CAHs) have basic business and communication systems operations. However, most CAHs are just beginning to plan for and begin implementation of complex clinical information systems, concludes this study. The survey of 70 rural CAHs in Iowa on their use of health information technology (IT) found that 34 percent of the hospitals did not employ any IT staff and half only employed one or two IT staff.

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**Bayliss, E.A., Blatchford, P.J., Newcomer, S.R., and others. (2011, June). "The effect of incident cancer, depression and pulmonary disease exacerbations on type 2 diabetes control." (AHRQ grants HS17627, HS15476). *Journal of General Internal Medicine* 26(6), pp. 575-581.**
Little is known about how the development of a new health condition affects management of existing conditions over time. This study finds that diabetes control in patients with type 2 diabetes does not appear to be affected by newly developed coexisting conditions such as cancer, depression, or worsened pulmonary disease. One possible explanation is that the stability of the diabetes control outcomes in these patients represents well-established patient self-care behaviors.

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**Borden, W.B., Redberg, R.F., Mushlin, A.I., and others. (2011). "Patterns and intensity of medical therapy in patients undergoing percutaneous coronary intervention." (AHRQ**

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**grant HS16075). *Journal of the American Medical Association* 305(18), pp. 1882-1889.**
Less than half of patients with stable coronary artery disease, who undergo coronary angiography, receive optimal medical therapy (OMT) before the procedure, despite guideline recommendations to maximize OMT before the procedure. Even after publication of the widely publicized 2007 Clinical Outcomes Utilizing Revascularization and Aggressive Drug Evaluation (COURAGE) trial, which showed that a trial of OMT is warranted before percutaneous coronary intervention, practice changed little, according to this study.

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**Boult, C., Reider, L., Leff, B., and others. (2011). "The effect of guided care teams on the use of health services." (AHRQ grant HS14580). *Archives of Internal Medicine* 171(5), pp. 460-466.**
A new model of interdisciplinary primary care called "guided care" has been developed to address the problem of older Americans with multiple chronic conditions, who frequently fail to receive high-quality, cost-effective, well-coordinated health care. The guided care team that includes a specially trained registered nurse, two to five physicians, and members of a primary care office staff provides a comprehensive geriatric assessment, evidence-based planning, case management, transitional care, patient self-management advice, and caregiver support. The only significant impact of this guided care model was a 29.7 percent reduction in the use of home health care services, concludes this study.

**Boyarsky, B.J., Hall, E.C., Singer, A.L., and others. (2011). "Estimating the potential pool of HIV-infected deceased organ donors in the United States." (AHRQ Contract No. 290-01-0012). *American Journal of Transplantation* 11(6), pp. 1209-1217.**
The National Organ Transplant Act of 1984 prohibits the use of organs from deceased donors with HIV/AIDS. Recent studies have shown excellent outcomes in carefully selected HIV-infected recipients of donor kidneys and livers, suggesting that HIV infection is no longer considered an absolute contraindication to solid organ transplantation. Reversal of the legal prohibition could provide roughly 500 patients living with HIV/AIDS with kidney or liver transplants each year, concludes a new study.

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**Brouwer, E.S., Napravnik, S., Smiley, S.G., and others. (2011). "Self-report of current and prior antiretroviral drug use in comparison to the medical record among HIV-infected patients receiving primary HIV care." (AHRQ grant HS18731). *Pharmocoepidemiology and Drug Safety* 20, pp. 432-439.**
Critical to effectively managing HIV infection is knowing what antiretroviral drugs (ARVs) a person has taken since the beginning of their infection. Asking patients to reconstruct this drug history, however, may not be the best approach, concludes a new study. It found that most patients find it difficult to recount all of their previous ARVs and some can't even recall ARVs they are currently taking.

**Cameron, K.A., Persell, S.D., Brown, T., and others. (2011). "Patient outreach to promote colorectal cancer screening among patients with an expired order for colonoscopy." (AHRQ grant HS17163). *Archives of Internal Medicine* 171(7), pp. 642-646.**
Colorectal cancer is the second leading cause of cancer death in the United States. Yet 40 to 50 percent of the 90 million Americans who could benefit from colorectal cancer screening have not been screened. Reminders and followup to patients referred for colonoscopies, but who had not had the procedure 3 months later, can improve screening rates, suggests this study.

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**Carr, B.G., Reilly, P.M., Schwab, C.W., and others. (2011). "Weekend and night outcomes in a statewide trauma system. (AHRQ grant HS17960). *Archives of Surgery* 146(7), pp. 810-817.**
Contrary to findings for patients admitted to emergency departments (EDs), injured patients admitted to trauma centers on the weekend are less likely to die than those admitted during weekdays, according to a new study. Previous studies of patients treated in EDs found that there was a "weekend effect," in which being seen for emergency care on a weekend or at night was associated with a higher risk of poor outcomes.

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**Cevasco, M., Borzecki, A.M., Chen, Q., and others. (2011). "Positive predictive value of the AHRQ Patient Safety Indicator 'Postoperative Sepsis': Implications for practice and policy." (AHRQ Contract No.**

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**290-04-0020). *Journal of the American College of Surgery*, 212(6), pp. 962-967.**
Researchers performed medical record reviews for events that Patient Safety Indicator 13 (PSI 13), postoperative sepsis, flagged at Veterans Administration and nonfederal hospitals. They found that PSI 13 was not effective in identifying postoperative sepsis cases. As a result, the authors assert PSI 13 is not ready to be used in safety profiling, public reporting, and pay-for-performance measures.

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**Chang, J.C., Cluss, P.A., Burke, J.G., and others. (2011). "Partner violence screening in mental health." (AHRQ grant HS13913). *General Hospital Psychiatry* 33, pp. 58-65.**
Intimate partner violence is prevalent among women and men receiving mental health services, but less than half of them are asked about intimate partner violence by their clinician, found this study. A total of 270 women and 158 men participated in the study. Among the participants, 38 percent disclosed having experienced physical abuse from a romantic partner.

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**Cook, N.L., Orav, E.J., Liang, C.L., and others. (2011). "Racial and gender disparities in implantable cardioverter-defibrillator placement: Are they due to overuse or underuse?" (AHRQ grant T32 HS00020). *Medical Care Research and Review* 68, pp. 226-246.**
Implantable cardioverter-defibrillators (ICDs) are a relatively new technology with evolving placement criteria. A new study suggests overuse of ICDs in men and whites who are not clinically appropriate for the device and underuse among clinically appropriate blacks and women. This has led to disparities in ICD placement for cardiac arrhythmias.

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**Debbink, M.P., and Bader, M.D.M. (2011, September). "Racial residential segregation and low birth weight in Michigan's metropolitan areas." (AHRQ grant T32 HS00053). *American Journal of Public Health* 101(9), pp. 1714-1720.**
Women living in black segregated urban neighborhoods in Michigan are more than twice as likely as women living in white nonsegregated neighborhoods to give birth to a low birth weight baby, according to a new study. These differences persisted after controlling for measures of economic well-being, such as concentrated poverty, percent of vacant buildings, and percent of college-educated women. Complications related to premature birth and low birth weight are the leading causes of death in non-Hispanic black infants.

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**Diggs, N.G., Holub, J.L., Lieberman, D.A., and others. (2011). "Factors that contribute to blood loss in patients with colonic angiodysplasia from a population-based study." (AHRQ grant HS14062). *Clinical Gastroenterology and Hepatology* 9, pp. 415-420.**
Angiodysplasia is a condition where small, vascular malformations develop on the wall of the large intestine. Patients suffering from angiodysplasia experience gastrointestinal bleeding and anemia. The study found a variety of predictors for blood loss including being black or Hispanic, hospitalization, being older than 80 years, having a severe coexisting illness, and the discovery of 2 to 10 or more lesions.

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**Dintzis, S.M., Stetsenko, G.Y., Sitlani, C.M., and others. (2011). "Communicating pathology and laboratory errors. Anatomic pathologists' and laboratory medical directors' attitudes and experiences." (AHRQ grant HS16506). *American Journal of Clinical Pathology* 135, pp. 760-765.**
Pathologists and laboratory medical directors face unique challenges related to error reporting and disclosure, because they traditionally have no prior relationship with the affected patient. This survey found that the vast majority of those surveyed reported having been involved with a medical error and almost all believed that serious errors should be disclosed to patients. However, many expressed discomfort with their communication skills in regard to error disclosure.

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**Finks, J.F., Kole, K.L., Yenumula, P.R., and others. (2011, October). "Predicting risk for serious complications with bariatric surgery: Results from the Michigan Bariatric Surgery Collaborative," (AHRQ grant HS18050). *Annals of Surgery* 254(4), pp. 633-640.**
Predicting which patients may experience complications after bariatric surgery would have tremendous benefit to the surgeon and the patient. Recently, researchers analyzed bariatric

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surgery data to determine which risk factors are associated with serious complications after bariatric surgery. The study resulted in the development of a risk calculator that can be used before surgery to identify patients at risk for complications.

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**Holman, R.C., Folkema, A.M., Singleton, R.J., and others. (2011, July/August). "Disparities in infectious disease hospitalizations for American Indian/Alaska Native people." (AHRQ grant HS17258). *Public Health Reports* 126, pp. 508-521.**

Hospitalizations for infectious diseases (ID) among American Indian/Alaska Native (AI/AN) people still loom larger for them than for the general population of the United States. From 2004–2006, hospitalizations for ID accounted for 22 percent of all hospitalizations among AI/AN people, compared with 14 percent of hospitalizations for the general U.S. population. Infections of the lower respiratory tract; skin and soft tissue infections; and kidney, urinary tract, and bladder infections contributed the most to these health disparities.

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**Hu, C-Y., Delclos, G.L., Chan, W., and others. (2011). "Post-treatment surveillance in a large cohort of patients with colon cancer." (AHRQ grant HS16743). *The American Journal of Managed Care* 17(5), pp. 329-336.**

Most patients who have been treated for local or regional colon cancer (stages I-III) generally follow their clinician's recommendations on scheduling followup office visits (83.9 percent) and colonoscopies (74.3 percent). However, only a minority (29.4 percent) of the 7,348 patients in the study follow the recommended schedule for carcinoembryonic antigen (CEA) tests, a potential cancer marker in the blood.

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**Hysong, S.J., Sawhney, M.K., Wilson, L., and others. (2011). "Understanding the management of electronic test result notifications in the outpatient setting." (AHRQ grant T32 HS17586). *BMC Medical Informatics and Decision Making* 11, p. 22.**

Previous studies have found a significant number of instances where abnormal test results reported through the electronic health record lacked timely followup. Participants were asked to discuss barriers and facilitators to successful management and followup of abnormal test result alerts and provide suggestions for improvement. The most frequently raised barrier was the number of alerts received by providers.

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**Jena, A.B., and Goldman, D.P. (2010). "Growing Internet use may help explain the rise in prescription drug abuse in the United States." (AHRQ grant T32 HS00046). *Health Affairs* 30(6), pp. 1192-1199.**

While some Internet-based pharmacies are legitimate or extensions of brick-and-mortar stores, other sites may promote the purchase of prescription medications without physician approval. A new study finds a direct correlation between the increased use of these Internet sites and rising levels of admission to treatment facilities for prescription drug abuse. Specifically, for every 10 percent increase in Internet use, admissions rise by 1 percent.

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**Kociol, R.D., Greiner, M.A., Fonarow, G.C., and others. (2011, October). "Association of patient demographic characteristics and regional physician density with early physician follow-up among Medicare beneficiaries hospitalized with heart failure." (HS16964). *American Journal of Cardiology* 108(7), pp. 985-991.**

Medicare beneficiaries hospitalized for heart failure are more likely to have early followup by a physician if they live in a region with a higher concentration of physicians, according to this study. In contrast, patients who are female, black, live in rural areas, or of low socioeconomic status are less likely to have early followup after discharge.

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**Kozhimannil, K.B., Trinacty, C.M., Busch, A.B., and others. (2011). "Racial and ethnic disparities in postpartum depression care among low-income women." (AHRQ grant HS18072). *Psychiatric Services* 62(6), pp. 619-625.**

Black and Hispanic women who gave birth while insured by Medicaid are about half as likely to begin mental health treatment for postpartum depression as are Medicaid-insured white women, a new study finds. Of the 29,601 low-income, Medicaid-insured mothers studied, a higher percentage of white women (9 percent) began antidepressant drug therapy or use of outpatient mental

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health services within 6 months after delivery than did black women (4 percent) or Hispanic women (5 percent).

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**LeMasters, T., and Sambamoorthi, U. (2011). "A national study of out-of-pocket expenditures for mammography screening." (AHRQ grant HS15390). *Journal of Women's Health* 20(12), pp. 1775-1783.**
Burdensome out-of-pocket expenditures may lead some women to forego receiving a mammogram, suggests a new study. These are women who are low-income, uninsured, or insured through health plans with increased cost-sharing. The researchers looked at women receiving mammograms in 2007 or 2008, and found that the average out-of-pocket mammography expenditure for all groups in 2007 was $32.90.

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**Mainous, A.G., Diaz, V.A., Matheson, E.M., and others. (2011). "Trends in hospitalizations with antibiotic-resistant infections: U.S., 1997–2006." (AHRQ Contract No. 290-07-10015). *Trends in Public Health Reports* 126, pp. 354-360.**
Hospitalizations associated with antibiotic-resistant infections have become more common over a recent 2-decade period, especially among young patients, reveals a new study. Since the 1990s, increased resistance to antibiotics has been found for a variety of pathogens. The emergence of vancomycin-resistant enterococci and methicillin-resistant *Staphylococcus aureus*, initially in hospitalized patients and later in the community, has made it difficult to treat infections with these resistant organisms.

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**Matthews, J.L., Parkhill, A.L., Schlehofer, D.A., and others. (2011). Role-reversal exercise with Deaf Strong Hospital to teach communication competency and cultural awareness." AHRQ grant HS15700). *American Journal of Pharmaceutical Education* 75(3), Article 53.**
A role-reversal exercise can help pharmacy students understand the communications needs of persons with hearing impairment, found this study. In the role-reversal exercise, hearing students act out illness scenarios in a simulated hospital staffed by deaf volunteers. The exercise has been incorporated into the curriculum of first-year pharmacy students at the Wegmans School of Pharmacy.

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**Martinez, E.A., Shore, A., Colantuoni, E., and others. (2011). "Cardiac surgery errors: Results from the UK National Reporting and Learning System." (AHRQ grants HS13904, HS18762). *International Journal for Quality in Health Care*, 23(2), pp. 151-158.**
To better understand where cardiac surgery errors occur and to target interventions, researchers used the United Kingdom's National Reporting and Learning System, a voluntary incident reporting system. They found that of 4,828 reported cardiac surgery incidents, 1,004 (21 percent) happened in the operating room (OR). The authors note that given the relatively short period the patient is actually in the OR, the percentage of incidents occurring there is high.

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**Rochon, D., Ross, M.W., Looney, C., and others. (2011). "Communication strategies to improve HIV treatment adherence." (AHRQ grant HS16093). *Health Communication* 26(5), pp. 461-467.**
One of the major challenges in HIV/AIDS care is to get patients to take their multiple medications regularly and according to the way they are prescribed. Recently, researchers developed and tested an adherence intervention that used health communication and marketing approaches. In the process, they identified factors that can be modified through effective communication strategies and result in improved adherence. ■

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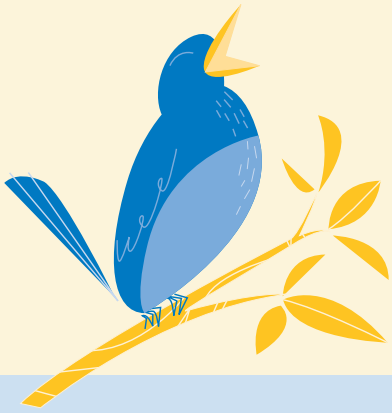

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