



# RESEARCH ACTIVITIES

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## Annual quality and disparities reports include data on health care-associated infections, obesity, and health insurance

Improvements in patient safety continue to lag, according to the 2009 *National Healthcare Quality Report* and *National Healthcare Disparities Report* released this spring by the Agency for Healthcare Research and Quality (AHRQ). Very little progress has been made on eliminating health care-associated infections (HAIs), according to a new section in the 2009 quality report. For example, of the five types of HAIs in adult patients who are tracked in the reports:

- Rates of postoperative sepsis, or bloodstream infections, swelled by 8 percent.
- Postoperative catheter-associated urinary tract infections rose by 3.6 percent.
- Rates of selected infections due to medical care increased by 1.6 percent.
- There was no change in the number of bloodstream infections associated with placement of central venous catheters, tubes placed in a large vein in the patient's neck, chest, or groin to give medication or fluids or to collect blood samples.

- However, rates of postoperative pneumonia improved by 12 percent.
- In addition, although rates are improving incrementally, blacks, Hispanics, Asians, and American Indians are less likely than whites to receive preventive antibiotics before surgery in a timely manner.

According to AHRQ Director Carolyn Clancy, M.D., AHRQ-funded research in Michigan has shown that infection rates of HAIs can be radically reduced. Over 100 participating hospital intensive care units in Michigan have been able to keep the rates of central line-associated bloodstream infections to near zero, 3 years after adopting standardized procedures. The project, conducted by the Michigan Health and Hospital Association Keystone Center, involved the use of a comprehensive unit-based safety program to reduce these potentially lethal infections. Last year, AHRQ announced new funding that has expanded the project to all 50 States, Puerto Rico, and the District of Columbia.

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## Quality and disparities reports

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AHRQ's annual quality and disparities reports, which are mandated by Congress, were first published in 2003. The reports show care trends by measuring health care quality for the Nation using a group of credible core measures. The data are based on more than 200 health care measures categorized in 4 areas of quality: effectiveness, patient safety, timeliness, and patient-centeredness.

The 2009 reports include a new section on lifestyle modifications, because preventing or reducing obesity is a crucial goal for many Americans and an important task for health care providers. The reports found:

- One-third of obese adults have never received advice from their doctor about exercise.
- Obese adults who are black, Hispanic, poor, or have less than a high school education are less likely to receive diet advice from their doctor.
- Most overweight children and one-third of obese adults report that they have not been told by their doctor that they are overweight.
- Most American children have never received counseling from their health care provider about exercise, and almost half have never received counseling about healthy eating.

The reports also indicate that the lack of health insurance slows improvement in health care quality

and reduction of disparities. For many services, not having insurance is the single strongest predictor of poor quality care, exceeding the effects of race, ethnicity, income, or education. Americans with no insurance are much less likely than those with private insurance to obtain recommended care, especially preventive services and management for diabetes. While differences between blacks and whites in the rates of lack of insurance have narrowed in the past decade, disparities related to ethnicity, income, and education remain large.

The quality and disparities reports are available online at [www.ahrq.gov/qual/qrd09.htm](http://www.ahrq.gov/qual/qrd09.htm), by calling 1-800-358-9295, or by sending an e-mail to [ahrqpubs@ahrq.hhs.gov](mailto:ahrqpubs@ahrq.hhs.gov). ■

## Visit the AHRQ Patient Safety Network Web Site

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

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**Use of nursing agency staff and quality of care, page 8**

**Underprescribing of warfarin to prevent strokes, page 11**

**Sickle cell disease hospitalizations and emergency care, page 16**

### Nearly one-fourth of parents of children with special health care needs have cut back on or quit work to care for them

Parents of children with special health care needs (CSHCN) often have to take time off work, reduce their number of work hours, or even quit a job altogether to care for their sick child. In fact, nearly a quarter of parents with CSHCN have experienced work loss in order to meet the medical needs of their child, reveals a new study. Megumi J. Okumura, M.D., of the University of California, San Francisco, and colleagues analyzed data from a national survey of these children. Two questions on the survey asked parents if they had ever stopped working or had to cut back on their hours as a result of their children's health. In addition to various demographic data, the researchers also looked at the functional limitations and condition stability of the child.

More than half of the CSHCN had some or a great deal of functional limitations due to their condition. Just over a third (35 percent) had changing health care needs. Almost all of the CSHCN (96.5 percent) were insured. Nearly a quarter of parents (23.7 percent) reported some type of work loss, with 13.3 percent of

families reporting that a member had to stop work to care for their child.

Factors associated with increased odds of work loss included having a younger CSHCN, increasing functional limitation and/or condition instability, being uninsured, and having public insurance. Work loss odds were lower for families with post-high school education and those with a medical home. A medical home can save a family time and frustration by coordinating medical appointments and referrals, streamlining communication between primary care doctors and other providers, and reducing duplicative services. In this way, a medical home has the potential to optimize work productivity for families, note the researchers. Their study was supported in part by the Agency for Healthcare Research and Quality (HS17716).

See "Understanding factors associated with work loss for families caring for CSHCN," by Dr. Okumura, Jeanne Van Cleave, M.D., Sangeeth Gnanasekaran, M.D., M.P.H., and Amy Houtrow, M.D., M.P.H., in the December 2009 *Pediatrics* 124(Suppl. 4), pp. S392-S398. ■ KB

### Children with ADHD from larger families more likely to use stimulants

Children who have attention-deficit/hyperactivity disorder (ADHD) are typically impulsive, hyperactive, and easily distracted—characteristics that can harm schoolwork, self-esteem, psychological development, and interpersonal relationships. Various stimulant medications are typically prescribed to quiet their behavior and help them focus. A recent study has found differences in stimulant use among these children depending on family structure. Specifically, children from families with additional children are more likely to use stimulants compared with children from a single-child family.

University of Chicago researchers, Atonu Rabbani, Ph.D., and G. Caleb Alexander, M.D., M.S., examined parental educational level, types of stimulants used by children with ADHD, and family size using data from the National Health Interview Survey from 1997 to 2003 and from the Medical Expenditure Panel Survey from 1998 to 2005. Stimulant use was greatest among younger children aged 2 to 6 with ADHD, with 56 percent of them using these medications. Older children aged 12 to 17 years had the least usage, with only 27 percent taking stimulants. Stimulant use was also more likely among children reporting excellent health

(45 percent) compared with children reporting fair (27 percent) or poor health (13 percent).

Children were 11 percent less likely to use stimulants if they came from households with a single mother, after adjusting for household income, insurance, and health status. After adjusting for these factors, children with ADHD from families with one other child and two or more other children were 32 percent and 77 percent more likely, respectively, to use stimulants than families with a single child. Children living in the largest families had greater than 2.5-fold odds of using stimulants compared with children who were

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## ADHD

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the only child in the family. The study was supported in part by the

Agency for Healthcare Research and Quality (HS15699).

See “Impact of family structure on stimulant use among children with attention-deficit/hyperactivity

disorder,” by Drs. Rabbani and Alexander, in the December 2009 *HSR: Health Services Research* 44(6), pp. 2060-2078. ■ KB

## Respiratory syncytial virus is more serious than the flu in young children

**B**y the age of 3, nearly all children experience an infection with respiratory syncytial virus (RSV). More than 40 percent get the flu (influenza). Both infections can cause a host of respiratory symptoms, some serious enough to require hospitalization. Yet RSV results in a greater disease burden than influenza, including more visits to the emergency department (ED), more hospital admissions, and more lost work days for parents, according to a new study. Researchers identified children 7 years of age and younger who were treated in the ED for acute respiratory infections during two winter seasons. Parents were interviewed at the ED visit and again 7 to 10 days later regarding lost work and school days and medications used to treat the child. Laboratory tests determined if the infection was due to RSV or influenza.

There were twice as many ED visits associated with RSV-caused respiratory infections than influenza infections. Children with RSV had six times as many hospitalizations. Also, RSV infections were twice as

likely to require additional primary care clinic visits and antibiotic therapy. Finally, parents of children with RSV missed nearly three times more workdays than parents of children with influenza. This burden was especially significant for parents of children with RSV who were younger than 2 years. They were nearly five times more likely to miss work.

More prevention efforts and infection control measures are needed to curb the spread of RSV and influenza in young children and reduce their disease and economic burdens, suggest the researchers. Their study was supported in part by the Agency for Healthcare Research and Quality (Contract No. 290-00-0020).

See “Relative impact of influenza and respiratory syncytial virus in young children,” by Florence T. Bourgeois, M.D., M.P.H., Clarissa Valim, M.D., Sc.D., Alexander J. McAdam, M.D., Ph.D., and Kenneth D. Mandl, M.D., M.P.H., in the December 2009 *Pediatrics* 124(6), pp. e1072-e1080. ■ KB

## Women's Health

### Nonplatinum chemotherapy agents more likely to lead to hospitalizations for older women with ovarian cancer

**T**he National Institutes of Health recommends that women who are diagnosed with stage IC to IV ovarian cancer receive chemotherapy. However, a new study finds that older women who are treated with nonplatinum chemotherapy drugs for their ovarian cancer may run a higher risk of being hospitalized for conditions like dehydration or anemia than women who receive

either platinum chemotherapy or no chemotherapy at all.

Xianglin L. Du, M.D., Ph.D., of the University of Texas School of Public Health and colleagues studied 9,361 women aged 65 or older who were diagnosed with stage I to IV ovarian cancer from 1991 to 2002. Of the 1,694 patients who received nonplatinum chemotherapy, 8 percent ended up in the hospital because of a

gastrointestinal ailment such as dehydration, nausea, vomiting, or diarrhea. In comparison, 6.6 percent of the 1,363 women who received platinum-based chemotherapy and 6.4 percent of the 3,094 women who received platinum-taxane therapy were hospitalized with stomach complaints.

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## Ovarian cancer

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Women who received nonplatinum chemotherapy were also more likely to be hospitalized for infections than women who received platinum-based chemotherapy. Finally, women who received platinum-taxane chemotherapy or no chemotherapy were less at risk than women who received nonplatinum-based

chemotherapy for a hospital stay for hematologic problems including anemia, neutropenia (low white blood cell count), and thrombocytopenia (low blood platelet count). The authors suggest that these findings may have clinical implications for deciding which chemotherapy course to prescribe for older women with ovarian cancer. This study was funded in part by the Agency for

Healthcare Research and Quality (HS16743).

See “Risk of hospitalizations associated with adverse effects of chemotherapy in a large community-based cohort of elderly women with ovarian cancer,” by Zhannat Nurgalieva, M.D., M.P.H., Chih-Chih Liu, M.S., and Dr. Du in the November 2009 *International Journal of Gynecological Cancer* 19(8), pp. 1314-1321. ■ KFM

## Home visits help pregnant, Medicaid-insured women alleviate depressive symptoms

Depressive symptoms are a common complication for women both during pregnancy and in the 12 months after giving birth. Low-income pregnant women and mothers are most susceptible, with nearly half screening positive for depressive symptoms. Having a nurse-community health worker (CHW) team make home visits substantially reduces depressive symptoms according to a new study. Stress levels are also reduced for higher risk women with low psychosocial resources.

Michigan State University researchers Lee Anne Roman, Ph.D., R.N., and Joseph C. Gardiner, Ph.D., and colleagues studied 613 women who telephoned 1 of 5 prenatal clinics in a Michigan county. They randomly assigned 307 women to the nurse-CHW team intervention and 306 women to usual community care (CC) that included opportunity for professional visits. Both approaches were part of Medicaid-enhanced prenatal/postnatal services. The intervention consisted of a nurse and two CHWs who functioned as a team. Women received a first assessment visit from the entire team. The nurse member made a minimum of two visits during pregnancy, one immediately following delivery, and two visits during the first year after the mother gave

birth. The two CHWs provided ongoing support through more frequent and regular visits, as well as telephone calls. Women in the intervention arm received an average of 24.4 face-to-face contacts, while women in the CC arm only received 8.5 contacts.

Women who received the home visits had significantly fewer depressive symptoms than women in the CC group. This was particularly true for women who had low psychosocial resources. Those with low psychosocial resources receiving home visits also had greater reduction in stress. According to the researchers, this intervention provides a practical, public-health approach to improving mental health in women by using existing State-sponsored Medicaid services. The study was supported in part by the Agency for Healthcare Research and Quality (HS14206).

See “Alleviating perinatal depressive symptoms and stress: A nurse-community health worker randomized trial,” by Drs. Roman and Gardiner, Judith K. Lindsay, B.S.N., M.P.H., and others in the *Archives of Women's Mental Health* 12, pp. 379-391, 2009. ■ KB

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



## Treatment without examination and lab tests appears effective for some women with vaginal symptoms

Physicians who treat women suffering from bacterial vaginosis, trichomoniasis, or vaginal candidiasis make their diagnosis through microscopy, pH testing, and the “whiff” test. To gather vaginal discharge samples for these tests, the physician must have the woman undergo a speculum examination. Yet offering some women treatment for these uncomfortable conditions based on their symptoms and skipping speculum examination and lab tests may be appropriate, finds a new study.

The 23 women who received treatment for their vaginal symptoms without examination had

outcomes and satisfaction ratings for their care similar to the 21 women who underwent traditional examination and laboratory tests. In fact, symptoms for 93 percent of all 44 women improved in the 2-week followup period, and 64 percent of women no longer had symptoms. Further, both physicians and patients accepted this approach.

While the approach was effective, clinicians are still tasked with determining which patients may have more serious conditions and require additional examination. In fact, because 7 percent of the women had a sexually transmitted disease (STD) such as chlamydia or gonorrhea, Matthew Anderson,

M.D., M.Sc., of the Montefiore Medical Center, and colleagues conclude that testing for STDs is important when women have vaginal symptoms. This study was funded in part by the Agency for Healthcare Research and Quality (HS16050).

See “Are a speculum examination and wet mount always necessary for patients with vaginal symptoms? A pilot randomized controlled trial,” by Dr. Anderson, Andreas Cohrssen, M.D., Kathleen Klink, M.D., and Danit Brahver, B.S., in the November/December 2009 *Journal of the American Board of Family Medicine* 22(6), pp. 617-624. ■ *KFM*

## Mycobacterial pulmonary disease more likely to affect women

Nontuberculous mycobacteria (NTM) are an important cause of disease and death, most often in the form of progressive lung disease. A new Oregon-based study has found that women have higher rates of NTM disease than men, including pulmonary disease. Pulmonary NTM was originally described in men, and until recent decades, thought to be less common among women. However, this study is the first population-based study of pulmonary NTM disease, and the first to document higher rates among women.

NTM-related pulmonary disease prevalence in women was 6.4 per 100,000 vs. 4.7 per 100,000 for men. The researchers believe that their findings are in line with published reports from experts who assert that the epidemiology of this disease has changed during the last several decades to affect women more frequently than men. They also found higher rates of NTM disease in those aged 51 and over and in residents of the Western, more urban part of Oregon. The latter may be due to the existence of large, municipal water systems in which water is standing for prolonged periods, which can attract bacteria, note the researchers.

Of the 933 patients with NTM isolated by culture, 56 percent met the microbiologic criteria for NTM disease. The annualized case rate of NTM disease was 7.2 cases per 100,000 persons. Pulmonary cases predominated with a case rate of 5.6 per 100,000, 85 percent of which was caused by *Mycobacterium avium* complex. Skin/soft tissue infections were the second most common cases, with a rate of 0.9 per 100,000. In comparison, Oregon’s rate of tuberculosis (TB) was 2.8 and 2.2 cases per 100,000 persons for 2005 and 2006, respectively, suggesting that NTM disease causes more illness than TB in the State. The study was conducted under Oregon’s special studies statute and was funded, in part, by the Agency for Healthcare Research and Quality (HS17552).

See “Nontuberculous mycobacterial disease prevalence and risk factors: A changing epidemiology,” by P. Maureen Cassidy, M.P.H., Katrina Hedberg, M.D., Ashlen Saulson, B.S., and others in the December 15, 2009 *Clinical Infectious Diseases* 49, pp. e124-e129. ■ *MWS*

### Socioeconomically disadvantaged blacks have the worst long-term outcomes from work-related low back pain

Individuals sometimes face long-term pain, unemployment, or must receive Social Security disability as a result of a job injury resulting in low back pain. Economically disadvantaged blacks have the hardest time adjusting 6 or more years after their Workers' Compensation (WC) settlement, reveals a new study. John T. Chibnall, Ph.D., and Raymond C. Tait, Ph.D., of Saint Louis University School of Medicine, identified 171 black and 203 white WC claimants for low back pain. All had their claims settled in Missouri during 2001 and the first 5 months of 2002. On average, participants were 72.3 months postsettlement. The individuals were interviewed by telephone about their pain intensity, its

interference with activities, level of disability, and their mental health status.

Levels of adjustment to low back pain assessed at 6 years were comparable with those assessed more than 4 years earlier. However, lower socioeconomic status, black race, and poorer early adjustment were associated with poorer long-term adjustment. Such individuals were found to have higher levels of pain, pain-related disability, and catastrophizing (tendency to think the worst when one is in pain).

Black claimants also had higher rates of occupational disability, as evidenced by long-term unemployment and receipt of Social Security disability.

This analysis also took into account other mediating factors

such as patient age, sex, diagnosis, surgery, and initial disability rating. If the purpose of the WC system is to provide equal access to effective medical treatment and case resolution that enables a fresh start, the present system merits fundamental change, conclude the researchers. Their study was supported in part by the Agency for Healthcare Research and Quality (HS13087 and HS14007).

See "Long-term adjustment to work-related low back pain: Associations with socio-demographics, claim processes, and post-settlement adjustment," by Drs. Chibnall and Tait, in *Pain Medicine* 10(8), pp. 1378-1388, 2009. ■ KB

### Disadvantages in housing, food, and health care all predict health declines in older Americans

Material disadvantages, such as inadequate housing, lack of food, and being uninsured or underinsured, are linked to declines in walking ability and self-rated health among older Americans, according to a new study. Researchers examined data from both the 2004 and 2006 Health and Retirement Study, a national study of Americans aged 51 years and older. They examined walking ability, an important predictor of disability and the need for later long-term care, as well as three factors: health insurance coverage, food insufficiency, and housing quality/affordability.

All three factors contributed to declines in walking ability and self-reported health. Most Americans experienced at least one form of material disadvantage. Individuals with multiple forms of material disadvantage were at particularly increased risk of health decline and functional impairment as they aged. Common problems cited by older persons included issues with neighborhood safety (27.7 percent) and

being either uninsured or underinsured (30.9 percent). More blacks (9 percent) than whites (2 percent) were disadvantaged in all three areas of health care, housing, and food. The same was true for 7 percent of participants with less than a high school education compared with 2 percent of those with a high school diploma.

The relationships between health declines and race, poverty, and education were weakened or eliminated when the researchers controlled for material disadvantages. Thus, material disadvantages appear related to health in ways not captured by education and poverty, conclude the researchers. Furthermore, the health effects of material disadvantage were similar to the health effects of comorbid illness. For example, the researchers found that food disadvantage was as strong a predictor of later health declines as heart disease, cancer, stroke, pulmonary disease, or diabetes. They

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## Older Americans

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suggest that policies to improve health address a range of basic human needs, rather than health care alone. The study was supported in part by the Agency for Healthcare Research and Quality (HS17003).

See “Material resources and population health: Disadvantages in health care, housing, and food among adults 50 years of age,” by Dawn E. Alley, Ph.D., Beth J. Soldo, Ph.D., José A. Pagán, Ph.D. and others in the *American Journal of Public Health* 99 (Suppl. 3), pp. S693-S701, 2009. ■ KB

## Elderly/Long-Term Care

### Nursing homes using more agency staff have lower quality of care

**N**ursing homes have well-documented staffing problems, including high turnover rates, problems with absenteeism, and low staffing levels. Given these problems, many nursing homes use agencies to meet their staffing needs for nurse aides (NAs), licensed practical nurses (LPNs), and registered nurses (RNs). Nursing homes with the highest use of agency staff have a clinically significant lower quality of care, according to Nicholas G. Castle, Ph.D., of the University of Pittsburgh. In many cases, the difference between no agency use and 25 percent or more agency use translates to a 1 or 2 percent difference in quality scores.

Considered cumulatively, the impact on quality is large and may be meaningful for nursing home residents, notes the author.

He examined how the use of agency staff affects the Nursing Home Quality Measures. Findings showed that 8 of 15 measures for NAs, 6 of 15 measures for RNs, and 4 of 15 measures for LPNs were significantly associated with the use of agency staff. He concluded that on the whole it was likely that no use of agency staff was associated with better care quality and higher use of agency staff was associated with worse quality.

Dr. Castle surveyed almost 3,900 nursing homes. More than 40

percent of these facilities used some NA agency staff, with fewer facilities using RN agency staff (30 percent) or LPN agency staff (20 percent). However, the actual percentage of positions filled by agency staff was around 5 percent for RNs, LPNs, and NAs. The author suggests that nursing homes carefully consider before using high levels of agency staff. This study was supported by the Agency for Healthcare Research and Quality (HS16808).

See “Use of agency staff in nursing homes,” by Dr. Castle in *Research in Gerontological Nursing* 2(3), pp. 192-201, 2009. ■ MWS

### Nursing home physicians and nurses struggle with communication barriers

**N**urses and physicians must communicate effectively if patients are to receive high-quality care. However, there may be barriers to effective communication in the long-term-care setting, where nurse-physician interaction is often done over the telephone. A recent study identified several communication barriers in nursing homes, particularly related to telephone communication between nurses and physicians, that have important implications for patient safety.

Nurses working at 26 long-term-care facilities in Connecticut were asked to fill out a questionnaire. The 375 nurses responded to questions related to openness and collaboration, logistical challenges, professional respect and understanding, and language comprehension. A representative sample of 21 nurses

who answered the questionnaire were also interviewed by telephone.

The communication barrier cited most often by the nurses was feeling hurried by the physician on the phone (28 percent). One-fourth of the nurses found it difficult to find a quiet location where they could make the call and 21 percent said they also had difficulty reaching the physician. Most of the interviewed nurses felt it was important to be prepared properly before making the call and to be brief and to the point when talking to the doctor. They also commented on how physicians were not always receptive to their calls.

The researchers recommend that physicians respect the nurses more and realize that nurses know their patients well. Calling nurses back promptly and

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## Communication barriers

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listening properly would also help. In turn, nurses should be prepared when they call, state what is needed from the physician, and communicate clearly. The study was supported in part by the Agency for Healthcare Research and Quality (HS16463).

See “Nurse-physician communication in the long-term care setting: Perceived barriers and impact on patient safety,” by Jennifer Tjia, M.D., M.S.C.E., Kathleen M. Mazor, Ed.D., Terry Field, D.Sc., and others, in the *Journal of Patient Safety* 5(3), pp. 145-152, 2009. ■ KB

## Developing community health resources entices more elderly patients to seek hospital care locally

**H**ospitalization for ambulatory-care-sensitive conditions (ACSCs) like hypertension and asthma is typically preventable with proper ambulatory care. In fact, ACSC hospitalization rates in a local area are often viewed as an indicator of access to primary care. Elderly patients with ACSCs are more likely to seek hospital care within their local markets if there is a greater availability of community resources, according to Jayasree Basu, Ph.D., of the Agency for Healthcare Research and Quality (AHRQ) and Lee R. Mobley, Ph.D., of RTI International. Both individual (severity of illness, insurance status) and community factors (availability of primary care and hospital care) can affect whether Medicare patients with ACSCs travel outside their local markets for hospital care.

This study found that more than any other provider or critical access hospital (CAH) variables, local median household income and inpatient hospital capacity affected Medicare patients’ decision for a distant hospitalization across the rural-urban continuum. Higher local median household incomes led to more out-of-area travel, while greater local inpatient capacity led patients to seek care at local hospitals.

The researchers used data from 2003 and 2004 hospital discharge files of AHRQ’s Healthcare Cost and Utilization Project State Inpatient Databases to examine the role of local community resources on the hospitalization patterns of Medicare patients with ACSCs. They studied Medicare patients in the States of New York, Florida, Pennsylvania, and California, defining local markets as primary care service areas. Results varied

somewhat from State to State because of demographic, economic, and policy differences. Only in New York and California were provider supply or CAHs significant factors in affecting travel patterns of Medicare patients. This issue is significant from a policy perspective, because considerable resources are being devoted to the allocation of physicians into underserved areas and providing assistance to small rural hospitals (many of which are CAHs) and health systems, note the researchers.

See “Impact of local resources on hospitalization patterns of Medicare beneficiaries and propensity to travel outside local markets,” by Drs. Basu and Mobley, in the *Journal of Rural Health* 26, pp. 20-29, 2009. Reprints (AHRQ Publication No. 10-R037) are available from AHRQ.\* ■ MWS

## Chronic Disease

### Physician-pharmacist teams can help lower blood pressure

**W**hen clinicians and pharmacists work together, they can lower patients’ previously uncontrolled high blood pressure, a new study finds. Researchers from the University of Iowa asked physicians and pharmacists to consult about treating patients with high blood pressure at three family medicine clinics in Iowa. They found that blood pressure was three times more likely to be controlled when physician-pharmacist teams were employed than

at three similar clinics that did not have physician-pharmacist teams.

In fact, 64 percent of patients at clinics with physician-pharmacist teams were able to achieve blood pressure control compared with 30 percent of patients at the other clinics. For instance, average blood pressure readings dipped 20.7/9.7 mm Hg for patients seen at the clinics with teams compared with just 6.8/4.5 mm Hg at the other clinics.

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## Lower blood pressure

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Physicians appeared willing to accept their colleagues' recommendations, accepting 96 percent of the 771 recommendations pharmacists made for patients with high blood pressure. The authors suggest that clinics and health systems that want to improve patients' blood pressure control should consider allowing clinical pharmacists to become more involved

in managing patients. This study was funded in part by the Agency for Healthcare Research and Quality (HS16094).

See "Physician and pharmacist collaboration to improve blood pressure control," by Barry L. Carter, Pharm.D., Gail Ardery, Ph.D., Jeffrey D. Dawson, Sc.D., and others in the November 23, 2009 *Archives of Internal Medicine* 169(21), pp. 1996-2002. ■ *KFM*

## Patient tool helps determine adherence to asthma medication

An important component of managing persistent asthma is the daily use of inhaled corticosteroids (ICS) to reduce airway inflammation. Low-income, minority patients show lower rates of adherence to these medications. A short questionnaire can help doctors determine if poor asthma control in this group is due to low medication adherence or to intrinsic severe asthma despite medication adherence, finds a new study. Researchers gave a 10-item questionnaire to 318 patients with asthma who were receiving care at 2 inner-city clinics; 53 percent had prior asthma hospitalizations and 70 percent had prior oral steroid use.

Each item was framed as a negative statement about using inhaled asthma medications, such

as "I only use it when I feel breathless," or "I stop taking it for a while." Patients could respond with one of five answers, ranging from always to never. Additional information was also gathered on hospitalizations, clinical history, and demographics. Patients were given the questionnaire at baseline and then again at 1 and 3 months. The researchers used an electronic monitor attached to the inhaler to calculate the percentage of days patients used ICS.

The new tool measured adherence rates effectively for the English- and Spanish-speaking, low-income minority patients. It also correlated well with the electronic adherence method, considered the gold standard for measuring adherence to ICS. High self-reported adherence on

the questionnaire predicted high electronic adherence. In the electronic group, patients used ICS 52 percent of days. Self-reported adherence was higher in those saying that daily ICS use was important and that ICS were controller medications. The study was supported in part by the Agency for Healthcare Research and Quality (HS13312).

See "Assessing the validity of self-reported medication adherence among inner-city asthmatic adults: The Medication Adherence Report Scale for Asthma," by Jessica L. Cohen, B.A., Devin M. Mann, M.D., Juan P. Wisnivesky, M.D., M.P.H., and others in *Annals of Allergy, Asthma & Immunology* 103, pp. 325-331, 2009. ■ *KB*

## Personality factors play a role in responsiveness to disease self-management programs

Patients feel more effective in managing chronic diseases such as asthma, arthritis, and diabetes when they receive supportive home visits from individuals suffering from chronic diseases. However, the impact of this peer approach is moderated by personality factors, concludes a new study. In fact, measuring personality factors in chronically ill individuals may facilitate targeting of disease self-management interventions to those most likely to respond, suggest Anthony Jerant, M.D., and colleagues at the University of California, Davis School of

Medicine. They recruited 415 adults with one or more chronic diseases from 12 offices and 70 family physician/internal medicine practices affiliated with a university-based primary care network.

Overall, 138 adults were randomly assigned to a control group of usual care that included an initial visit by a study nurse, 139 adults were assigned to a telephone peer intervention, and 138 were assigned to a home-visit peer intervention. Peer discussions involved topics such as exercising safely, use of relaxation

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## Self-management programs

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techniques, coping with difficult emotions, and taking medications. All patients completed a 60-item version of the Five Factors Model of personality factors (neuroticism, extraversion, openness, agreeableness, and conscientiousness).

At the end of 6 weeks, chronic disease self-efficacy, measured on a 33-item scale, was significantly higher in the home-based group than in the phone-based and control groups. This effect waned by 6 months and disappeared within a year. However, personality factors moderated the effects of the support intervention. For

example, lower self-efficacy was associated with higher levels of neuroticism and lower levels of conscientiousness, agreeableness, and extraversion. These patients benefited the most from the home intervention. The study was supported in part by the Agency for Healthcare Research and Quality (HS13603).

See “Five factor model personality factors moderated the effects of an intervention to enhance chronic disease management self-efficacy,” by Peter Franks, M.D., M.P.H., Benjamin Chapman, Ph.D., Paul Duberstein, Ph.D., and Dr. Jerant, in the *British Journal of Health Psychology* 14(Pt. 3), pp. 473-487, 2009. ■ KB

## Doctors underprescribe warfarin to prevent strokes in patients with atrial fibrillation and heart failure

As many as 7,000 preventable strokes occur each year among patients treated for heart failure (HF) and atrial fibrillation (AF). One problem is inadequate prescribing of the blood thinner warfarin to prevent strokes among patients discharged from the hospital after treatment for HF with AF, according to a new study. Patients hospitalized for HF alone have a 1-year mortality exceeding 30 percent and readmission rates exceeding 50 percent; these percentages are even worse for patients with both HF and AF. The researchers found that among the patients hospitalized for HF, 20.5 percent had AF upon admission and another 13.7 percent had a prior

history of AF. Overall, 64.9 percent of the HF patients studied who did not have problems that prevented the use of warfarin were discharged on warfarin therapy, and this proportion did not increase over the 3.5 years of the study.

The percentage of eligible patients receiving warfarin treatment at discharge varied widely among the hospitals, from 0 percent to 96 percent. Furthermore, patients in the South and West regions of the United States were more than 30 percent less likely to be placed on warfarin than patients in the Northeast.

The study analyzed data collected through the American Heart Association's Get With the

Guidelines (GWTG) Program on patients hospitalized for HF from January 1, 2005, through March 25, 2008. In total, the researchers analyzed treatment data on 75,534 patients with HF admitted to 255 hospitals participating in the GWTG-HF registry. The study was funded in part by the Agency for Healthcare Research and Quality (HS16964).

More details are in “Quality of care for atrial fibrillation among patients hospitalized for heart failure,” by Jonathan P. Piccini, M.D., Adrian F. Hernandez, M.D., M.H.S., Xin Zhao, Ph.D., and others in the *Journal of the American College of Cardiology* 54(14), pp. 1280-1289, 2009. ■ DIL

## Outcomes/Effectiveness Research

### A certain type of stroke increases risk of death and poor outcome

Acute ischemic stroke is caused when a blood clot blocks an artery in the brain. Several large vessels in the brain can be affected. When they become blocked during a stroke, it is called a large vessel occlusion (LVO). A new study, using various brain imaging techniques, has found that LVO accounts for nearly half of all acute ischemic strokes. In addition, having this type of stroke increases the odds

of dying and decreases the odds of having a good clinical outcome.

The researchers collected clinical and 6-month outcome data on 735 patients with suspected acute stroke at 2 academic medical centers. All patients underwent imaging studies to determine if they indeed had a stroke, its type, and clinical features. A total of

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## Acute ischemic stroke

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578 were verified as having a stroke; 97 experienced a transient ischemic attack (TIA, a temporary, minor blood flow stoppage that is not considered a stroke).

An LVO accounted for 46 percent of all patients with stroke and 13 percent of patients with TIA. Compared with patients who had suffered small vessel occlusions, those with LVO had significantly higher (poorer) stroke scores resulting from a 7.8 increase in scoring. Having an LVO was also associated with 4.5-fold increased odds of death compared with patients

with normal imaging findings. Stroke patients without an LVO had threefold greater odds of having a good outcome compared with patients with LVO. An LVO involving the basilar artery in the brain was associated with the worst outcome and highest mortality. The study was supported in part by the Agency for Healthcare Research and Quality (HS11392).

See “Significance of large vessel intracranial occlusion causing acute ischemic stroke and TIA,” by Wade S. Smith, M.D., Ph.D., Michael H. Lev, M.D., F.A.H.A., Joey D. English, M.D., Ph.D., and others in the December 2009 *Stroke* 40, pp. 3834-3840. ■ KB

## Patients who undergo knee ligament reconstruction do better when the doctor or hospital perform it frequently

**R**econstruction of the anterior cruciate ligament (ACL) is one of the most common and fastest-growing forms of knee surgery, with 70,547 ACL reconstructions done in New York State alone between 1997 and 2006. However, little has been known about the factors associated with surgical success. According to a new study, the need for hospital readmission for additional treatment was reduced when the initial surgery was done at a hospital or by a doctor that performed high volumes of ACL reconstruction.

Readmission to the hospital within 90 days of the original procedure was not common (2.3 percent of all surgeries). However, 6.5 percent of patients had a subsequent surgery on either knee within a year. Surgeons who performed fewer than 6 ACL reconstructions in the past 12 months (low surgical volume)

accounted for 21.7 percent of the procedures. Their patients were 44 percent more likely to be readmitted within 90 days than patients operated on by surgeons who performed at least 52 procedures in the past 12 months (high surgical volume). Similarly, patients operated on at hospitals that performed fewer than 2 ACL reconstructions a month on average were 32 percent more likely to need readmission within 90 days than hospitals averaging more than 10 operations monthly.

Factors associated with poorer outcome were being over 40 years old, being male (higher rates of readmission) or female (higher rates of subsequent ACL reconstruction within 1 year), and having more than one structure injured at the time of the ACL reconstruction. Drawing on a database of all hospital admissions and ambulatory surgeries in New York State, the researchers

identified 70,547 ACL reconstructions done in the State between 1997 and 2006. The operations were done by 1,513 surgeons at 263 distinct medical centers. Outpatient surgery (81.4 percent) was more common than inpatient surgery (18.6 percent). Slightly more than a third of the operations (37.3 percent) were for ACL reconstruction only, while more than half (50.6 percent) were ACL reconstruction combined with repair of the meniscus. The study was funded in part by the Agency for Healthcare Research and Quality (HS16075).

More details are in “Epidemiology of anterior cruciate ligament reconstruction,” by Stephen Lyman, Ph.D., Panagiotis Koulouvaris, M.D., Seth Sherman, M.D., and others in the October 2009 *Journal of Bone and Joint Surgery* [American Volume] 91(10), pp. 2321-2328. ■ DIL



## Early and intensive intervention for a flu pandemic is effective and cost-effective

An influenza pandemic has the potential to cause widespread illness and death, is very costly, and strains the health care system's capacity to respond. The widespread outbreak of the 2009 H1N1 influenza virus in the summer and fall of 2009 highlighted the urgent need to identify effective prevention and mitigation strategies for an influenza pandemic.

Researchers led by Nayer Khazeni, M.D., M.S., of Stanford University Medical Center, conducted two studies designed to identify the most effective and cost-effective strategies for dealing with an influenza pandemic. The first study focused on different 2009 H1N1 vaccination strategies, and the second study assessed influenza A (H5N1) mitigation and response strategies. The two studies described here were supported in part by the Agency for Healthcare Research and Quality (HS18003).

**Khazeni, N. K., Hutton, D. W., Garber, A. M., and others. (2009, December). "Effectiveness and cost-effectiveness of vaccination against pandemic influenza (H1N1) 2009." *Annals of Internal Medicine* 151, pp. 829-839.**

The researchers developed a model of progression of the 2009 H1N1 virus to determine how vaccination at one of two points in time would affect the course of the pandemic. They followed a hypothetical group of 8.3 million individuals living in a large U.S. city and ranging in age from 0 to 100 years with an average remaining life expectancy similar to the population of New York City.

The researchers compared the effectiveness and cost-effectiveness of no vaccination, vaccination in mid-October, and vaccination in mid-November. They found that vaccinating 40 percent of the population in October would slow widespread transmission of the virus and be cost-saving, adding 69,679 quality-adjusted life years (QALYs) and saving \$469 million relative to no vaccination. Vaccinating 40 percent of the population in November would add 49,422 QALYs and save \$302 million relative to no vaccination.

Regardless of the timing of vaccination, complete coverage of the population is not necessary to shorten the pandemic, note the researchers. They also point out that highly effective nonpharmaceutical interventions—such as early use of hand washing and surgical masks—could significantly delay the peak of the pandemic, increasing the effectiveness and cost-effectiveness of delayed vaccination.

**Khazeni, N., Hutton, D. W., Garber, A. M., and others. (2009, December). "Effectiveness and cost-effectiveness of expanded antiviral prophylaxis and adjuvanted vaccination strategies for an influenza A (H5N1) pandemic." *Annals of Internal Medicine* 151, pp. 840-853.**

The influenza A (H5N1) virus is one of the most important international public health concerns of the 21st century due to its potential to cause a pandemic, note these researchers. To have pandemic potential, a virus must meet three criteria: high virulence, antigenic uniqueness, and sustained

human-to-human transmissibility. The H5N1 virus meets two of these criteria. It does not yet have the ability for sustained spread among humans, although it could develop this ability through spontaneous mutation or an interspecies link (such as swine).

To estimate the effectiveness and cost-effectiveness of alternate pandemic H5N1 mitigation and response strategies, the researchers examined three scenarios: vaccination and antiviral medication in quantities similar to those available in the U.S. stockpile (stockpile strategy), stockpile strategy but with expanded distribution of antiviral agents (expanded prophylaxis strategy), and stockpile strategy but with adjuvanted vaccine (expanded vaccination strategy). An adjuvant is a substance added to a vaccine to improve the immune response so that less vaccine is needed.

Expanded vaccination was the most effective and cost-effective of the three strategies examined, averting 68 percent of infections and deaths and gaining 404,030 QALYs at \$10,844 per QALY gained relative to the stockpile strategy. The researchers were encouraged by the finding that the expanded vaccination strategy resulted in increased effectiveness and population coverage, because it demonstrates that the ongoing commitment to increase stockpiles of adjuvant can substantially reduce the morbidity and mortality of a severe influenza pandemic. ■ MG



### Higher nurse-patient ratios result in societal cost benefits for some hospital areas

**I**ncreasing nurse-to-patient staffing is recommended to improve patient safety and reduce adverse events. A recently published simulation study shows that increased registered nurse (RN) staffing was associated with lower hospital-related mortality and adverse patient events. This approach can result in societal net savings, depending on the area of the hospital.

University of Minnesota researchers analyzed data from 27 published studies on patient outcomes and nurse-to-patient ratios. They estimated hospital savings and the number of adverse events avoided. They determined the savings-cost ratio from increased nurse staffing for patients in intensive care units (ICUs) and those admitted to medical or surgical floors.

Increasing nurse staffing in the ICU had the greatest positive impact on societal savings from avoided deaths and patient adverse events. The monetary benefit of saved lives per 1,000 hospitalized patients was 2.5 times higher than the increased cost of one additional

full-time nurse per patient day in the ICU. It was 1.8 times higher in surgical units and 1.3 times higher in medical units. The researchers estimated that increasing nurse staffing by one full-time nurse in the ICU would save 327,390 years of life in men and 320,988 in women. This would result in a productivity benefit of \$4 billion to \$5 billion dollars. In surgical units, the staffing change would result in a larger productivity benefit of \$8 billion to \$10 billion dollars.

While these are societal net savings, hospitals do not appear to reap sufficient monetary benefit from length of stay reductions produced by increased nurse staffing. The study was supported in part by the Agency for Healthcare Research and Quality (Contract No. 290-02-0009).

See “Cost savings associated with increased RN staffing in acute care hospitals: Simulation exercise,” by Tatyana A. Shamliyan, M.D., M.S., Robert L. Kane, M.D., Christine Mueller, Ph.D., R.N., and others in *Nursing Economics* 27(5), pp. 302-331, 2009. ■ KB

### Medicaid MCOs don't boost care access for the disabled or lower Medicaid expenditures

**T**he type of Medicaid program available to adults with disabilities (AWDs) depends on the State and county of residence. Currently, State Medicaid spending accounts for 22.9 percent of total State expenditures, more than spending on elementary and secondary education. Medicaid managed care organizations (MCOs) were created in the belief that they would improve care while holding down costs. Yet two recent studies by Harvard Medical School researcher Marguerite E. Burns, Ph.D., found little or no benefit from voluntary or mandatory enrollment of adult Medicaid patients with disabilities in MCOs. She recommends that to control costs for AWDs and

improve their access to care, States investigate other policy and care management tools beyond MCOs alone. The studies, described here, were funded in part by the Agency for Healthcare Research and Quality (T32 HS00083).

**Burns, M. E. (2009). “Medicaid managed care and health care access for adult beneficiaries with disabilities.” *HSR: Health Services Research* 44(5 Part I), pp. 1521-1541.**

This study found that patients in mandatory Medicaid MCOs were more likely to experience delays in care than similar patients enrolled in Medicaid fee-for-service (FFS) or voluntary MCO programs. Enrollees in a mandatory MCO

program were 24.9 percent more likely to wait more than 30 minutes to see a health care provider than enrollees in Medicaid FFS plans. The mandatory MCO beneficiaries were also 32 percent more likely to report a problem in getting to see a specialist and were 10 percent less likely to have received a flu shot in the past year.

The findings were based on analysis of data from the Household Component of the Medical Expenditure Panel Survey (1996–2004) and county-by-county program information from the Centers for Medicare & Medicaid Services. Individuals studied were AWDs (aged 18 to 64), who participated in the Federal

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## Medicaid MCOs

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Supplementary Security Income program for individuals with disabilities.

**Burns, M. E. (2009). “Medicaid managed care and cost containment in the adult disabled population.” *Medical Care* 47(10), pp. 1069-1076.**

This study revealed that the cost of monthly Medicaid expenditures for adult Medicaid patients did not differ between counties with FFS or

MCO plans. The author investigated total monthly Medicaid expenditures for AWDs in the three types of Medicaid programs. Approximately 50 percent of the persons in the study were from counties with FFS programs, 20 percent from counties with mandatory MCO programs, and 30 percent from counties with voluntary MCOs (patients had an option of FFS or MCO coverage).

Both FFS and mandatory MCO programs had mean unadjusted monthly expenditures of around

\$440 per beneficiary, while counties that offered voluntary MCOs spent around \$600 per beneficiary each month. In adjusted analyses, beneficiaries in mandatory MCO counties had a lower probability of emergency room use than those in FFS counties; however, it did not result in lower average spending for MCO beneficiaries relative to FFS beneficiaries. ■ *DIL*

## Medicare Advantage enrollees are admitted to hospitals with higher mortality rates than Medicare fee-for-service enrollees

The question of whether persons enrolled in Medicare Advantage (MA) plans use different hospitals or receive better or worse care has been difficult to test. Since these enrollees do not submit claims for reimbursement, Medicare does not receive detailed hospital discharge summaries. However, by using data from 1,500 hospitals submitted to 13 statewide databases for 2006, researchers have found that MA enrollees are more likely than Medicare fee-for-service (FFS) enrollees to receive care at hospitals with mortality rates 1.5 percent higher than the 4 percent overall mean. At the same time, MA enrollees receive care at hospitals with fewer patient safety problems (patient safety event scores 1 percent lower than the average of 3.5 percent). These discrepant results are possibly due to greater discretion by MA plans both in approving patients for elective surgery and in selecting hospitals for surgical patients, according to Bernard Friedman, Ph.D., and H. Joanna Jiang, Ph.D., of the Agency for Healthcare Research and Quality (AHRQ).

The remarkable difference between the safety results and mortality results may in part be explained by the fact that safety measures generally exclude emergency admissions, while the mortality categories

include many emergency patients. When a patient is referred for an elective procedure, the health plan can have more discretionary impact on the use of surgery and the hospital selected for the procedure. It appears that MA plans are exercising that discretion. This could happen indirectly by the health plan’s selection of physicians available to enrollees, note the researchers.

Their study used nine Patient Safety Indicators developed by AHRQ and reviewed by the National Quality Forum. The risk-adjusted mortality measure used only eight categories of surgical cases. The authors believe that their study demonstrates the types of comparative information that could help Medicare enrollees become better informed about outcome differences between hospitals.

See “Do Medicare Advantage enrollees tend to be admitted to hospitals with better or worse outcomes compared with fee-for-service enrollees?” by Drs. Friedman and Jiang in the February 2010 *International Journal of Health Care Finance and Economics* 10(2), pp. 171-185. Reprints (Publication No. 10-R042) are available from AHRQ.\* ■ *MWS*

### Paramedics sometimes interrupt CPR to open airway

Current guidelines recommend continuous, uninterrupted chest compressions during cardiopulmonary resuscitation (CPR). However, paramedics sometimes interrupt CPR chest compressions in order to insert a breathing tube (endotracheal intubation) into the patient's airway. A new study found that paramedics interrupted CPR at least twice for a total of 2 minutes during endotracheal intubation efforts. This finding adds support to efforts to deemphasize out-of-hospital intubation and delay it until later in resuscitation efforts, note the researchers.

They studied CPR interruptions among 100 patients with out-of-hospital cardiopulmonary arrests who were treated by paramedics.

Compression sensors attached to cardiac monitors in the ambulance continuously recorded all delivered CPR chest compressions. All of the resuscitation events were recorded on a digital audio channel. A chest compression interruption was defined as 5 seconds or longer.

On average, there were two CPR interruptions for every patient treated. More than a third of patients had more than two interruptions. Some patients experienced as many as nine interruptions. An average of 46.5 seconds elapsed during the first interruption. Almost a third lasted more than 1 minute, with a few interruptions lasting close to 4 minutes.

Second interruptions were briefer, running an average of 35

seconds in duration. The average total duration of all interruptions was 109.5 seconds. A quarter of these lasted more than 3 minutes. The researchers determined that 22 percent of all CPR interruptions were the result of paramedics' efforts to insert an airway tube. The study was supported in part by the Agency for Healthcare Research and Quality (HS13628).

See "Interruptions in cardiopulmonary resuscitation from paramedic endotracheal intubation," by Henry E. Wang, M.D., M.S., Scott J. Simeone, B.S., Matthew D. Weaver, B.S., and Clifton W. Callaway, M.D., Ph.D., in the November 2009 *Annals of Emergency Medicine* 54(5), pp. 645-652. ■ KB

## Agency News and Notes

### Study reveals high rates of rehospitalizations and emergency pain treatment for sickle cell disease

Four of every 10 individuals with sickle cell disease had to return to the hospital within 30 days of a previous hospitalization or go to the emergency department for treatment of pain, according to the largest study to date on use of acute care medical services by these patients. The study was conducted by David C. Brousseau, M.D., M.S., and colleagues at the Medical College of Wisconsin and the Children's Hospital of Wisconsin.

Sickle cell disease, an inherited blood disorder, most commonly causes acute, severe, recurrent painful episodes due to occlusion of blood vessels by sickle-shaped red blood cells. People with sickle cell disease are also at increased risk for stroke and chronic problems such as kidney and lung disease. The disease affects millions of people worldwide, including an

estimated 70,000 to 100,000 persons in the United States, with blacks disproportionately affected.

When the researchers analyzed acute care use by age groups, they found that 18- to 30-year-old patients had the highest rate of rehospitalizations within 30 days (41 percent). Two-thirds of these patients were actually readmitted within 14 days of their previous hospital discharge. This group was also more likely to go to the emergency department for treatment of pain and then be released (20 percent within 30 days). In general, they had approximately three and a half hospital visits per year—either a rehospitalization or an emergency department visit—regardless of their insurance. This rate is markedly higher than the two visits per year for children 10 to 17 years old with sickle cell disease.

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## Sickle cell disease

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Regardless of age, the patients with Medicaid or other types of public insurance used acute care for sickle cell-related reasons more than privately insured and uninsured patients. Publicly insured 18- to 30-year-old patients had the highest rate of medical use—nearly five encounters per year compared with all other age groups with any other insurance, private or public. The study was based on 21,112 patients with sickle cell disease in eight States—Arizona, California, Florida,

Massachusetts, Missouri, New York, South Carolina, and Tennessee—who were hospitalized or treated and released from hospital emergency departments in 2005 and 2006. The State databases are part of the AHRQ-administered Healthcare Cost and Utilization Project.

More details are in “Acute care utilization and rehospitalizations for sickle cell disease,” by Dr. Brousseau, Pamela L. Owens, Ph.D., Andrew L. Mosso, M.S., and others, in the April 7, 2010 issue of the *Journal of the American Medical Association* 303(13), pp. 1288-1294. ■

## Black children are more likely to be hospitalized for a ruptured appendix than white children

**B**lack children were one-third more likely than white children to be hospitalized for a ruptured appendix in 2006, according to the latest data from the Agency for Healthcare Research and Quality (AHRQ). If not treated quickly, a ruptured appendix can cause life-threatening complications. Ruptures may result when the warning signs of appendicitis are missed, leading to a delay in surgery to remove the infected appendix. In some cases, parents may not be able to get health care quickly enough.

The Federal agency’s analysis found that:

- The hospital admission rate of black children for a ruptured appendix in 2006 was 365 per 1,000 admissions compared with 276 per 1,000 admissions for white children.
- Hispanic children had the second-highest rate, 344.5 per 1,000 admissions, followed by Asian and Pacific Island children, at 329 per 1,000 admissions.
- Poverty played a role for all children, regardless of race or ethnicity. Children from poor communities were 26 percent more likely to be hospitalized for

a ruptured appendix than those from higher-income communities (337 per 1,000 admissions compared with 268.5 per 1,000 admissions). At all income levels, Black and Hispanic children had higher ruptured appendix rates than white children.

These findings are based on data from pages 256-257 in the 2009 *National Healthcare Disparities Report* [www.ahrq.gov/qual/nhdr09/nhdr09.pdf](http://www.ahrq.gov/qual/nhdr09/nhdr09.pdf). The report examines the disparities in Americans’ access to and quality of health care, with breakdowns by race, ethnicity, income, and education. ■

## More adults with diabetes are getting flu shots

**T**he Centers for Disease Control and Prevention recommend that persons who are at high risk of having serious flu complications get vaccinated each year. This includes all persons 65 years of age and older and persons with chronic conditions like diabetes that weaken their ability to fight flu and its complications. The proportion of Americans with diabetes aged 18 to 64 who reported getting flu shots the previous year rose from 40 percent to 50.5 percent between 2000 and 2007, according to the latest data from the Agency for Healthcare Research and Quality (AHRQ). In contrast, the proportion of seniors aged 65 and older with diabetes who reported getting a flu shot within the previous year remained stable at about 70 percent.

AHRQ’s analysis also found that between 2000 and 2007:

- The immunization rate for people aged 18 to 64 with diabetes who were covered only by public insurance, such as Medicaid, surged by 14 percent (39 percent to 53 percent), followed closely by a 12 percent increase among those with private insurance (41 percent to 53 percent).
- The immunization rate for diabetes patients aged 18 to 64 without insurance did not change, remaining at about one-third.
- For diabetes patients aged 65 and over with Medicare, either alone or with supplemental private

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## Flu shots

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or public insurance, the immunization rates were stable, remaining at about two-thirds to three-fourths.

These findings were based on 2000 and 2007 data from AHRQ's Medical Expenditure Panel Survey

(MEPS) Quality of Care Summary Data Tables ([www.meps.ahrq.gov/mepsweb](http://www.meps.ahrq.gov/mepsweb); go to Table 1.5). MEPS collects information each year from a nationally representative sample of the U.S. civilian, noninstitutionalized population about their health care use, expenses, access to services, health status, and the quality of the health care they obtained. ■

## For 1 in 10 Medicaid patients, it's back to the hospital in a month

One of every 10 adult Medicaid patients who were hospitalized in 2007 for a medical condition other than childbirth had to be readmitted at least once within 30 days of their initial hospital stay that year, according to the latest data from the Agency for Healthcare Research and Quality (AHRQ). These Medicaid patients were 70 percent more likely to be readmitted at least once within 30 days than their privately insured counterparts. AHRQ's data analysis also found that the number of underlying health problems Medicaid patients had increased their likelihood of readmission. For example, 14 percent of Medicaid patients with three or more underlying health problems were readmitted within 30 days of their previous hospital stay compared with 10 percent of those who had no health problems

other than the one for which they were admitted.

The highest hospital readmission rates among Medicaid patients were for:

- HIV/AIDS (17 percent)
- Blood-related disorders (14 percent)
- Alcohol or substance abuse (13 percent)
- Kidney and urinary tract disorders (12 percent)
- Gall bladder, liver, and pancreatic problems (12 percent)
- Mental disorders (12 percent)
- Infections (12 percent)
- Respiratory disorders (11 percent)
- Diabetes and related metabolic problems (11 percent)

High hospital readmission rates have been drawing increasing

attention from policymakers because they may reflect issues with the health care provided in the hospitals or lack of discharge planning and outpatient followup. Hospital readmissions also have the potential to drive up health care costs. These findings are based on data in *All-Cause Hospital Readmission Rates among Non-Elderly Medicaid Patients, 2007*. The report uses statistics from the 2007 *Nationwide Inpatient Sample*, a database of hospital inpatient stays that is nationally representative of inpatient stays in all short-term, non-Federal hospitals. The data are drawn from hospitals that comprise 90 percent of all discharges in the United States and include all patients, regardless of insurance type, as well as the uninsured. ■



## Health Literacy Toolkit Published



AHRQ recently published the *Health Literacy Universal Precautions Toolkit*. The toolkit is based on the principal of universal precautions, or specific actions that providers can take to make health information more understandable for all patients. Over a third of patients have limited health literacy, which results in their not understanding what they need to do to take care of their health. Limited health literacy is associated with poor management of chronic diseases, poor ability to understand and adhere to medication regimes, increased hospitalizations, and poor health outcomes.

Health literacy universal precautions are needed because providers don't always know which patients have limited health literacy. This toolkit is designed

to help adult and pediatric practices ensure that systems are in place to promote better understanding by all patients, not just those providers think need extra assistance. The toolkit, ([www.ahrq.gov/qual/literacy](http://www.ahrq.gov/qual/literacy)), developed for AHRQ by the University of North Carolina at Chapel Hill, includes:

- A Quick Start Guide
- Path to Improvement (6 steps to implement toolkit)
- 20 short tools to identify and address areas needing improvement.
- Links to Internet resources
- An appendix with resources to support implementation, such as sample forms, posters, PowerPoint presentations, and worksheets. ■

## Research Briefs

**Argo, J. L., Vick, C. C., Graham, L. A., and others. (2009).** "Elective surgical case cancellation in the Veterans Health Administration system: Identifying areas for improvement." (AHRQ grant HS13852). *The American Journal of Surgery* 198, pp. 600-608.

Unanticipated cancellations of elective surgeries decrease operating room efficiency and are inconvenient to patients, physicians, and staff. The researchers surveyed 40 Veterans Administration (VA) hospitals with the highest and lowest cancellation rates. There were 329,784 cases scheduled by 9 surgical specialties, of which 40,998 were cancelled. With a cancellation rate of 12.4 percent, the VA system lost more than \$32

million in 2006. The reasons for cancellation were placed in five categories. The greatest proportion of cancellations were due to patient factors (35 percent), work-up/medical status change (28 percent), and facility factors (20 percent). The researchers caution against setting benchmarks for cancellation rates since case mix and patient population must be considered before planning a quality improvement program.

**Castaldi, P. J., Cho, M. H., Cohn, M., and others. (2010).** "The COPD genetic association compendium: A comprehensive online database of COPD genetic associations." (AHRQ grant HS16808). *Human Molecular Genetics* 19(3), pp. 526-534.

Although smoking is the primary risk factor for the development of chronic obstructive pulmonary disease (COPD), family studies support the hypothesis that genetic variation contributes to COPD susceptibility. Only one gene has been definitively proven to influence COPD susceptibility. There have been promising findings from over 100 published COPD candidate gene studies but most have not been consistently replicated. The authors performed a systematic review and meta-analysis of 108 population-based, case-control articles pertaining to COPD genetic associations. A total of 72 genes were studied in the publication database. The authors identified 27 genetic variants that

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## Research briefs

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were suitable for quantitative meta-analysis. Four of these variants—GSTMI null, rs 1800470 in TGFB1, rs1800629 in TNF, and rs1799895 in SOD3—were significantly associated with COPD susceptibility. The authors recommend that these variants be targeted for future study.

**Curtis, J. R., Arora, T., Xi, J., and others. (2009). “Do physicians within the same practice setting manage osteoporosis patients similarly? Implications for implementation research.” (AHRQ grant HS16956). *Osteoporosis International* 20, pp. 1921-1927.**

To carry out implementation research studies, it is important to know whether randomizing groups of physicians who practice together in a common setting, rather than randomizing individual physicians, is necessary. Randomizing groups of physicians would avoid contamination between intervention and control physicians but at the cost of sacrificing statistical power and raising other design issues. The researchers examined data from two studies of osteoporosis management in long-term glucocorticoid users and nursing home patients with known osteoporosis or prior fracture. They found that physicians practicing together were not more alike in prescribing osteoporosis medications than those in different practices. The researchers concluded that osteoporosis quality management may be able to ignore common practice settings and maximize statistical power by targeting individual physicians.

**Ghaferi, A. A., Birkmeyer, J. D., and Dimick, J. B. (2009, December). “Complications, failure to rescue, and mortality**

**with major inpatient surgery in Medicare patients.” (AHRQ grant HS17765). *Annals of Surgery* 250(6), pp. 1029-1034.**

Some hospitals have higher surgical mortality rates than others. Many believe that high-mortality hospitals simply have higher complication rates. However, there is a growing body of evidence suggesting that complications and mortality are not related, i.e., hospitals with high rates of complications do not necessarily have high mortality rates. A possible explanation is that high-mortality hospitals may not be as proficient in recognizing and managing serious complications once they occur, a phenomenon known as failure to rescue. In a study of 269,911 patients who underwent 1 of 6 high-risk operations, the risk-adjusted mortality rate varied 2.5-fold between the worst-performing 20 percent and the top-performing 20 percent of hospitals. However, complication rates between these groups of hospitals were very similar (36.4 percent vs. 32.7 percent). In contrast, rates of failure to rescue were much higher at the worst-performing compared with the best-performing hospitals, with a nearly threefold difference (16.7 percent vs. 6.8 percent).

**Hyzy, R. C., Flanders, S. A., Pronovost, P. J., and others. (2010, January). “Characteristics of intensive care units in Michigan: Not an open and closed case.” (AHRQ grant HS14246). *Journal of Hospital Medicine* 5(1), pp. 4-9.**

Organization of physician services in intensive care units (ICUs) varies widely and influences mortality, morbidity, and costs of care. In order to understand the delivery of critical care physician services in Michigan, the

researchers used a descriptive questionnaire to survey Michigan hospitals. They received 96 responses representing 72 hospitals with 115 ICUs. Twenty-four of 96 ICU sites were “closed,” i.e., only intensivists served as the attending physician of record. Hospitals with closed ICUs were larger and had larger ICUs than sites with open ICUs or with nonintensivist decisionmaking. The presence of hospitalists serving as attending physicians was strongly associated with an open ICU, i.e., an ICU that had multiple attending specialists. Only 18 sites had 100 percent of their ICU attending physicians board-certified in critical care, with nearly two-thirds of sites having fewer than 50 percent of similarly certified attending physicians.

**Memtsoudis, S. G., Ma, Y., Della Valle, A. G., and others. (2009). “Perioperative outcomes after unilateral and bilateral total knee arthroplasty.” (AHRQ grant HS16075). *Anesthesiology* 111, pp. 1206-1216.**

Total knee arthroplasty (TKA) is the most effective treatment of end-stage osteoarthritis. When both knees are affected, bilateral TKA (BTKA) reduces the overall cost of care by 18-36 percent and duration of hospital stay by 4-6 days. However, the safety of BTKA remains controversial with studies reporting an associated increase in morbidity and mortality. To explore this issue, the researchers used 1998-2006 data from the Nationwide Inpatient Sample sponsored by the Agency for Healthcare Research and Quality. The researchers found an increased incidence of perioperative complications (9.45 percent vs. 7.07 percent) and in-hospital mortality (0.30 percent vs. 0.14 percent) among patients undergoing

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BTKA when compared with single TKA. BTKAs performed in a staged approach during the same hospitalization were associated with an increased incidence of in-hospital complications when compared with simultaneous BTKAs, and offered no mortality benefit.

**Moore, C., Li, J., Hung, C., and others. (2009, December). “Predictive value of alert triggers for identification of developing adverse drug events.” (AHRQ Contract No. 290-00-0018). *Journal of Patient Safety* 5(4), pp. 223-228.**

Clinical event monitors alert physicians to the possibility of an adverse drug event (ADE) and have generally been used to detect ADEs for tracking purposes or to ameliorate ongoing harm due to an ADE after a drug has been administered. ADEs were defined as the development of a drug-related critical laboratory value occurring between 1 and 72 hours after the initial trigger firing. Patients at a large teaching hospital were monitored using electronic triggers designed to detect patients at increased risk of four types of ADEs: hypoglycemia, hypokalemia, hyperkalemia, and thrombocytopenia. Overall, during the 5-month study period, the triggers fired 611 times on 456 patients, 101 of whom went on to experience one or more related ADEs within 72 hours after the initial trigger firing. The researchers concluded that these primary-prevention triggers have sufficient positive predictive value to effectively identify patients at high risk for experiencing ADEs in the future.

**Pizer, S. D., Frakt, A. B., and Iezzoni, L. I. (2009, October). “Uninsured adults with chronic conditions or disabilities: Gaps in public insurance programs.” (AHRQ grant HS15941). *Health Affairs* 28(6):w1141-w1150. Epub.**

The researchers sought to determine the size of the uninsurance problem among working-age people with low incomes and chronic health conditions or disabilities. The data used came from the Bureau of Labor Statistics and the Agency for Healthcare Research and Quality’s Medical Expenditure Panel Survey for the years 2000-2005. The rates of uninsured people increased overall from 13.7 percent in 2000 to 16 percent in 2005 (a 17 percent increase). However, there was only a 3.5 percent increase for low-income people with disabilities or health conditions who were in a Federal eligibility category. Those not in a Federal category saw rates jump 18.6 percent. The two large and growing gaps in public insurance programs were regional and categorical. The South had very high uninsurance rates compared with the much lower rates in the Northeast. Those not in federally mandated Medicaid eligibility categories had uninsurance rates that doubled compared with those in Federal categories.

**Rivard, P. E., Elixhauser, A., Christiansen, C. L., and others. (2009). “Testing the association between patient safety indicators and hospital structural characteristics in VA and nonfederal hospitals.” *Medical Care Research and Review* Oct 30, 2009, Epub ahead of printing. Reprints (AHRQ Publication No. 10-R027) are available from AHRQ.\***

The researchers studied the relationship between hospital characteristics (teaching status, number of staffed beds, nurse staffing levels, and urban/rural location) and 14 Agency for Healthcare Research and Quality Patient Safety Indicators (PSIs). Also included was a composite incorporating multiple PSIs. PSIs are software tools applied to administrative data to identify potentially preventable adverse events. Using discharge data from Veterans Administration (VA) and non-Federal hospitals, the researchers found that PSIs were more frequently associated with teaching status than with other hospital structural characteristics. In the non-Federal hospitals, PSIs were more likely in major teaching hospitals for four medical/surgical and two postoperative PSIs. The researchers believe that this relationship merits further study.

**Ryan, A. M., Burgess, J. F., Tompkins, C. P., and Wallack, S. S. (2009, Fall). “The relationship between Medicare’s process of care quality measures and mortality.” (AHRQ grant T32 HS00062). *Inquiry* 446, pp. 274-290.**

The massive costs of Medicare combined with concerns about the value of medical care received by Medicare beneficiaries led Congress to call for hospital value-based purchasing (VBP), a combination of pay-for-performance, and public quality reporting. A critical question is how health care quality will be assessed in VBP. One way to do this, utilized by these researchers, is to examine the relationship between process and mortality in the context of Hospital

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Compare, a voluntary, Internet-based public quality reporting program for hospital care. They found that performance on the starter set of Hospital Compare process measures is inversely correlated with risk-adjusted 30-day mortality for heart attack, heart failure, and pneumonia. However, differences in process performance were not associated with within-hospital variation in mortality. This suggests that process performance is not causally related to the mortality outcomes, and instead is a proxy for unobserved factors such as physician skill.

**Singer, S. J., Falwell, A., Gaba, D. M., and others. (2009, October-December). “Identifying organizational cultures that promote patient safety.” (AHRQ grant HS13920). *Health Care Management Review* 34(4), pp. 300-311.**

Startling statistics about the extent of preventable medical errors have directed attention to the “culture of safety” in health care organizations. The researchers examined the relationship between an organization’s “safety climate” and its “culture of safety.” “Climate” refers to shared perceptions related to a given, specific area of interest such as safety and “culture” refers to employees’ fundamental ideology that explains why an objective like safety is pursued in a particular

way. In their survey of 92 U.S. hospitals and 35,340 senior managers, physicians, and hospital staff, the researchers found that a higher level of group culture correlated with a higher level of safety climate, but a more hierarchical culture was associated with a lower safety climate. A mix of culture types, which emphasized group culture, seemed optimal for safety climate.

**Vasilevskis, E. E., Knebel, R. J., Wachter, R. M., and Auerbach, A. D. (2009, November/December). “California hospital leaders’ views of hospitalists: Meeting needs of the present and future.” (AHRQ grant HS11416). *Journal of Hospital Medicine* 4(9), pp. 528-534.**

Today there are more than 25,000 practicing hospitalists in the United States, with no signs of slackening demand. The researchers surveyed California hospital leaders to understand the prevalence of hospitalist groups in California hospitals as well as the scope of clinical and nonclinical practice of hospitalists. They received 179 responses from 332 California hospitals. Sixty-four percent of hospital leaders stated that they used hospitalists for at least some patients. The most important reasons for implementing a hospitalist model included caring for uncovered patients (68 percent), decreasing hospital costs and length of stay (63 percent), and improving throughput in the emergency room (62 percent). In addition to general

medical care, the most common clinical activity of hospitalists was screening medical admissions from the emergency room (67 percent). The most common nonclinical activity was participation in quality improvement activities (72 percent).

**Yoon, J., and Ettner, S. L. (2009). “Cost-sharing and adherence to antihypertensives for low and high adherers.” (AHRQ grant HS16815). *The American Journal of Managed Care* 15(11), pp. 833-840.**

Among factors influencing patients’ adherence to drugs, one of the strongest relationships exists between higher out-of-pocket payments for drugs and less drug utilization, including lower adherence to drug prescriptions. The researchers examined the impact of cost-sharing on adherence to antihypertensive drugs across adherence levels. They performed a cross-sectional study of a large sample of working-age adults. Using the medication possession ratio (MPR) to measure drug adherence to antihypertensives over a 9-month period, they found that the regression-adjusted MPR was 8 to 9 points lower among patients with the highest cost-sharing compared with patients with the lowest cost-sharing (a co-payment of \$5 or less). By contrast, there was no significant relationship between cost-sharing and adherence for high adherers. Other predictors of worse adherence were drug class and the presence of other illnesses. ■





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