



# RESEARCH ACTIVITIES

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## Reports show few health care disparities eliminated, persistent variations in care, and slow pace of improvement

Racial, ethnic, and income-based disparities have been eliminated in some areas of health care. Yet, significant variations in the quality of and access to services remain, particularly in such areas as prenatal care, preventive screening, and mental health treatment, according to annual reports released by the Agency for Healthcare Research and Quality (AHRQ). The *2008 National Healthcare Quality Report* shows that health care quality continues to improve at a slow pace. For example:

- Care delivered in hospitals improved at an annual rate of nearly 3 percent, the highest among care settings.
  - Care provided in doctors' offices and other outpatient settings improved at a rate slightly over 1 percent.
  - Patient safety rates (protecting patients from injury due to medical care or medical errors) declined by nearly 1 percent.
- Receipt of needed services also varied widely. For example:
- 40 percent of recommended care was not received by patients.

- Heart attack patients received 95 percent of recommended services, but only 15 percent of dialysis patients were on a transplant waiting list.
- Seven out of 10 adults with mood, anxiety, or impulse disorders received inadequate or no treatment.

The *2008 National Healthcare Disparities Report* found that improvements in preventive care, chronic care, and access to care have significantly reduced disparities in:

- Rates of mammography in Asian, American Indian, and Alaska Native women.
- Smoking cessation counseling in low-income adults.
- Appropriate timing of antibiotics to prevent surgery-related infections among American Indians and Alaska Natives.

At the same time, most of the largest disparities have not changed significantly. For example:

- The proportion of new AIDS cases was 9.4 times higher for blacks and more than three times

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## Health care disparities

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- higher for Hispanics than for whites.
- American Indian and Alaska Native women were twice as likely to lack prenatal care as white women.
- At least 60 percent of quality measures have not improved for minorities compared to whites in the past 6 years.

**Editor's Note:** AHRQ's Quality and Disparities Reports, which are mandated by Congress and were first published in 2003, are read widely by policymakers, health care analysts, public health advocates, health insurers, journalists, and consumers. The *National Healthcare Quality Report* synthesizes 220 quality measures, which range from how many pregnant women receive recommended prenatal care to how many elderly receive *pneumococcal*

vaccinations. The *National Healthcare Disparities Report* summarizes which racial, ethnic, and income groups are benefiting from improvements in care. Both reports draw on data from more than three dozen databases, most sponsored by Federal health agencies. The reports are available online at [www.ahrq.gov/qual/qdr08.htm](http://www.ahrq.gov/qual/qdr08.htm) or directly from AHRQ.\* ■

## Outcomes/Effectiveness Research

### Type of beta blocker may affect mortality after hospitalization for heart failure

Patients who are hospitalized with heart failure often receive beta blockers at discharge to reduce the risk of further heart failure. Also known as beta-adrenergic blocking agents, these medications make the heart beat more slowly and reduce blood pressure. A new study cautiously suggests that a commonly prescribed, shorter-acting beta blocker, metoprolol tartrate, may carry a

higher risk of death for patients suffering from heart failure compared with atenolol.

Researchers in California and Massachusetts examined the risk of death for 11,326 patients who were discharged alive after being hospitalized for heart failure between 2001 and 2003. Nearly 8,000 of the patients received beta blockers at or after discharge, most often atenolol (39 percent),

metoprolol tartrate (43 percent), or carvedilol (12 percent). The annualized death rate (per 100 person-years) in the year following hospital discharge was 20.1 for patients taking atenolol, 22.8 for patients taking metoprolol tartrate, and 17.7 for patients taking carvedilol. Patients who did not receive or did not take beta blockers

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

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### Also in this issue:

**Depression and caregivers for people with Alzheimer's dementia, see page 8**

**Cost-effectiveness of disease management for heart failure, see page 12**

**Reducing pediatric medication errors, see page 15**

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## Beta blockers

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had a nearly twofold increased risk of death compared with patients who took the drugs.

Patients who took metoprolol tartrate had a 16 percent higher adjusted risk of death than patients who received atenolol. In this sample, carvedilol, one of two FDA-approved beta-blockers for the treatment of heart failure, was not

associated with a different adjusted death rate than atenolol, which was a frequently prescribed beta blocker during followup. The authors recommend that further randomized studies be conducted that include a broader set of beta blockers in representative populations treated in community-based practice settings. This study was funded by the Agency for Healthcare Research and Quality through its Developing Evidence to Inform Decisions about

Effectiveness program (Contract No. 290-05-0033).

See “Comparative effectiveness of different  $\beta$ -adrenergic antagonists on mortality among adults with heart failure in clinical practice,” by Alan S. Go, M.D., Jingrong Yang, M.A., Jerry H. Gurwitz, M.D., and others in the December 8, 2008, *Archives of Internal Medicine* 168(22), pp. 2415-2421. ■

## Delayed occurrence of hypotension or bradycardia justifies continued monitoring of patients after carotid artery stenting

Patients who receive stents (mesh tubes that open up their carotid arteries to improve blood flow) can suffer from low heart rates (bradycardia) or low blood pressures (hypotension) after receiving their stents. Both conditions can indicate that the heart is not pumping enough blood to meet the body’s demands. A new study finds that patients whose carotid arteries needed to be stented to improve cerebral blood flow were at risk for dipping heart and blood pressure rates within 12 hours of the procedure.

Twenty-eight percent of patients in the study experienced low blood pressure and 38 percent experienced low heart rates within 12 hours after receiving their stents. Patients who took medicine to control their high blood pressure or who never experienced a minor stroke but had narrowed arteries were at risk for having low heart rates. Older patients whose carotid arteries were especially narrow were likely to experience low blood pressure rates.

However, 97 percent of patients appeared to be free from the threat of low blood pressure 6 to 12 hours

after receiving their stents, and 91 percent were clear from low heart rates. The authors caution that though new onsets of low blood pressure or dropping heart rates are rare 6 to 12 hours after carotid stent insertion, patients should still be monitored for a minimum of 12 hours. This study included 93 men and women who received carotid artery stents from December 2002 to January 2007. The study was funded in part by a grant from the Agency for Healthcare Research and Quality (HS16075) to the researchers at the Weill Medical College of Cornell University Center for Education and Research on Therapeutics (CERT). For more information on the CERTs program, visit [www.ahrq.gov/clinic/certsovr.htm](http://www.ahrq.gov/clinic/certsovr.htm).

See “Predictors and timing of hypotension and bradycardia after carotid artery stenting,” by P. Lavoie, John Rutledge, M.A.S., M. A. Dawoud, and others in the November-December 2008 *American Journal of Neuroradiology* 29(10), pp. 1942-1947. ■

## 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/).

## Home care problems can put patients with diabetes at risk for visits to the emergency room or hospitalization

A “black box” of factors that contribute to adverse events in home care was investigated in a recent pilot study of 50 patients with diabetes being cared for at home. The study population, which was largely black and Hispanic women, developed hyperglycemia or hypoglycemia during the course of the home care stay, 1 of the 13 home care adverse events defined by the Centers for Medicare and Medicaid Services. Of the 48 percent of patients who developed hyperglycemia (abnormally high blood-sugar levels), three-fourths went to the emergency department (ED) and more than one-third (37.5 percent) were subsequently admitted to the hospital. Of the 38 percent of patients who developed hypoglycemia (abnormally low blood-sugar levels), all of them landed in the ED and nearly two-thirds (63.2 percent) were

subsequently admitted to the hospital. Type of glycemic event was unknown for 14 percent of the population.

Ten percent of these and other care visits were probably avoidable if home care had been optimal, 56 percent were potentially avoidable, and 34 percent were unavoidable (some of these patients were judged to be too unstable to have been discharged from the hospital), according to the researchers. Deficient care processes were found in every one of the cases studied. For example, home care nurses failed to teach patients about the signs and symptoms of uncontrolled diabetes, appropriate diet, and medications in 40 percent, 37 percent, and 43 percent of cases, respectively.

In nearly half the cases, there was no documentation that the doctor had been notified when

blood glucose level was outside target levels. In 54 percent of the cases, these problems were compounded by patients’ or families’ inability or unwillingness to adhere to the care plan. Other factors compromising home care included lack of care coordination among home care providers and lack of procedures to ensure communication between physicians and home care nurses. The study was supported by the Agency for Healthcare Research and Quality (HS11962).

See “Exploring diabetic care deficiencies and adverse events in home healthcare,” by Margaret V. McDonald, M.S.W., Lori J. King, B.A., Marcia Moodie, M.S.N., R.N., and Penny H. Feldman, Ph.D., in the November/December 2008 *Journal for Healthcare Quality* 30(6), pp. 5-12. ■

## Failure to intensify drug therapies may lead to suboptimal control of diabetes despite adequate monitoring

Patients with diabetes must have their disease and risk factors well controlled if they are to experience good outcomes. However, most adults with diabetes are still not adequately controlled. A new study indicates that the failure to intensify drug therapy to control blood glucose, high blood pressure, and high cholesterol may contribute to suboptimal control.

Researchers examined data extracted from medical records and electronic pharmacies for 383 patients with type 2 diabetes who received treatment through a managed care program affiliated with an academic medical center from 1999 to 2001. Patients were considered to be in suboptimal control of their diabetes if drug therapy was recommended for the following risk factors: high levels of hemoglobin A1c (A1c, an indication of blood-sugar level), systolic blood pressure (SBP), and LDL cholesterol (LDL). Failure to intensify therapy was identified when a risk factor required a medication dose increase but no action was taken by the physician.

Over the course of 24 months, the researchers found that patients with A1c levels of greater than 7 percent showed steady improvement. For patients with high blood pressure, only those with an SBP equal to or greater than 160 mmHg showed significant improvement. Patients with a baseline of 140-160 mmHg showed no change. Patients with LDL levels greater than or equal to 130 mg/dl showed the most improvement. Among patients with actionable A1c at baseline, 20 percent remained in suboptimal control after 2 years. This was true for 42 percent of those with high SBP and 12 percent with LDL actionable at baseline.

According to the study, three aspects of primary care are strongly associated with suboptimal control of diabetes: (1) missed visits, (2) failure to monitor in spite of kept visits, and (3) failure to intensify therapy even when patients keep visits and monitoring is

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## Diabetes

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completed. More research is needed to identify and evaluate the barriers and promoters affecting intensification of therapy as well as ways to improve this type of intervention in patients with diabetes. The study was supported in part by the Agency for Healthcare Research and Quality (HS11946).

See “Missed opportunities in diabetes management: A longitudinal assessment of factors associated with sub-optimal quality,” by T. Alafia Samuels, M.D., M.P.H., Ph.D., Shari Bolen, M.D., M.P.H., H.C. Yeh, Ph.D., and others, in the November 2008 *Journal of General Internal Medicine* 23(11), pp. 1770-1777. ■

## Patients infected with hepatitis C virus fare best with optimal dosage and adherence to combination medications

Patients suffering from hepatitis C virus (HCV) infection must endure a grueling drug regimen that includes weekly subcutaneous injections of pegylated interferon (IFN), twice-daily pills of ribavirin, and frequent monitoring of adverse effects and laboratory results. Consistently taking 85 percent or more doses of the combined medication is linked to increased HCV suppression and early viral response (EVR), according to a new study. Decline in HCV load became even greater when patients had 85 percent or more adherence to their regimen and were prescribed the recommended weight-based ribavirin dosage throughout the initial 12 weeks of treatment.

Clinicians should consider poor treatment adherence as a possible

cause of virologic nonresponse during HCV therapy, recommend researchers at the Center for Education and Research on Therapeutics (CERT) at the University of Pennsylvania. They used pharmacy refill data to examine adherence of 188 patients with chronic HCV infection to pegylated IFN and ribavirin therapy and its impact on HCV load and early virologic response at 12 weeks.

The mean decrease in HCV load at 12 weeks was 0.66 log IU/mL greater for patients with 85 percent or higher adherence than for those with less than 85 percent adherence. When patients who received a suboptimal ribavirin dosage were excluded, the decrease in viral load was even better -1.00

log IU/mL more for persons with 85 percent or greater adherence compared with those with less adherence to pegylated IFN (73 vs. 29 percent) and ribavirin (73 vs. 55 percent). The study was supported in part by a grant from the Agency for Healthcare Research and Quality (HS10399) to the University of Pennsylvania CERT. For more information on the CERTs program, visit [certs.hhs.gov/index.html](http://certs.hhs.gov/index.html).

See “Adherence to hepatitis C virus therapy and early virologic outcomes,” by Vincent Lo Re III, M.D., M.S.C.E., Valerianna K. Amorosa, M.D., A. Russell Localio, J.D., M.P.H., Ph.D., and others, in the January 15, 2009 *Clinical Infectious Diseases* 48, pp. 186-193. ■

## Perceptions about fruit and vegetable intake are influenced by individual and community factors

Both individual and community influences affect a person's perceptions of the variety, affordability, and quality of fruits and vegetables, concludes a new study. These are factors that can affect whether a person consumes the recommended five or more daily servings of fruits and vegetables that can help prevent chronic disease, note the study authors. They surveyed 2,479 adults, many of whom were overweight and suffered from several chronic diseases, and were recruited from 22 family practices in North Carolina. The survey asked about their perceptions of the variety, affordability, and quality of fruit and vegetables. The researchers also

conducted focus groups, interviews, community mapping, and photographs with a subsample of 32 people.

The results revealed a complex web of factors and perceptions that underpinned nutrition behaviors. Individual barriers to eating more fruits and vegetables were food preferences, fatigue of taste buds for certain foods, life stresses, lack of forethought in meal planning, current personal health status, aging, and perceived impact of food on chronic disease status. Individual facilitators were presence of chronic disease, lifetime experience related to intake of fruits and

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## Fruit and vegetables

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vegetables, preferences for certain fruits and vegetables, and personal or spousal health status.

Environmental community facilitators were availability of home gardens, low cost of foods at farm stands, and childhood exposure to fruits and vegetables. Perceived environmental barriers included contradictory media messages related to nutrition and health outcomes, limited worksite food options, food

availability, and food cost at grocery stores. The study was supported in part by the Agency for Healthcare Research and Quality (HS13353).

More details are in "Perceptions of individual and community environmental influences on fruit and vegetable intake, North Carolina, 2004," by Josephine E.A. Boyington, Ph.D., M.P.H., R.N., Britta Schoster, M.P.H., Kathryn Remmes Martin, M.P.H., and others, in the January 2009 *Public Health Research, Practice, and Policy* 6(1), pp. 1-15. ■

## Chronic Disease

### Primary care recognition and treatment of chronic kidney disease can be markedly improved with a few approaches

By 2004, 13 percent of the U.S. population suffered from chronic kidney disease (CKD), most likely due to the rise in such risk factors as hypertension, diabetes, and cardiovascular disease. CKD is underdiagnosed and undertreated in primary care practices; however, a new study suggests that a few quality improvement (QI) techniques can markedly improve its diagnosis and treatment. Researchers at the State University of New York at Buffalo, led by Chester H. Fox, M.D., studied the impact of a QI intervention on care of 181 adults with CKD at two underserved primary care practices over a 1-year period. They determined CKD by a glomerular filtration rate (GFR) of less than 60 mL/min, considered moderate or stage 3 CKD (normal GFR is more than 90 mL/min).

The QI intervention used practice enhancement assistants (PEAs), computer decisionmaking

support, and academic detailing to boost implementation of CKD guidelines. The PEAs used computer-guided support systems to implement the National Kidney Foundation Kidney Disease Outcome Quality Initiative guidelines, an evidence-based national CKD care guideline, by creating computerized patient-specific recommendations for each provider. A paper version was used in the paper-based practice.

Once approved, reminder notes were put into patient charts to diagnose CKD and/or anemia, discontinue harmful medications, request additional laboratory workups and referrals, intensify chronic disease management, and treat CKD complications. Academic detailing used clinicians to educate physicians about CKD diagnosis and treatment during a monthly luncheon. Use of the QI approach significantly improved recognition of CKD from 21

percent to 79 percent of patients at the practices. Diagnosis of anemia doubled from 33 to 67 percent. Use of the potentially kidney-damaging drugs metformin and nonsteroidal anti-inflammatory drugs slid 50 percent and 41 percent, respectively. Finally, mean GFR increased a small but significant amount from 45.75 to 47.34, which the researchers deemed encouraging. The study was supported by the Agency for Healthcare Research and Quality (HS16031).

More details are in "Improving chronic kidney disease care in primary care practices: An upstate New York practice-based research network (UNYNET) study," by Dr. Fox, Andrew Swanson, B.A., Linda S. Kahn, Ph.D., and others, in the November/December 2008 *Journal of the American Board of Family Medicine* 21(6), pp. 522-530. ■

**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.

## Clinician interviews are the best method to determine whether patients with kidney failure are also depressed

**K**idney failure occurs when a person's kidneys can no longer filter blood to get rid of waste products, balance electrolyte levels, control blood pressure, or stimulate red blood cell production. Also called end-stage renal disease (ESRD), kidney failure can be treated only with dialysis or a kidney transplant. A new study finds that patients with ESRD who suffer from depression end up in the hospital or die more frequently than ESRD patients who are not depressed.

To determine if patients at a Veterans Health Affairs unit in Durham, North Carolina, were depressed, researchers had them complete questionnaires on depression and also had a clinician conduct interviews with the patients. The results of the clinician interview more accurately diagnosed depression and predicted whether patients would be hospitalized or die during the year following the study.

Of the 96 patients with ESRD who received dialysis, 26 (27 percent) were depressed. During the

1-year followup period, 21 of those 26 patients (81 percent) either died or were hospitalized compared with 31 of the 72 patients (43 percent) who were not depressed. In light of these results, the authors suggest that more research is needed on the effects of antidepressants for people who suffer from kidney failure. Patients with ESRD are usually excluded from participating in treatment trials for antidepressants, but they may have better health outcomes if they are able to use those drugs. This study was funded in part by the Agency for Healthcare Research and Quality (T32 HS00079).

See "Death or hospitalization of patients on chronic hemodialysis is associated with a physician-based diagnosis of depression," by S. Susan Hedayati, M.D., M.H.Sc., Hayden B. Bosworth, Ph.D., Libbie P. Briley, M.D., M.D., F.A.S.N., and others in the October 2008 *Kidney International* 74(7), pp. 930-936. ■

## Medicare beneficiaries with cancer do not frequently use National Cancer Institute Cancer Centers for care

**T**hirty-two States are home to 63 National Cancer Institute (NCI) Cancer Centers that provide care to patients and reach out to underserved populations, in addition to conducting cancer research. However, less than 10 percent of cancer patients insured by Medicare use cancer center resources, a new study finds.

Just 7.3 percent of the 211,048 patients with breast, lung, colorectal, or prostate cancer who were covered by Medicare received treatment at NCI Cancer Centers from 1998 to 2002, researchers from Dartmouth College found. Travel time was a major determinant for whether a patient would seek care at an NCI Cancer Center, with every 10 minutes of travel time resulting in a 11 percent decreased likelihood of choosing a

cancer center for care. Among patients receiving care at an NCI Cancer Center, 61 percent lived 30 minutes or less from the center, 77 percent lived within 1 hour, and 92 percent lived within 2 hours. Creating programs in rural areas that provide travel assistance to NCI Cancer Centers may prompt more Medicare beneficiaries to use those centers, the authors suggest.

Patients with cancer insured by Medicare who received most of their care from generalist physicians also did not seek care at cancer centers. These patients' physicians may have longstanding partnerships with local oncologists, so patients do not feel compelled to travel to an NCI Cancer Center. Patients who had multiple health conditions also tended to stay close to home for treatment.

Patients covered by Medicare who received diagnoses of cancer in later stages were likely to seek treatment at NCI Cancer Centers to gain the clinical advantages the centers offer. Additionally, blacks living in urban areas, where many NCI Cancer Centers are located, were also likely to receive care at cancer centers. This study was funded in part by the Agency for Healthcare Research and Quality (HS00070).

See "Determinants of NCI Cancer Center attendance in Medicare patients with lung, breast, colorectal, or prostate cancer," by Tracy Onega, Ph.D., Eric J. Duell, Ph.D., M.S., Xun Shi, Ph.D., and others in the December 6, 2008 *Journal of General Internal Medicine* 24(2), pp. 205-210. ■

## Caregivers of individuals with Alzheimer's dementia are more likely to visit emergency departments or be hospitalized when depressed

Of the nearly 4 million adults with Alzheimer's dementia (AD) in the United States, 3 million live in the community with 75 percent of their care needs delivered by family and friends. The stress associated with caring for these loved ones can take its toll on the caregiver. According to a new study, 24 percent of those caring for persons with AD will end up visiting emergency departments (ED) or be admitted to the hospital. In addition, the use of these acute care services is associated with being depressed.

In this study, 153 patients with AD were recruited from two large primary care practices. Family and friends caring for these individuals were interviewed to provide information on the patient's behaviors, actions, and activities of daily living. Caregivers also provided information about their own mood and the use of acute care services.

Nearly a quarter (24 percent) of caregivers had either visited an ED or had been hospitalized in the 6 months prior to participating in the study. There was no association between the level of cognitive impairment in the patient with AD and the use of acute care services by the caregiver. However, ED visits and hospitalizations most often occurred in caregivers

caring for patients with cognitive, functional, behavioral, and psychological symptoms. These caregivers were also likely to suffer from more symptoms of depression.

The researchers note that cognitive decline in a loved one is not as stressful to caregivers, probably because they expect and are prepared for such decline. Rather, it is the patient's agitation, aggression, and other symptoms that prove to be the biggest caregiver stressors. In fact, these are most often the reasons why caregivers resort to long-term care placement.

The researchers suggest that primary health care and collaborative programs need to include the caregiver's needs at the same time as they provide care to a patient with AD. The study was supported in part by the Agency for Healthcare Research and Quality (HS10884).

See "Acute care utilization by dementia caregivers within urban primary care practices," by Cathy C. Schubert, M.D., Malaz Boustani, M.D., M.P.H., Christopher M. Callahan, M.D., and others, in the November 2008 *Journal of General Internal Medicine* 23(11), pp. 1736-1740. ■

## Lupus increases direct health care costs and loss of work productivity

Systemic lupus erythematosus (SLE) is a debilitating disease that often robs young people of being fully productive during their work years. Now, researchers at the University of California, San Francisco (UCSF) have determined just how much lupus contributes to increased health care costs and lost work productivity.

The researchers used data from UCSF's Lupus Outcomes Study, obtaining information on health care resource use and employment on 812 participants. Estimates of health care costs associated with lupus were also analyzed. The researchers measured changes in the number of hours worked since receiving a diagnosis of lupus in

order to calculate productivity costs. Since lupus affects women mostly, the majority of subjects in the study (92.6 percent) were female.

Almost all of the participants (99.9 percent) had seen a physician at least once in the past year; 21 percent were hospitalized at least once. More than a third (39 percent) had visited the emergency department (ED) at least one time. Only 2.6 percent received dialysis in the previous year.

Total direct health care costs for each participant were \$12,643. Almost half of this (\$6,153) was due to hospital admissions. Medications accounted for 25.7 percent of the total cost, while

physician visits were responsible for 11.6 percent.

At the time of their lupus diagnosis, 76.8 percent of individuals were employed. This employment rate dropped to under half (48.7 percent) by the time they participated in the study. The number of annual working hours also decreased among those still working. Mean income at the time of diagnosis was \$24,931; at study entry, it had declined to \$16,272. Participants with the highest level of disease activity incurred almost double the direct health care costs than those with the lowest level (\$16,761 vs. \$9,501). Factors predicting higher costs included

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## Lupus

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greater disease activity, longer disease duration, and worse physical and mental health status. The study was supported in part by the Agency

for Healthcare Research and Quality (HS13893).

See “Health care costs and costs associated with changes in work productivity among persons with systemic lupus erythematosus,” by

Pantelis Panopalis, M.D., Jinoos Yazdany, M.D., M.P.H., JoAnn Zell Gillis, M.D., and others, in the December 2008 *Arthritis & Rheumatism* (Arthritis Care & Research) 59(12), pp. 1788-1795. ■

## Pharmaceutical Research

### Pharmacists' efforts to contact patients or physicians do not improve refills for chronic disease medications

Taking prescribed medications has been shown to decrease symptoms and improve quality of life for many patients suffering from chronic diseases. Yet many of these patients fail to refill their prescriptions on a timely basis. Efforts by community-based pharmacists to telephone patients with chronic disease or fax their physician when medication refills are overdue do not improve refill persistence, concludes a new study. Barbara C. Tilley, Ph.D., of the Medical University of South Carolina, and colleagues randomly assigned 3,048 patients overdue for drug refills for common chronic diseases to three treatment groups: pharmacist contacts the patient via telephone, pharmacist contacts the patient's prescribing physician via fax, and usual care. They obtained refill data from a centralized database that included nine pharmacies within a South Carolina grocery store chain.

The median medication copay was \$11, and most patients (89 percent) had some type of insurance coverage. There were no significant differences among the three groups in the number of days from

their recommended refill date until the patients filled a prescription for any medication relevant to their chronic diseases (such as heart disease, diabetes, depression, and heart failure). The time-to-refill was shorter (but not significantly) among patients in the usual care group compared with patients in the phone patient and fax physician groups. Thus, neither approach was more effective than usual care for improving refill prescriptions. Diabetes was the only disease showing a possible benefit of the phone patient group, since they had better outcomes than counterparts receiving usual care, but analysis suggested the difference was not significant. The study was supported by the Agency for Healthcare Research and Quality (HS10871).

See “Two pharmacy interventions to improve refill persistence for chronic disease medications,” by Paul J. Nietert, Ph.D., Dr. Tilley, Wenle Zhao, Ph.D., and others, in the January 2009 *Medical Care* 47(1), pp. 32-40. ■

### Study shows no conclusive relationship between long-term statin use and lower risk of a type of skin cancer

Some evidence suggests that statins (drugs used to reduce cholesterol levels) may prevent cancer, while other studies show no effect. A new study of veterans at high risk for developing skin cancer found no conclusive link between long-term statin use and risk for keratinocyte carcinoma on the face or ears. Researchers examined the association between statin use and

occurrence of keratinocyte carcinoma among 1,037 veterans participating in the Veterans Affairs Topical Tretinoin Chemoprevention Trial.

The researchers documented veterans' time to their first occurrence of the skin cancer on their face or ears. Veterans were randomized based on their statin use or no statin use at the start of the study. Dermatologists examined

them at the beginning of the study and every 6 months during followup (a median of 3.5 years). During the followup period, half of the veterans developed keratinocyte carcinoma. However, analyses showed no significant associations between statin use and the skin cancer.

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## Skin cancer

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Based on a crude model, statin use at the time of study randomization was associated with a 17-percent lower rate of new lesions of keratinocyte carcinoma among high-risk veterans. Adjustment for individual confounding factors did not alter this estimate. However, more

detailed analysis suggested that statin use was not associated with the rate of keratinocyte carcinoma. Due to many confounding factors in the study, the authors caution that these data are inconclusive and do not refute that statins may be associated with lower risk of some cancers. The study was supported in part by the Agency for Healthcare Research and Quality (T32 HS00011).

See “Association between statin use and risk for keratinocyte carcinoma in the Veterans Affairs Topical Tretinoin Chemoprevention Trial,” by David D. Dore, Pharm.D., Ph.D., Kate L. Lapane, Ph.D., Amal N. Trivedi, M.D., M.P.H., and others, in the January 2009 *Annals of Internal Medicine* 150(1), pp. 9-18. ■

## Women's Health

### Women with cardiac symptoms are more likely than men to experience delays in emergency care

When it comes to seeking treatment for a heart attack or other cardiac event, getting to the hospital quickly is critical, especially for women. Women often delay seeking emergency care and are at higher risk of dying. As such, the emergency medical services (EMS) system plays an important role in expediting treatment. In a new study, researchers found that women are 50 percent more likely than men to experience delays in EMS care.

The researchers retrospectively examined the records for adult residents of 10 municipalities in Dallas County, Texas, who made a call to 911 between January 1 and December 31, 2004. These calls were received by 29 hospitals and 98 EMS stations. A total of 5,887 patients with suspected cardiac-related symptoms were analyzed. A delay in EMS was defined as being more than 15 minutes beyond the median elapsed time (34 minutes).

On average, women arrived at the hospital 2.3 minutes slower than men. Average transport times were also longer for Asian/Pacific Islanders (2.9 minutes) and Native Americans (3.0 minutes). Women had significantly higher odds of being delayed even after the researchers adjusted for time of day and other variables. Factors increasing the likelihood of being delayed included evening rush hour travel, bypassing a local hospital, and living in a densely populated neighborhood. The study was supported in part by the Agency for Healthcare Research and Quality (HS10282 and T32 HS00060).

See “Elapsed time in emergency medical services for patients with cardiac complaints: Are some patients at greater risk for delay?,” by Thomas W. Concannon, Ph.D., John L. Griffith, Ph.D., David M. Kent, M.D., M.S., and others, in the January 2009 *Circulation: Cardiovascular Quality and Outcomes* 2, pp. 9-15. ■

### Abused women are more likely to rely on condoms than birth control pills to prevent pregnancies

Studies suggest that women in abusive relationships often have unintended pregnancies because they do not use contraception. For instance, these women may not be able to control when intercourse occurs, rendering barrier methods of birth control

useless; or, they may depend on their partner to use a condom.

Laura A. McCloskey, Ph.D., of Wayne State University, and colleagues surveyed 225 women in the Boston area on their methods and use of birth control. While the study did not find an association

between abuse and not using contraception, the researchers did find a high rate of abused women who did not use birth control. For example, of the 115 women who reported being abused in the past

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## Abused women

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year, 17 percent did not use birth control, compared with 11 percent of the 110 women who were not abused. For all women in the study, those who were married women and those who were between 40 and 49 years old were less likely than other women in the study to use birth control. The women in the latter group may not have used

contraception because they believed they had a low risk of conceiving, the authors suggest.

Abused women most often used condoms (33 percent) to prevent pregnancy, while nonabused women most often used birth control pills (46 percent). The authors suggest that abused women who rely on condoms may face an unintended pregnancy if their partners refuse to use this method of contraception. They recommend abused women be

counseled on backup birth control methods in case they encounter this situation. This study was funded in part by the Agency for Healthcare Research and Quality (HS11088).

See “Intimate partner violence and women’s contraceptive use,” by Corrine M. Williams, Sc.D., Ulla Larsen, Ph.D., and Dr. McCloskey in the December 2008 *Violence Against Women* 14(12), pp. 1382-1396. ■

## Disparities/Minority Health

### Weekly telephone calls help patients with limited English proficiency and literacy self-manage diabetes

Self-management is an important part of diabetes care. In order to be successful, however, support services need to be in place to help patients with their specific, ongoing needs. Researchers at the University of California, San Francisco Center for Vulnerable Populations, have found that tailoring self-management support (SMS) through the use of a simple automated communication technology is very effective at reaching traditionally “hard-to-reach” individuals, particularly those with language, literacy, and insurance challenges.

The researchers investigated two SMS strategies. The first was an automated telephone self-management support system. Patients in this intervention received weekly, prerecorded telephone calls in their native language (English, Spanish, or Cantonese) over a period of 9 months. Each call lasted 6 to 12 minutes, and participants responded to diabetes-related questions. Based on their answers, the patients received either tailored, immediate health education or subsequent callbacks from a nurse care manager who helped them solve any issues using goal setting and action plans.

A second set of patients received monthly support meetings over a period of 9 months. During these 90-minute group interventions, a physician and health educator focused on diabetes-related goal setting and

action plans. The sessions involved 6 to 10 patients and were conducted in their native language.

The automated telephone call intervention reached a much greater proportion of the target population compared with the group medical intervention. Participation rates were high across clinic, clinician, and patient levels. There were especially high levels of participation among the uninsured and patients who were non-English language speakers and those who had limited literacy, in terms of call responses and action plan generation. In contrast, the group medical visit intervention had lower participation among patients with communication barriers. The researchers suggest that by employing simple communication technologies to deliver more care to patients with greater needs, public health and health care systems can help reduce disparities in diabetes care in individuals with communication barriers. The study was supported in part by the Agency for Healthcare Research and Quality (HS14864).

See “Seeing in 3-D: Examining the reach of diabetes self-management support strategies in a public health care system,” by Dean Schillinger, M.D., Hali Hammer, M.D., Frances Wang, M.S., and others, in the October 2008 *Health Education & Behavior* 35, pp. 664-682. ■

## Nurse-led disease management of heart failure is cost-effective in ethnically diverse urban communities

**N**urse-led disease management programs not only improve quality of life for heart failure patients, but are also reasonably cost effective. That's the finding from a recent study, which looked at this intervention over a period of 12 months.

In their investigation, researchers randomized 406 patients with heart failure to participate in either a nurse-led disease management program or receive usual care. All were from the Harlem neighborhood in New York City and the majority were black and Hispanic, of lower socioeconomic status. During the 12 months, patients in the program met with a nurse, who then followed up with regular telephone calls. The nurses helped patients follow a low-salt diet and stressed the importance of taking medications. Every 3 months, trained surveyors called

patients in both groups to ask about physical functioning and care received. Administrative records were also analyzed to determine medical costs and their cost effectiveness.

Compared with patients in the usual care group, nurse-led patients maintained better physical functioning over the 12-month period of the study. They also had greater quality-of-life scores during every 3-month interval. The nurse-led intervention cost \$2,177 for each patient. This was offset, however, by the \$2,378 savings realized in lower hospitalization costs per person. The researchers calculated that the improved quality of life cost society less than \$25,000 per quality-adjusted-life-year. This is considered a reasonable cost to gain 1 year of healthy life. In this study, the nurse-led intervention was most cost

effective for patients with earlier stages of heart failure (New York Heart Association class I and II).

Since the study enrolled patients from an ethnically diverse, inner-city neighborhood, the results may not apply to other geographic settings. More research is needed to determine the best types of nurse-led management interventions and which heart failure patients will benefit the most from them. The study was supported by the Agency for Healthcare Research and Quality (HS10402).

See "Cost-effectiveness of nurse-led disease management for heart failure in an ethnically-diverse urban community," by Paul L. Hebert, Ph.D., Jane E. Sisk, Ph.D., Jason J. Wang, Ph.D., and others, in the October 2008 *Annals of Internal Medicine* 149, pp. 540-548. ■

## Minority children from disadvantaged families use more urgent care and less preventive care for their asthma

**W**heezing, coughing, chest tightness, and difficulty breathing are the hallmarks of asthma, one of the most common chronic illnesses in children. Many children can control their asthma by using prescribed inhaled anti-inflammatory medications daily. However, a new study by Gail M. Kieckhefer, Ph.D., A.R.N.P., of the University of Washington, and colleagues finds that black and Hispanic children from low-income families and children whose mothers had less than a high-school education have prescriptions for asthma medicines filled less often than children from higher income families or whose mothers graduated high school. These children also tended to use emergency departments, and not medical office visits, to receive care for their asthma. The authors suggest that better educated mothers focus more on preventing asthma symptoms and rely less on urgent care facilities to treat asthma attacks after they occur.

If black and Hispanic parents rely on urgent care facilities because they lack the expertise to manage their children's asthma at home, educational interventions may give them the skills they need, the authors suggest. However, if parents rely on urgent care because they do not have regular caregivers, programs such as the State Children's Health Insurance Program may give children the access to preventive care they need for asthma care. This study, funded in part by the Agency for Healthcare Research and Quality (HS13110), used 1996 to 2000 data for 982 children from the Agency's Medical Expenditure Panel Survey.

See "Health care utilization by children with asthma," by Hyoshin Kim, Ph.D., Dr. Kieckhefer, April A. Greek, Ph.D., and others in the January 2009 *Preventing Chronic Disease* 6(1), pp. 1-10. (E-pub available at [www.cdc.gov/pcd/issues/2009/Jan/07\\_0199.htm](http://www.cdc.gov/pcd/issues/2009/Jan/07_0199.htm).) ■



## Caregiving is especially challenging for Korean Americans

As the number of older Americans continues to grow, more families will be faced with the challenge of caring for elderly loved ones. While Korean-American families are no different in this regard, they are more likely to depend on family members as informal caregivers rather than rely on outside supportive care services, according to a new study.

Researchers conducted eight focus groups with first-generation, Korean-American adults over an 8-month period. Participants were all living with or providing care to a Korean-American relative or nonrelative aged 60 years or older.

During the focus groups, the caregivers expressed a strong sense of duty to care for ill or frail family members, thereby upholding the traditional value of daughter/son devotion (filial piety) known as “hyo.” This duty often

competed with other life priorities within harsh immigrant life, such as working extremely long hours to survive in the United States. Participants found caregiving physically and psychologically demanding. All were ambivalent about using outside, formal services, which they viewed as a last resort.

The study also identified a number of ways health care services can be improved to meet the needs of an expanding Korean-American population. Barriers to optimal caregiving include language difficulties, unavailability of Korean food in nursing homes, and a lack of culturally acceptable alternatives. Many of the participants had significant difficulty communicating with mainstream health care providers. This made them especially afraid of placing the loved one in a nursing home.

Because nurses have the most contact with caregivers and the person receiving care, the researchers suggest that acquiring more knowledge about changing cultural norms can help nurses work with informal caregivers to reconcile traditional values with care demands. The researchers agree that more culturally appropriate support services are needed. The study was supported in part by the Agency for Healthcare Research and Quality (HS13779).

See “Experiences and challenges of informal caregiving for Korean immigrants,” by Hae-Ra Han, Ph.D., R.N., Yun Jung Choi, Ph.D., R.N., Miyong T. Kim, Ph.D., R.N., F.A.A.N., and others, in the May 2008 *Journal of Advanced Nursing* 63(5), pp. 517-526. ■

## Elderly/Long-Term Care

### Deaths and rehospitalizations for elderly patients have not decreased despite advances in heart failure therapies

For patients suffering with chronic heart failure, the past 20 years have been a time of medical advances, including drug therapy with beta blockers and angiotensin-converting enzyme inhibitors. However, a new study finds that despite these strides, the rates at which elderly patients with chronic heart failure are rehospitalized or die have not changed significantly.

Researchers examined Medicare records for more than 2.5 million patients with heart failure who were hospitalized from January 2001 to December 2005. Although in-hospital deaths fell from 5.1 percent to 4.2 percent during the 4 years, deaths at 30 days, 180 days, and 1 year were constant at 11 percent, 26 percent, and 37 percent, respectively. In the short term, almost one

in four patients returned to the hospital within 30 days after an initial stay for heart failure. In the longer term, one in three patients with heart failure died, and two-thirds were rehospitalized during the 1-year followup period.

These death and rehospitalization rates may reflect the fact that clinical trials for drugs to treat heart failure often exclude elderly patients from participating, so evidence about the effectiveness of drugs is limited for this group. Further, elderly patients may also have several other medical conditions that need to be managed along with heart failure. Identifying

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## Heart failure therapies

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management strategies for these patients is urgent, the authors suggest, because heart failure is a leading cause of hospitalization in the steadily increasing Medicare population. This study was funded in part by the

Agency for Healthcare Research and Quality (HS10548).

See “Early and long-term outcomes of heart failure in elderly persons, 2001-2005,” by Lesley H. Curtis, Ph.D., Melissa A. Greiner, M.S., Bradley G. Hammill, M.S., and others in the December 8, 2008, *Archives of Internal Medicine* 168(22), pp. 2481-2488. ■

## Race and gender affect the likelihood that elderly patients will take their antihypertensive medications

Depending on their race and gender, different factors motivate elderly men and women to take their prescribed antihypertensive medications. Thus, a one-size-fits-all educational program may not be the most effective way to improve medication adherence, suggests Daniel L. Howard, Ph.D., of Shaw University. He and coinvestigators examined antihypertensive medication adherence by a sample of 2,913 elderly hypertensive patients in North Carolina. They collected data in four waves: 1987, 1990, 1994, and 1998 (completed by only 1,470 participants).

Overall, 50.7 percent of white and 59.2 percent of black participants reported currently taking their antihypertensive medication. Both white and black women with higher body mass

index (BMI) were more likely to report taking their medication over time. White women who were satisfied with their medical care and black women treated by a minority physician were more likely to take their medication over time.

In contrast, white men with a lower BMI and who were not satisfied with their medical care were less likely to take their antihypertensive medication over time. Also, black men with lower BMI who have white physicians were less likely to take their medication as directed. Black men were 36 percent more likely to take their medication if they had a minority physician or if they were married, 31 percent more likely to do so if they lived in a rural area, and 26 percent more likely to do so if they had controlled blood

pressure. Focusing on individual-level characteristics and the different factors that may motivate specific ethnic groups may help to develop more precisely targeted interventions to improve adherence to antihypertensive medication by the elderly, conclude the researchers. The study was supported in part by the Agency for Healthcare Research and Quality (HS13353).

More details are in “Predicting medication use in an elderly hypertensive sample: Revisiting the established populations for epidemiologic studies of the elderly study,” by Mimi M. Kim, Ph.D., Dr. Howard, Jay S. Kaufman, Ph.D., and DaJuanicia Holmes, M.S., in the December 2008 *Journal of the National Medical Association* 100(10), pp. 1386-1393. ■

## Health Information Technology

### Electronic health records provide more complete information than paper-based records in labor and delivery units

The use of electronic health records (EHR) in obstetrical environments has lagged behind other clinical specialties that have already embraced the technology. In a study of the use of an EHR in a labor and delivery unit, Jeanne-Marie Guise, M.D., M.P.H. of Oregon Health and Science University, and colleagues found that electronic admission records contained more patient information when compared with paper records.

The researchers examined 250 paper-based and 250 EHR labor and delivery admission notes in a busy university hospital labor and delivery unit. The paper-based records were created during a 6-month period before the unit implemented an EHR system. All of the EHR admission notes studied were created after the system was in place for 1 year.

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## Electronic health records

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Paper-based admission notes were substantially more likely to be missing key clinical information when compared with the EHR. Data most likely to be missing included contractions (10 vs. 2 percent), membrane status (64 vs. 5 percent), bleeding (35 vs. 2 percent), and fetal movement (20 vs. 3 percent). The EHR also was more likely to contain complete information about factors used to calculate gestational age. Other data more likely to be missed in paper-based notes were fetal monitoring information, infection history, and laboratory data, such as blood type and Rh factor. When workflow was examined, both computer-related and direct patient care activities significantly increased following the EHR implementation.

Implementing an EHR system in labor and delivery units can improve patient safety and quality of care. EHRs have specific design features that may improve document completeness compared with paper-based records. For example, providers can use a single check box to indicate an entire category of patient history is negative. More research is needed to understand how certain safety features can affect aspects of labor and delivery care. The study was supported by the Agency for Healthcare Research and Quality (HS15321).

See “Examining the value of electronic health records on labor and delivery,” by Karen B. Eden, Ph.D., Rosalia Messina, M.P.A., Hong Li, M.D., M.S.P.H., and others, in the September 2008 *American Journal of Obstetrics & Gynecology* 199, pp. 307.e1-307.e9. ■

## Patient-centered health information technology has little impact on reducing pediatric medication errors in emergency departments

**M**ore than half (58 percent) of all medications prescribed to children in emergency departments (EDs) are associated with at least one error. Patient-centered health information technology (health IT) interventions are one possible way to reduce the number of these medication errors. ParentLink, a patient-centered health IT designed to enhance communication between parents and emergency providers, has minimal impact on medication errors during pediatric ED care.

The finding comes from a study of two EDs where parents brought in their children for care. Researchers compared usual care with intervention periods using the ParentLink system. Parents entered the child's symptoms, current medications, and allergies into a mobile kiosk. The system then provided ED physicians with treatment recommendations.

Parents received a printout of likely ED-based actions and suggested ways to talk effectively with providers. Both usual care and ParentLink participants received a structured telephone interview 5 to 10 days after the ED visit.

ParentLink was designed to avoid common prescribing errors in emergency medicine due to miscalculated doses and drug-allergy interactions for common medications prescribed for pain, asthma, and infections. However, in this study, ParentLink demonstrated no significant impact on the rate of medication errors in ED care for children. This may have been due to the fact that certain types of medication errors related to communication and drug-allergy interactions were already low in the two EDs studied.

Another possible explanation is that 50 percent of the most common medication errors were

related to deficiencies in documentation, considered outside ParentLink's range of potential impact. These included no documented order, no order time, and no signature. The highest error rate per 100 patients was found in children taking 2 or more medications at the time of the ED visit. Efforts in the future should focus on refining health IT to better integrate information produced by the patient with existing systems' data. The study was supported by the Agency for Healthcare Research and Quality (HS14947).

See “Impact of a patient-centered technology on medication errors during pediatric emergency care,” by Stephen C. Porter, M.D., M.P.H., Rainu Kaushal, M.D., M.P.H., Peter W. Forbes, M.A., and others, in the September/October 2008 *Ambulatory Pediatrics* 8, pp. 329-335. ■

### Health information systems need to address pediatric needs

**B**ecause adults are the largest consumers of health care services, health information technologies have concentrated on that population's needs. As these information technologies mature, however, they should also begin to address the unique needs of children, suggest Agency for Healthcare Research and Quality researchers Patrick H. Conway, M.D., M.Sc., P. Jonathan White, M.D., and Carolyn Clancy, M.D. For example, electronic health records (EHRs) should be able to measure weight in grams, record childhood immunizations, calculate medication dosages based on weight, provide pediatric growth charts, and permit a temporary patient number to identify infants until parents obtain a Social Security number (which many EHRs use as a patient number).

Health information systems should also be equipped to handle the privacy issues adolescents face, including laws that require parental notification and changes in

foster care guardians. Further, because many States are striving to provide better health records for foster children, health information systems should also permit information sharing among providers.

The authors recommend that individuals involved in pediatric medicine engage public and private funders of health information technology projects to encourage implementation of systems that address pediatric concerns. State Medicaid and private payers could also offer financial incentives to pediatric practices to adopt EHRs, as cost is often the greatest barrier in adopting them.

See "The public role in promoting child health information technology," by Drs. Conway, White, and Clancy in the January 2009 *Pediatrics* 123(Supplement 2), pp. S125-S127. Reprints (AHRQ Publication No. 09-R038) are available from AHRQ.\* ■

### Adult drug for sickle cell anemia may be safe for children

**I**n 1998, the U.S. Food and Drug Administration approved the medication hydroxyurea for adults with sickle cell anemia. This inherited blood disease causes red blood cells to lose their shape, block circulation, and cause organ damage. Hydroxyurea is used to prevent sudden, painful episodes, called crises, caused by blocked blood flow to bones, lungs, abdomen, or joints. Although the drug has not been approved for pediatric use, in 2002 the National Heart, Lung, and Blood Institute recommended its use for children with sickle cell anemia.

Researchers from the Johns Hopkins Evidence-based Practice Center examined 26 published studies to determine the drug's

effectiveness and safety for children. One randomized clinical trial of children with sickle cell anemia found that children who were given hydroxyurea had fewer and shorter hospitalizations compared with children who received a placebo. In three of four observational studies, the number of pain crises decreased when children took the drug.

Children who have sickle cell anemia tend to grow slower and reach puberty later than other children. A panel of experts found that hydroxyurea did not cause growth delays in children who were 5 to 15 years old. However, because the drug affects the reproductive system of male mice,

it may have an adverse effect on sperm production after puberty.

The authors suggest that frequent monitoring and coordination of care between primary care providers and pediatric hematologists may help improve the access of children to hydroxyurea's benefits. This study was funded by the Agency for Healthcare Research and Quality (Contract No. 290-02-0018).

See "Hydroxyurea for sickle cell disease: A systematic review for efficacy and toxicity in children," by John J. Strouse, M.D., Sophie Lanzkron, M.D., Mary Catherine Beach, M.D., M.P.H., and others in the December 2008 *Pediatrics* 122(6) pp. 1332-1342. ■



### Emergency departments need to do more to maximize patient safety

**M**uch more can be done to improve patient safety in emergency departments (EDs), say clinicians who work there. In a recent survey, clinicians reported problems related to the ED physical environment, staffing, inpatient coordination, and information coordination and consultation. The findings come from a survey of 3,562 health care providers who worked at 65 EDs across the country. Most of those surveyed felt the ED needed to be bigger; only 38 percent were satisfied with the current space. A third said the number of patients consistently exceeded their ED's capacity to provide safe care and 31 percent reported patients receiving care in the hallways.

Only 6 percent indicated that patients admitted to the hospital from the ED were transferred in less than 1 hour. Most felt that medications, monitoring devices, and stretchers were consistently available and working properly. Half reported difficulty when it came to gaining access to a patient's medical record.

Staffing was also a problem. While 60 percent of ED clinicians felt physician staffing was sufficient, only 33 percent felt the same way about nurse staffing. Less than half of those surveyed (45 percent) did not believe

clinical information was consistently transferred between physicians during shift changes. More than half (58 percent) felt the same way about nurses' transfer of information. Only 15 percent of those surveyed reported that individuals were consistently blamed when safety problems happened in the ED. Another 46 percent said this was the case some of the time. Only half felt that hospital administrators supported patient safety improvements on a consistent basis. Nevertheless, the majority of those surveyed felt that patient safety was a top priority at their ED and 70 percent indicated that efforts were underway to improve patient safety. The study was supported in part by the Agency for Healthcare Research and Quality (HS13099).

See "The safety of emergency care systems: Results of a survey of clinicians in 65 US emergency departments," by David J. Magid, M.D., M.P.H., Ashley F. Sullivan, M.S., M.P.H., Paul D. Cleary, Ph.D., M.P.H., and others, in the December 2008 online edition of the *Annals of Emergency Medicine*, available at [www.ncbi.nlm.nih.gov/pubmed/19054592](http://www.ncbi.nlm.nih.gov/pubmed/19054592). ■

### Quality of asthma care varies significantly in emergency departments

**A**pproximately 2 million visits to emergency departments (EDs) each year are due to asthma, yet, little is known about the quality of acute asthma care at the ED level. In a new study, researchers have discovered geographic differences in quality of asthma care, with EDs in the South less likely to deliver guideline-specific care. The researchers retrospectively reviewed medical charts related to 6,065 ED visits for acute asthma in 63 urban EDs located in 23 States. They determined just how well such care matched asthma management guidelines issued by the National Institutes of Health.

Emergency departments with higher asthma patient volume tended to score better when it came to delivering guideline-concordant care. This was also true for EDs that had an emergency medicine residency program. The most significant finding, however, was that EDs located in the South were less likely to deliver guideline-concordant care compared with northeastern EDs. Three-quarters of patients (76 percent) studied received all four types of care recommended by the NIH guidelines. Such patients had a significantly lower risk of hospital admission compared with patients

who did not receive all four types of care.

More than half of patients treated in the ED for asthma never received any peak expiratory flow (PEF) measurement, a simple measure of breathing capacity. Also, 22 percent of patients may have benefited from receiving systemic corticosteroid therapy if they had received it. Unnecessary antibiotics were given to 17 percent of patients. The researchers also found important delays in the delivery of asthma care in the ED. All of these areas should be the focus of future quality improvement

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## Asthma care

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efforts, suggest the researchers. Their study was supported in part by the Agency for Healthcare Research and Quality (HS13099).

See “Quality of care for acute asthma in 63 US emergency

departments,” by Chu-Lin Tsai, M.D., Sc.D., Ashley F. Sullivan, M.S., M.P.H., James A. Gorden, M.D., M.P.A., and others, in the February 2009 *Journal of Allergy and Clinical Immunology* 123(2), pp. 354-361. ■

## Acute Care/Hospitalization

### Discharge process reduces hospital use in the 30 days following discharge

One in five patients discharged from a hospital ends up back at the emergency department or in the hospital within a month because of an adverse event. Thirty percent of these return trips may be avoidable if a hospital standardizes its discharge process to include patient education, coordination with the patient’s primary care physician, and pharmacist followup with the patient, a new study finds.

Brian W. Jack, M.D., of the Boston University School of Medicine, studied the effect of a reengineered discharge process with 738 patients discharged from the Boston Medical Center from January 2006 to October 2007. The 370 patients in the intervention group received a personalized after-hospital care plan from a nurse discharge advocate. The advocate also provided the plan and discharge summary to the patient’s primary care provider on discharge day. A pharmacist followed up with a phone call to the patient within 4 days after discharge to ensure the patient understood how to take any new medications. The control group of 368 underwent the hospital’s regular discharge process.

The reengineered discharge process decreased hospital use by about 30 percent in the 30 days

following discharge. Further, patients who underwent the reengineered discharge process were more likely to identify their diagnosis, understand their medication, and visit their primary care physicians within 30 days of discharge compared with patients who received the hospital’s regular discharge plan.

The authors demonstrated a cost savings of \$412 per discharge using the reengineered process. They suggest that hospitals that institute the new process will benefit by reducing unneeded hospitalizations and attaining a quality improvement target. This study was funded in part by the Agency for Healthcare Research and Quality (HS14289 and HS15905).

See “A reengineered hospital discharge program to decrease rehospitalization: A randomized trial,” by Dr. Jack, Veerappa K. Chetty, Ph.D., David Anthony, M.D. M.Sc., and others in the February 3, 2009 *Annals of Internal Medicine* 150(3), pp. 178-187.

**Editor’s note:** On March 31, 2009, AHRQ hosted a free Web conference on the Re-Engineered Hospital Discharge (Project RED) intervention. To register and view the recorded Web conference, send an e-mail to: [Hospital\\_Technical\\_Assistance@AHRQ.hhs.gov](mailto:Hospital_Technical_Assistance@AHRQ.hhs.gov). ■

### Patients actively engaged in their health are more likely to adhere to physical therapy after spine surgery

After patients undergo surgery for degenerative conditions of the lumbar spine, the North American Spine Society recommends that they have physical therapy to strengthen weakened back muscles. Richard L. Skolasky, Sc.D., and colleagues at Johns Hopkins

University found that the level of patient activation (defined as an individual’s propensity to engage in positive health behavior) is associated with better attendance and engagement in physical therapy.

The study enrolled 65 patients who presented for surgery of their

degenerative lumbar spinal stenosis. All underwent a baseline assessment prior to surgery. Patient activation was measured using the Patient Activation Measure (PAM). Every week for 6 weeks, patients

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## Spine surgery

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were asked about how many physical therapy sessions were prescribed and how many they actually attended. At 6 weeks, physical therapists were asked to rate the patients' engagement in physical therapy using a standard rating scale.

According to the researchers, there were no significant differences in patient activation scores with respect to age, gender, marital status, comorbid conditions, or education. The researchers found that as patient activation increased, the severity of depressive

symptoms decreased. Self-efficacy and hopefulness grew with increasing patient activation. Patients who demonstrated high activation attended more of their therapy sessions compared with patients with low activation and there was a strong positive association between patient activation and engagement. Physical therapists rated these individuals as highly engaged in their therapy.

The researchers believe this work points to the importance of looking at psychological factors and patient competencies when trying to understand health behaviors, and

indicate that the PAM can be used as a valuable tool in clinical practice. Additional research needs to focus on the value of preoperative interventions aimed at increasing patient activation and subsequent recovery. The study was supported by the Agency for Healthcare Research and Quality (HS16106).

See "Patient activation and adherence to physical therapy in persons undergoing spine surgery," by Dr. Skolasky, Ellen J. Mackenzie, Ph.D., Stephen T. Wegener, Ph.D., and Lee H. Riley III, M.D., in the October 2008 *Spine* 33(21), pp. E784-E791. ■

## Substance abuse is linked to readmissions for mood disorders

About 21 million American adults suffer from mood disorders, including major depression and bipolar disorder. When people with mood disorders are hospitalized for treatment, between 20 and 50 percent of them return to the hospital within a year. Researchers at the Rutgers University Center for Education and Research on Therapeutics (CERT) analyzed Medicaid claims data from five States and found that nearly a quarter of people with major depression, bipolar disorder, or both conditions were hospitalized from 1999 to 2000. Thirty-six percent of those who were hospitalized also had received diagnoses of alcohol or drug abuse.

Twenty-four percent of the people hospitalized with mood disorders were rehospitalized within 3 months after they were discharged. Half (50 percent) of those who were rehospitalized also had received diagnoses of drug or alcohol abuse. People with mood disorders who abused drugs had an adjusted readmission hazard rate that was 58 percent greater than those who did not abuse drugs, and people with

mood disorder who abused alcohol had an adjusted readmission rate that was 46 percent greater than those who did not abuse alcohol.

The authors suggest that people suffering from major depression and bipolar disorder, who also abuse drugs or alcohol, might be able to avoid hospitalizations and rehospitalizations if their substance abuse, mental health, and medical care services are better integrated so that they receive appropriate care. This study was funded in part by a grant from the Agency for Healthcare Research and Quality (HS16097) to the Rutgers University CERT. For more information on the CERTs program, please visit [certs.hhs.gov/index.html](http://certs.hhs.gov/index.html).

See "Substance abuse and hospitalization for mood disorder among Medicaid beneficiaries," by Jonathan D. Prince, Ph.D., Ayse Akincigil, Ph.D., Donald R. Hoover, Ph.D., and others in the January 2009 *American Journal of Public Health* 99(1), pp. 160-167. ■

## Experience, career satisfaction, and fewer work hours lead to less stress for attending physicians

**M**aking the transition from medical student to medical resident can be a stressful adjustment. However, as interns, residents, and attending physicians advance in their residencies and become more adept at their careers, their stress levels decline, a new study finds. Timothy R. Dresselhaus, M.D., M.P.H., of the University of California, San Diego, and colleagues, asked 185 interns (first-year residents), residents, and attending physicians to record real-time mood assessments on hand-held computers over an 18-month period at 4 teaching hospitals in San Diego.

Attending physicians worked fewer hours (8.9 hours) than interns (10.4 hours) and residents (10.5 hours) and had more patients (9.7) assigned to them than residents (7.7 patients) and interns (5 patients). However, attending physicians had much lower stress ratings compared with interns and residents. The authors suggest that attending physicians may be well matched in their career choices, and their clinical decisionmaking experience reduces their stress, despite short workdays in which they see many patients.

Poor sleep quality and high patient load were associated with

increased stress. To combat stress, the authors recommend that medical educators teach students to recognize stress, residents receive training in leading and supervising interns, and interns receive training in time management. This study was funded in part by the Agency for Healthcare Research and Quality (HS14283).

See “Intern to attending: Assessing stress among physicians,” by Erin R. Stucky, M.D., Dr. Dresselhaus, Adrian Dollarhide, M.D., and others in the February 2009 *Academic Medicine* 84(2), pp. 251-257. ■

## Patient Safety and Quality

### Patient safety events make hospital stays longer and more costly

**H**ospital stays that result in a patient safety event report are 17 percent more costly and 22 percent longer compared with stays with no events. The most expensive and most common events are medication and treatment errors, accounting for 77 percent of all event types and 77 percent of added costs. The findings come from a study by researchers at the Center for Outcomes Research and Education, Providence Health and Services, Portland, Oregon. They analyzed events captured in a voluntary electronic reporting system at three hospitals in Portland.

Previous research on patient safety-related cost and length of stay has focused on events or injuries defined by some level of patient harm. In contrast, 90 percent of events in this study did not result in patient harm. As a result, the excess cost and length of stay observed was probably due to near misses, latent errors, and other unsound practices, explain the researchers.

Events considered the most expensive were medication errors and patient falls (21 percent higher cost), behavioral problems (15 percent), loss/exposure (13 percent), treatment (12 percent), and equipment

(11 percent). Patient falls incurred the greatest increase in length of stay (34 percent longer), followed by medication events (26 percent), loss/exposure (25 percent), behavioral problems (21 percent), treatment (13 percent), and equipment (10 percent).

Over 2 years, these patient safety events resulted in an estimated \$8.3 million in additional costs and an additional 4,854 days in the hospital. Medication events were the most costly, accounting for an estimated \$4 million and nearly half (2,300) of the extra patient days. Treatment events and falls resulted in \$2.3 million and \$900,000 of extra costs, respectively. During the 2-year period, falls resulted in more than 1,100 additional bed days. The study was supported in part by the Agency for Healthcare Research and Quality (Contract No. 290-00-0018).

See “Excess cost and length of stay associated with voluntary patient safety event reports in hospitals,” by Andrew R. Paradis, M.B.A., Valerie T. Stewart, Ph.D., K. Bruce Bayley, Ph.D., and others, in the January/February *American Journal of Medical Quality* 24(1), pp. 53-60. ■



## Staff perceptions of hospital patient safety differ by department and position

How health care workers feel about patient safety at their hospital depends on whom you ask and where they work. For example, emergency department personnel have the worst safety climate perceptions, while workers in nonclinical areas hold a more favorable view, finds a new study. Researchers used the Patient Safety Climate in Healthcare Organizations survey, which includes 38 items capturing important safety climate features, to examine perceptions of the patient safety climate by hospital work area and staff position. A total of 18,361 completed surveys were received from a sample of 92 U.S. hospitals. In addition to sampling 100 percent of senior managers and physicians, the researchers included 10 percent of all other workers.

Overall, 17 percent of responses indicated that a safety climate was absent at the individual's organization. Among emergency department personnel, nurses perceived substantially lower levels of safety climate when compared with personnel in other areas and other emergency department personnel. The researchers also discovered that the patient safety climate was worse in hospital wards, with nurses again having the lowest perceptions. Both emergency department and ward nurses were concerned about the limited engagement by senior management and the lack of sufficient organizational resources.

Overall, nurses were more negative than physicians when it came to perceptions of safety climate. However, physicians were

more likely than nurses to report a sense of shame and embarrassment when they made a mistake or asked for help. Status and authority differences between physicians and nurses may result in barriers that have a negative impact on safety culture. Any strategies used to improve safety climates should take into consideration these differences in work areas and disciplines, suggest the researchers. Their study was supported in part by the Agency for Healthcare Research and Quality (HS13920).

See "Patient safety climate in 92 US hospitals: Differences by work area and discipline," by Sara J. Singer, M.B.A., Ph.D., David M. Gaba, M.D., Laurence C. Baker, Ph.D., and others, in the January 2009 *Medical Care* 47(1), pp. 23-31. ■

## WalkRounds program enhances the patient safety climate in hospitals

Hospital WalkRounds were introduced in 1999 to improve hospital safety. WalkRounds are weekly visits by hospital executives and frontline medical staff to different hospital units. Their purpose is to provide a forum to ask about adverse events and near misses and identify factors that led to these patient safety problems. The information is then put into a database to use to improve safety. Implementing WalkRounds improves how caregivers assess patient safety and provides a structured forum for them to discuss safety concerns, according to a new study.

For nearly 3 years, seven hospitals agreed to participate in the prospective study by starting a WalkRounds program in all patient care areas. Rounds were conducted weekly using a seven-step program guide. Researchers gathered information on safety attitudes from caregivers at the start of the program and then again at 18 months. At baseline, 10 of 21 care areas had safety climate scores below 60 percent. After implementing WalkRounds, only three care areas had scores below this level. All other care areas increased their scores by 10 points or more. WalkRounds resulted

in significant improvement when it came to discussing patient safety concerns. Caregivers felt more encouraged to discuss and learn from errors, as well as to report concerns in an effective manner. They also felt empowered with a stronger sense of responsibility for patient safety and more connected around safety issues with staff in other care areas.

When bringing up patient safety problems, nurses were more inclined to talk about operational difficulties. Physicians, on the other hand, focused on clinical decisionmaking issues. Since the WalkRounds program was so intensive, only two of the seven participating hospitals were able to successfully sustain their implementation on a broad level. The researchers identified three factors necessary for success: leadership commitment, a champion trained in quality and safety, and adequate time and resources for data management and feedback. The study was supported in part by the Agency for Healthcare Research and Quality (HS55401).

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## WalkRounds

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See “Revealing and resolving patient safety defects: The impact of leadership WalkRounds on frontline

caregiver assessments of patient safety,” by Allan Frankel, Ph.D., Sarah Pratt Grillo, M.H.A., Mary Pittman, Dr.P.H., and others, in the December 2008 *HSR: Health Services Research* 43(6), pp. 2050-2066. ■

## Faculty and leadership are unhappy with medical school culture

Medical school faculty treasure and value their relationships with residents and their patients. Such is not the case, however, when it comes to relating to their peers. A survey shows that they feel disconnected to each other and find it difficult to develop trusting relationships with colleagues and supervisors. A team led by Linda Pololi, M.B.B.S, M.R.C.P., of Brandeis University, interviewed faculty members from five diverse medical schools in the United States about their perceptions and experiences in academic medicine. Participants included new and highly experienced clinicians from different specialties.

Medical school faculty found most rewarding their interactions

with physicians-in-training, research collaborators, and patients. On the other hand, many said they felt isolated, lacked supportive relationships among their peers, and the medical school culture did not support trusting relationships. They portrayed the culture as intense, competitive, stressful, and individualistic. Such feelings were expressed by both men and women at all stages in their career development.

Academic medical environments had a “dehumanizing” effect on those interviewed. Showing any sensitivity to others was considered a weakness. Study participants felt they were not valued as faculty who contributed to the success of the medical school and the larger

organization was viewed as not being loyal to the faculty. At some medical schools, there was a culture of mistrust, dishonesty, and breaches of academic integrity. The researchers suggest schools of medicine need to make efforts to create and support trusting relationships in order to enhance clinical, educational, and research activities. Their study was supported in part by the Agency for Healthcare Research and Quality (HS16342).

See “A study of the relational aspects of the culture of academic medicine,” by Dr. Pololi, Peter Conrad, Ph.D., Sharon Knight, Ph.D., R.N., and Phyllis Carr, M.D., in the January 2009 *Academic Medicine* 84(1), pp. 106-114. ■

## Study calls for better data for physician profiling

An ever-increasing number of health insurance plans are using physician performance data to improve quality and market share. More than one-third of health maintenance organizations (HMOs) now reward physicians based on quality measures, such as colorectal cancer screening for eligible patients or use of appropriate medications for patients with asthma. However, questions regarding the reliability and validity of these measures remain. The authors of a new study recommend greater efforts to improve the quality and quantity of data available for physician profiling. They found that most physicians did not have adequate numbers of quality events (patients that qualified for a specific screening or treatment) to support reliable quality measurement.

The researchers evaluated data obtained from 9 health plans covering more than 11 million members. They used 27 quality measures to determine the effectiveness of care delivered, and calculated the

number of quality events. The authors point out that using administrative data to measure and compare physician performance on a reliable basis is challenging. This is particularly true when data are limited to patients in a single health plan. With this limitation, the researchers found that only a small number of physicians could be profiled in a reliable way on common quality measures.

Most measures required at least 50 quality events per physician to get a reliable estimate of a physician’s performance. The largest proportions of physicians that were reliably evaluated on a single quality measure were 8 percent for colorectal cancer screening and 2 percent for diabetic kidney disease screening. When the researchers used composite measures of preventive, chronic, acute, and overall care, more physicians were able to be evaluated reliably. However, the majority of physicians in this large database could not be evaluated

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## Physician profiling

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reliably by either method. The study was supported in part by the Agency for Healthcare Research and Quality (HS16277).

See “Benchmarking physician performance: Reliability of individual and composite measures,” by Sarah Hudson Scholle, M.P.H., Dr.P.H., Joachim Roski, Ph.D., M.P.H., John L. Adams, Ph.D., and others, in the December 2008 *American Journal of Managed Care* 14(12), pp. 829-839. ■

## Competition among HMOs may have a negative impact on quality

Competition among health maintenance organizations (HMOs) has been promoted as a means to lower costs and improve care quality. Yet a new study suggests that such competition has little impact on various measures of health plan performance and may have a negative impact on care quality.

Researchers conducted a longitudinal analysis of 5-year data from the Healthcare Effectiveness Data and Information Set (HEDIS) and the Consumer Assessment of Health Plans Survey (CAHPS). Both

databases form the basis for most health plan report cards. The researchers used quality measures from both of these databases to measure the quality of health plans from 1998 to 2002.

They found no consistent relationship between HMO competition and care quality. Estimates of CAHPS measures suggested that more competition actually resulted in worse plan ratings, but better ratings for physicians. The pressure for lower premiums from consumers appears to dominate. However, such pricing competition may be

at the expense of improving quality in these HMOs, suggest the researchers. They also note that the fragmentation associated with competition may hinder quality improvement. The study was supported in part by the Agency for Healthcare Research and Quality (HS10771).

See “Does competition improve health care quality?,” by Dennis P. Scanlon, Ph.D., Shailender Swaminathan, Ph.D., Woolton Lee, M.S., and Michael Chernew, Ph.D., in the December 2008 *HSR: Health Services Research* 43(6), pp. 1931-1951. ■

## Recent past performance ratings of HMOs predict good performance in the future

Although health plan performance measures remain relatively stable over time, recent past ratings in particular can predict how plans will perform in the future, concludes a new study. Such information about past performance can help consumers make informed decisions about whether or not to enroll in a particular plan, note the study authors. They looked at quality assurance data for six indicators of childhood immunization between 1998 and 2002 from a national database of both publicly and nonpublicly reporting health plans. The researchers used an approach that combined the six indicators into one index of quality and examined the stability of the rankings of this underlying index over time.

Nearly two-thirds of health plans ranking in the upper tier of performance in 1999 continued to maintain such high performance in the following year. Among plans that remained in this upper tier for 2 years in a row (1998 and 1999), nearly three-fourths of

them stayed at this level in 2000. The probability of being in the upper tier in 2000 depended on the health plan's state of performance in earlier years. However, ratings from the recent past (2 to 3 years) were more predictive of future performance than ratings from the distant past.

The study also found that performance was not a permanent feature of health plans. More than a quarter of plans deemed upper tier in 1998 and 1999 ceased to remain there in 2000. Health plans that performed well over multiple time periods were most likely to be good performers in the future. The study was supported in part by the Agency for Healthcare Research and Quality (HS10771).

See “Persistence of HMO performance measures,” by Shailender Swaminathan, Ph.D., Michael Chernew, Ph.D., and Dennis P. Scanlon, Ph.D., in the December 2008 *HSR: Health Services Research* 43(6), pp. 2033-2049. ■

## Study outlines the challenges of conducting quality improvement studies at rural and small community hospitals

Staff shortages and turnover, other hospital priorities, and lack of technical resources are a few of the many challenges researchers face when trying to conduct quality improvement (QI) studies at rural and small community hospitals, concludes a new study.

Phase one implemented information technology in 64 hospitals to allow the hospitals to collect and make available (via a Web portal) data on specific inpatient quality of care measures (for heart attack, heart failure, and community-acquired pneumonia) and patient safety measures (for example, pressure sores and obstetric trauma).

Phase two of the study randomized 23 of 47 hospitals among the 64 phase one hospitals that committed to participating in the trial to the Web-based benchmarking tool plus an offsite educational program on tools and

techniques for implementing and evaluating QI initiatives (the intervention). The 24 control hospitals used the Web-based benchmarking tool only. The CEOs of hospitals in the randomized trial phase provided written consent to participate, including commitment of hospital staff to participate fully with a specifically prescribed leadership team in the educational intervention. Of the 23 intervention hospitals, only 16 completed the offsite educational program, 1 attended the educational sessions but did not complete the required QI project, 3 enrolled in “makeup” sessions, and 3 were unable to attend.

Few clinical leaders and hospital executives attended the educational classes. Also, 12 percent of staff who began the sessions changed jobs, and couldn’t implement or disseminate the QI strategies and techniques they learned.

Understaffing also made it difficult to target staff to attend the educational classes. The authors suggest that a more effective strategy for designing future QI education programs for rural settings might be an onsite course that could be attended by a larger number of hospital leaders and clinical personnel. The study was supported in part by the Agency for Healthcare Research and Quality (HS15431).

More details are in “Challenges in conducting a hospital-randomized trial of an educational quality improvement intervention in rural and small community hospitals,” by Giovanni Filardo, Ph.D., M.P.H., David Nicewander, M.S., Jeph Herrin, Ph.D., and others, in the November/December 2008 *American Journal of Medical Quality* 23(6), pp. 440-447. ■

## Health Care Costs and Financing

### The cost and impact of medical errors continue long after hospital discharge

Medical errors are costly when they happen to patients in the hospital. The cost and impact of these errors also linger long after the patient is released from the hospital, concludes a new study. Researchers William E. Encinosa, Ph.D., and Fred J. Hellinger, Ph.D., at the Agency for Healthcare Research and Quality (AHRQ) found that the death rate increased by 50 percent and error-related costs rose 20 percent over the 90-day period after patient discharge. What’s more, error-related problems increased the likelihood of readmission to the hospital, increasing total length of hospital days by 33 percent.

The researchers analyzed 161,004 patient surgeries identified from a large database of insurance claims data. They examined all medical claims incurred within

90 days after the admission date for 14 potentially preventable adverse medical events (Patient Safety Indicators [PSIs] developed by AHRQ; see [www.qualityindicators.ahrq.gov/psi\\_overview.htm](http://www.qualityindicators.ahrq.gov/psi_overview.htm)). PSIs ranged from infections due to medical care and transfusion reactions to anesthesia complications and pneumothorax. Medication errors were not included in the study.

The 14 PSIs were responsible for 11 percent of all 90-day deaths after surgery and 2 percent of hospital readmissions. An initial hospital stay involving a PSI was 16.2 days on average. Readmission increased the total length of stay days to 21.5 days (33 percent).

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## Medical errors

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Excess 90-day costs likely attributable to PSIs ranged from \$646 for technical problems (such as accidental laceration and pneumothorax) to \$28,218 for acute respiratory failure, with up to 20 percent of these costs incurred after hospital discharge. These findings suggest that reducing the 14 patient safety events

examined in this study can result in significant cost savings at the national level.

See “The impact of medical errors on ninety-day costs and outcomes: An examination of surgical patients,” by Drs. Encinosa and Hellinger, in the December 2008 *HSR: Health Services Research* 43(6), pp. 2067-2085. Reprints (AHRQ Publication No. 08-R079) are available from AHRQ.\* ■

## Use of health care among the uninsured increases over time during the first year without insurance

**T**he uninsured are increasingly likely to use health care services as the months pass during the first year of their becoming uninsured, according to a new study. Researchers analyzed data on the uninsured from the Agency for Healthcare Research and Quality (AHRQ) 1996-2002 Medical Expenditure Panel Survey (MEPS). This national survey contains information on the use of health services, insurance, and the health status of individuals.

The probability of using health care services increased during the first year of an uninsured episode, with more health care use in the second 6 months compared with the first 6 months. Health care use may rise during the first year of an uninsured episode because it takes

time for individuals to find low-cost or free health care in their communities. In addition, the uninsured may delay seeking health care, believing they will become insured once again in the near future. After several months without insurance, however, they may no longer be able to delay care, explain the researchers.

The difference in use of care over time suggests the importance of controlling for time since the uninsured episode began when estimating the effects of policies on access to care among the uninsured. The findings also suggest that interventions targeted at the uninsured may need to be tailored to individuals depending on how long they have been uninsured. The researchers found little evidence

that the final length of time without insurance, whether a few months or a year or more, affected when health care was used. This may be because individuals are unable to anticipate changes in their insurance coverage or they can anticipate when they will become insured, but their care is not discretionary. The study was supported in part by the Agency for Healthcare Research and Quality (HS10770).

See “Individuals’ use of care while uninsured: Effects of time since episode inception and episode length,” by Carole Roan Gresenz, Ph.D., Jeannette Rogowski, Ph.D., and José J. Escarce, M.D., Ph.D., in the December 2008 *Journal of the National Medical Association* 100(12), pp. 1394-1404. ■

## Dental Health

### Current and prior cavities and dentists’ assessments help identify patients at risk for future cavities

**O**ver the past decade, dentists have been urged to perform caries risk assessments (CRAs) to boost the chance that patients will receive appropriate treatment to prevent future dental cavities. Adding the dentist’s personal assessment to classification determined strictly by a patient’s previous caries experience and current caries improves the sensitivity of identifying patients at risk for subsequent cavities. However, overall accuracy may suffer, according to a

new study. Nancy A. Perrin, Ph.D., of Oregon Health and Science University, and colleagues determined the impact of these three approaches to determining caries risk by examining administrative data from two dental plans.

At Plan A, current caries activity alone explained about 2.5 percent of the variance in future caries activity, while previous and current caries activity

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## Cavity risk assessments

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explained 5.5 percent of the variance. The results for Plan B were similar. Current caries activity alone explained 4.9 percent of the variance, but previous and current caries activity explained 6.9 percent of the variance. When the dentists' CRAs were added to past and current caries activity, the model explained 8.2 percent of the variance in Plan A, but only 4.1 percent of the variance in Plan B.

In Plan B, more of the additional patients identified by the dentists' CRAs as caries-active were false-positives, thereby weakening the overall effectiveness of the additional information. At both plans, dentists

were more likely to assign an elevated caries risk to those patients who were older, received prior preventive treatment, and had larger numbers of caries-related procedures in the prior 1-year period and current period. The authors call for more studies to improve dentists' accuracy in caries risk assessments. The study was supported by the Agency for Healthcare Research and Quality (HS13339).

See "Exploring the contributions of components of caries risk assessment guidelines," by James D. Bader, D.D.S., M.P.H., Dr. Perrin, Gerardo Maupome, D.D.P.H., Ph.D., and others, in *Community Dentistry and Oral Epidemiology* 36, pp. 357-362, 2008. ■

## Agency News and Notes

### High blood pressure was the most common condition for which women sought treatment in 2006

Approximately 25 million women in the United States – most over the age of 45 – were treated for high blood pressure in 2006, making it the most common condition for which women sought treatment, according to data from the Agency for Healthcare Research and Quality (AHRQ).

The other most common diseases for which women sought treatment in 2006 by age group, included:

- Women age 65 and older: hyperlipidemia, fat build-up in the blood (7.1 million);

osteoarthritis (5.9 million); heart disease (5.7 million); and chronic obstructive pulmonary disease and asthma (5.5 million)

- Women ages 45 to 64: depression and other mental disorders (8.3 million); chronic obstructive pulmonary disease and asthma (8.2 million); hyperlipidemia (6.5 million); and osteoarthritis (5.8 million)
- Women ages 30 to 44: depression and other mental disorders (5 million); chronic obstructive pulmonary disease or asthma (4.8 million); female

genital disorders (4.2 million); and acute bronchitis (4 million)

AHRQ's data include treatment in doctors' offices and hospital outpatient clinics, emergency rooms, hospitals, and by home health care providers. The data are taken from the 2006 Medical Expenditure Panel Survey (MEPS), a detailed source of information on the health services used by Americans, the frequency and cost of use, and sources of payment. For more information, go to the MEPS Web site at [www.meps.ahrq.gov/mepsweb/](http://www.meps.ahrq.gov/mepsweb/). ■

### Medicare payments for outpatient prescription drugs jumped by more than \$38 billion in 2006

Medicare payments for outpatient prescription medications climbed by more than \$38 billion in 2006 compared with 2005, according to data from the Agency for Healthcare Research and Quality (AHRQ). Medicare offered prescription drug coverage to all Medicare beneficiaries beginning in January 2006 with the implementation of Medicare Prescription Drug Coverage or Medicare Part D. Prior to January 2006,

Medicare prescription drug coverage was limited to certain beneficiaries, such as people who required dialysis or a transplant due to severe kidney disease.

AHRQ's analysis of outpatient prescription drug spending found that between 2005 and 2006:

- Medicare spending for outpatient prescription drugs rose from \$5.9 billion to \$44.3 billion.

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## Medicare payments

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- Medicare's share of the Medicare population's overall drug spending increased from about 7 percent to 45 percent.
- In contrast, Medicaid's share of the Medicare population's drug spending decreased from 15.5 percent to about 1 percent, and private insurance's share fell from 25 percent to 16.5 percent.
- The proportion of Medicare beneficiaries that had one or more payments by Medicare for one or more

prescription drug purchases rose from about 21 percent to nearly 69 percent.

These findings are based on data from the Medical Expenditure Panel Survey (MEPS), a detailed source of information on the health services used by Americans, their frequency and cost, and sources of payment. For more information, see *Prescription Drug Estimates for Medicare Beneficiaries, 2005 and 2006*, MEPS Statistical Brief #240, on the MEPS Web site at [www.meps.ahrq.gov/mepsweb/](http://www.meps.ahrq.gov/mepsweb/). ■

## Mental disorders, asthma, and trauma injuries topped the list of most costly medical conditions in children in 2006

Over \$98 billion was spent to treat medical problems in children age 17 and under in 2006, according to data from the Agency for Healthcare Research and Quality (AHRQ). Treating mental disorders in children topped the list at a cost of \$8.9 billion. Rounding out the top five most costly medical conditions in children were:

- Asthma, one of the most common serious chronic illnesses in children, \$8 billion.

- Trauma-related disorders – including fractures, sprains, burns, and other physical injuries from accidents or violence, \$6.1 billion.
- Acute bronchitis – inflammation of the airways of the lungs that causes shortness of breath and wheezing, \$3.1 billion.
- Acute infectious diseases – such as viral and bacterial infections, \$2.9 billion.

These findings are from the 2006 Medical Expenditure Panel Survey (MEPS), a detailed source of information on the use of health services by Americans, frequency and cost of use, and source of payment. For more information, see *The Five Most Costly Children's Conditions, 2006: Estimates for the U.S. Civilian, Noninstitutionalized Children, Ages 0 to 17*, MEPS Statistical Brief #242, on the WEPS Web site at [www.meps.ahrq.gov/mepsweb/](http://www.meps.ahrq.gov/mepsweb/). ■

## Repeat C-sections rose dramatically in the past decade

The percentage of pregnant women undergoing a repeat Cesarean section (C-section) delivery jumped from 65 percent to 90 percent between 1997 and 2006, according to data from the Agency for Healthcare Research and Quality (AHRQ). C-sections are performed for medical reasons and they can be elective. Medical reasons include a previous C-section, malposition of the baby in the uterus; the mother has active genital herpes; the baby's head is too large to pass through the mother's pelvis; or problems with the umbilical cord.

AHRQ also found that:

- Nearly one-third of the 4.3 million childbirths in 2006 were delivered via C-section, compared with one-fifth in 1997.
- C-sections are more costly than vaginal deliveries, \$4,500 versus \$2,600 in uncomplicated deliveries, and \$6,100 versus \$3,500 in deliveries with complications.

- Therefore, although C-sections account for 31 percent of all deliveries, they account for 45 percent of all costs associated with delivery.
- C-sections account for 34 percent of all deliveries by women who are privately insured, but only 25 percent of deliveries by women who are uninsured.

For more information, see *Hospitalizations Related to Childbirth, 2006*, HCUP Statistical Brief #71 ([www.hcup-us.ahrq.gov/reports/statbriefs/sb71.pdf](http://www.hcup-us.ahrq.gov/reports/statbriefs/sb71.pdf)). The report uses statistics from the 2006 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 discharges in the United States and include all insured and uninsured patients. ■

### Task Force reaffirms recommendations for screening and counseling all adults and pregnant women for tobacco use

The U.S. Preventive Services Task Force (USPSTF) has reaffirmed its 2003 recommendation that clinicians ask all adults about tobacco use and provide tobacco cessation interventions for those who smoke. Tobacco dependence is responsible for nearly half a million deaths each year from heart disease, respiratory disease, and cancer. The Task Force also reaffirmed its recommendation that clinicians ask all pregnant women about tobacco use and provide augmented, pregnancy-tailored counseling for those who smoke. Smoking during pregnancy results in the death of about 1,000 infants annually and is associated with an increased risk for premature birth and intrauterine growth retardation.

The recommendations are based on information found in the updated U.S. Public Health Service

*Clinical Practice Guideline: Treating Tobacco Use and Dependence: 2008 Update*. The recommendations are published in the April 21 issue of the *Annals of Internal Medicine* and are available on the AHRQ Web site at [www.ahrq.gov/clinic/uspstf/uspstbac2.htm](http://www.ahrq.gov/clinic/uspstf/uspstbac2.htm).

The USPSTF is the leading independent panel of experts in prevention and primary care. Supported by AHRQ, the Task Force conducts rigorous, impartial assessments of the scientific evidence for the effectiveness of a broad range of clinical preventive services, including screening, counseling, and preventive medications. Its recommendations are considered the gold standard for clinical preventive services. ■

## Research Briefs

**Bergstrom, N., Smout, R., Horn, S., and others. (2008, July). "Stage 2 pressure ulcer healing in nursing homes." *Journal of the American Geriatric Society* 56(7), pp. 1252-1258. Reprints (AHRQ Publication No. 09-R001) are available from AHRQ.\***

Pressure ulcers, which affect many nursing home residents, form when constant pressure on an area of the skin (for example, due to being bedridden or in a wheelchair) reduces blood to the affected area and the tissue starts to die. These ulcers can become chronic gaping wounds that don't heal for months or don't heal at all. The researchers analyzed data on resident and wound characteristics associated with healing time of stage 2 pressure ulcers (abrasion, blister, or shallow crater) among 774 nursing home residents with a stay of 14 days or longer. Overall, there were

1,241 stage 2 pressure ulcers on 774 residents. Less than half (45.4 percent) of the ulcers healed. Median time to heal was 46 days. Median time to heal was 33 days for small (1 cm<sup>2</sup> or less), 53 days for medium (greater than 1 cm<sup>2</sup> and less than 4 cm<sup>2</sup>), and 73 days for large (greater than 4cm<sup>2</sup>) ulcers. The researchers found that nursing home residents' pressure ulcers that were large or located on the extremities were slower to heal than pressure ulcers located elsewhere.

**Brokel, J. M., and Harrison, M. I. (2009). "Redesigning care processes using an electronic health record: A system's experience." (AHRQ grant HS15196). *The Joint Commission Journal on Quality and Product Safety* 35(2), pp. 82-92. Reprints**

**(AHRQ Publication No. 09-R036) are available from AHRQ.\***

This paper describes the steps taken by a multi-State Catholic health care system to implement a patient-centered electronic health record (EHR) in its hospitals and clinics. The authors discuss the planning and implementation processes, which were carried out at 32 facilities in 2 phases over an 8-year period for the health care system overall. An additional eight facilities will undergo planned EHR implementation by the end of 2011. Phase I consisted of a clinical data repository, dictated physician reports, pharmacy medication profile, and a set of adverse drug alerts. Phase II added computer provider order entry, decision support tools, emergency tracking, and medical records management.

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## Research briefs

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The authors describe a set of five principles used for the redesign of work flows, and summarize the lessons learned from the process.

**Brown, T. M., Vaidya, D., Rogers, W. J., and others. (2008, May). “Does prevalence of the metabolic syndrome in women with coronary artery disease differ by the ATP III and IDF criteria?” (AHRQ grant HS13852). *Journal of Women’s Health* 17(5), pp. 841–847.**

The metabolic syndrome, in which patients have a combination of high blood pressure, elevated blood glucose, abnormal lipid levels, and increased waist size (reflecting increased fat in the internal organs of the abdomen) is associated with elevated risk for heart attack or stroke. The researchers used data on 372 postmenopausal women to investigate the effect of using two competing clinical definitions of the metabolic syndrome on its prevalence and its usefulness in identifying women at high risk of future heart attacks or stroke. They compared the results using the criteria of 2002 National Cholesterol Education Program Adult Treatment Panel III (ATP III) with the results using the 2006 definition put forward by the International Diabetes Federation. Overall, women who met at least one of the definitions for the metabolic syndrome were significantly more likely to experience a cardiovascular event during followup than those who met neither definition (14 percent versus 6 percent). The researchers concluded that the 2006 redefinition does not improve the identification of postmenopausal women with demonstrated coronary artery disease who have the

metabolic syndrome or improve prediction of their risk of heart attack or stroke.

**Epstein, R. S., Frueh, F. W., Geren, D., and others. (2009). “Payer perspectives on pharmacogenomics testing and drug development.” *Pharmacogenomics* 10(1), pp. 149-151. Reprints (AHRQ Publication No. 09-R034) are available from AHRQ.\***

As pharmacogenomic technologies move from the bench to the bedside, payer perspectives on pharmacogenomics testing and drug development become important. This paper describes payers’ suggestions for data or study designs important for coverage determination of hypothetical drugs and pharmacogenomic tests. A workshop panel of representatives from the health plan, government, and employer sectors suggested seven areas for drug developers to strongly consider. These included comparative information on new tests versus usual care; assessment of the negative predictive value of new tests; measures and reports on cost offsets; balance of relative risk improvement with absolute risk; consideration of policy implications of the products or tests; reporting of percentage responders in addition to group mean improvements; and inclusion of specific pharmacogenomic information in U.S. Food and Drug Administration approved labels.

**Field, S., Weiner, M., and Long, J. (2009). “Racial disparities in diabetes and physicians: Lack of association does not indicate cause or cure.” (AHRQ grant HS17099). *Archives of Internal Medicine* 169(2), pp. 202–203.**

The authors of this commentary criticize the statistical methods used

by researchers who conducted a study of racial disparities in diabetes care that appeared earlier the same year in the same journal. The earlier paper concluded that few of the disparities in intermediate outcomes between black and white patients can be attributed to physician-related factors. The current authors suggest that the researchers’ use of a random-effects model to evaluate physician-level factors was inappropriate and it would be better to treat these as a fixed effect using a conditional logit model. The conditional logit model does not have the same limitations as a random-effects model, and would give a stronger statistical basis for conclusions about physician effects.

**Fiore, M. C., Jaen, C. R., and Baker, T. B. “A clinical practice guideline for treating tobacco use and dependence: 2008 update. A U.S. Public Health Service Report.” (AHRQ Contract No. 290-06-0005). *American Journal of Preventive Medicine* 35(2), pp. 158–176, 2008.**

The 2008 updated clinical practice guideline for treating tobacco use and dependence recommends brief and intensive smoking-cessation interventions and system-level changes to promote the assessment and treatment of tobacco use. An independent panel of 24 researchers supported by the Agency for Healthcare Research and Quality and 7 other Federal agencies analyzed new research findings since release of the 2000 guideline. Tobacco dependence is now viewed as a chronic disease that typically needs ongoing assessment and repeated intervention. Since 2000, evidence indicates that counseling, either by itself or with other

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treatments, is effective in helping patients (including teen smokers) quit tobacco use. Health care policies, such as health insurance coverage of tobacco-dependence treatment, increase the likelihood that a tobacco user will receive treatment and quit successfully. The 2008 guideline also cites areas in which additional research is needed, such as the development of innovative and more effective counseling programs. Research is also needed to develop more effective interventions for children, adolescents, and young adults.

**Gardiner, J. C., Luo, Z., and Roman, L. A. (2008).** “Fixed effects, random effects, and GEE: What are the differences?” (AHRQ grant HS14206). *Statistics in Medicine* 28, pp. 221–239.

Researchers need to understand the assumptions underlying the various statistical approaches available to them (the fixed-effects model, the random-effects model, and the method of generalized estimating equations [GEE]) to use the proper statistical method for analyses of repeated measurements taken as part of longitudinal studies. The authors of this paper describe the critical assumptions that researchers need to examine to determine which model is appropriate in a given setting. To demonstrate the differences in results obtained using each statistical model, the authors use a study of depressive symptoms in low-income pregnant women. The women were evaluated for depressive symptoms with a structured questionnaire five times, from before their child’s birth to after birth. The findings using each

statistical model are discussed, together with the reasons for differences in results.

**Glance, L. G., Osler, T. M., Mukamel, D. B., and others. (2009).** “Impact of statistical approaches for handling missing data on trauma center quality.” (AHRQ grant HS16737). *Annals of Surgery* 249(1), pp. 143-148.

A study on trauma center quality finds that using a multiple imputation technique to assign values to missing data results in quality measures nearly identical to those based on true data. The study used records from the National Trauma Databank for 63,020 patients at 68 hospitals with no missing quality data. When 10 percent of the quality data was randomly set to missing, quality rankings based on imputed data were virtually identical to the results obtained using true data from the databank records. Such measures gave inferior results, however, when patients with missing data were simply excluded from the analysis. Hospital quality assessment also changed when risk factors that had missing data were excluded.

**Grant, R. W., Wald, J. S., Schnipper, J. L., and others. (2008, September).** “Practice-linked online personal health records for type 2 diabetes mellitus.” (AHRQ grant HS13660). *Archives of Internal Medicine* 168(16), pp.1776-1782.

Clinicians sometimes do not intensify medications (strengthen the dose or add another medication) to better control the blood glucose levels of patients with diabetes. Uncontrolled blood glucose levels increase patients’ risk of developing serious diabetes-related

complications such as blindness and foot amputation. To learn if a Web-based personal health record (PHR) could improve diabetes care, the researchers randomized 11 primary care practices to a diabetes-specific PHR intervention or control. The diabetes-specific PHR imported clinical and medication data that the patient could correct or update, provided patient-tailored decision support, and enabled the patient to author a diabetes care plan to electronically submit to the doctor prior to upcoming appointments. Active control practices received a PHR to update and submit family history and health maintenance information. Overall, 244 patients (37 percent of those with registered online access) enrolled in the study. Most of the intervention and control patients had reasonable baseline blood glucose control. Nevertheless, markedly more patients in the intervention than control practices had their diabetes treatment regimens adjusted (53 vs. 15 percent).

**Hinman, A. R., and Davidson, A. J. (2009).** “Linking children’s health information systems: Clinical care, public health, emergency medical systems, and schools.” (AHRQ Contract No. 240-04-0014). *Pediatrics* 123(supplement), pp. S67–S73.

There exist a variety of children’s health information systems, including immunization registries and other public health databases, trauma and accident registries (emergency services), school health information systems, and multipurpose health information exchanges. At present these systems do not connect with one another. The authors of this paper discuss

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the challenges and barriers—as well as the benefits—of developing a national, integrated health information system for pediatric patients. They discuss a demonstration project in Colorado, and conclude that technology is not the limiting factor. Instead, there is the need to include all stakeholders in defining the requirements of a linked system, develop implementation standards, and proceed through public–private sector collaboration rather than government dominance.

**Khuri, S. F., Henderson, W. G., Daley, J., and others. (2008, August).** “Successful implementation of the Department of Veterans Affairs’ National Surgical Quality Improvement Programs in the private sector: The patient safety in surgery study.” (AHRQ grant HS11913). *Annals of Surgery* 248(2), pp. 329–336.

When the Department of Veterans Affairs implemented its National Surgical Quality Improvement Program (NSQIP) in all of its hospitals beginning in 1994, it resulted in a 47 percent progressive reduction in deaths within 30 days after surgery (postoperative mortality), and a 43 percent reduction in surgery-related illnesses within 30 days after surgery (postoperative morbidity). The researchers investigated whether the implementation of the NSQIP in private sector hospitals would have similar effects. Their study involved 184,843 patients who underwent major general or vascular surgery. Thirty percent of the patients in the study were from 14 private sector hospitals. They found that the implementation of the NSQIP in private hospitals over 3 years decreased their overall

postoperative problems by 8.7 percent, surgical site infections by 9.1 percent, and kidney complications by 23.7 percent.

**Lazarus, R., Klompas, M., Champion, F., and others. (2009, February).** “Electronic support for public health: Validated case finding and reporting for notifiable diseases using electronic medical data.” (AHRQ grant HS17045). *Journal of the American Medical Informatics Association* 16, pp. 18–24.

U.S. physicians are required to report specific infectious diseases such as tuberculosis or HIV to public health authorities. However, existing manual, provider-initiated reporting systems generally result in incomplete, error-prone, and tardy information flow. This paper describes the Electronic Support for Public Health (ESP) application, which is an automated, secure, portable public health detection and messaging system for cases of notifiable diseases. The ESP application applies disease-specific logic to any complete source of electronic medical data in a fully automated process and supports an optional case management workflow system for case notification control. The ESP application has operated since January 2007 to apply rigorously validated case identification logic to ambulatory electronic medical record data from more than 600,000 patients.

**Liu, L., Huang, X., and O’Quigley, J. (2008).** “Analysis of longitudinal data in the presence of informative observational times and a dependent terminal event, with application to medical cost data.” (AHRQ grant HS16543). *Biometrics* 64(9), pp. 950–958.

The authors of this paper propose a random-effects model of repeated measures, as are often taken during a longitudinal observational study. Their model deals with the presence of both informative observation times and a dependent terminal event (such as patient death). The random-effects model includes three submodels: a model for the intensity of recurrent hospital admission times; a random-effects model for the value of repeated measures; and a proportional hazards model for death. The researchers used correlated random effects to join the three models, and estimated the values via Gaussian quadrature techniques in SAS. When this procedure was used to model medical costs for patients with chronic heart failure seen in the University of Virginia Health System, the researchers found a significant difference based on the sex of the patient in the amount of medical costs per hospital visit. They also found that white patients had better outcomes than nonwhite patients, and that every 10-year increase in age raised the death rate by 91 percent.

**Mayer, M. L., Skinner, A. C., Freed, G. L., and others. (2009).** “Interspecialty differences in the care of children with chronic or serious acute conditions: A review of the literature.” (AHRQ grant HS13309). *Journal of Pediatrics* 154(2), pp. 164–168.

Prior research has shown that there are differences in the quality of care for adults with specific conditions among different medical specialists and between specialists and generalists. A review of the literature by the authors sought to determine whether this was also true for pediatric specialists and generalists. Although these

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researchers found differences in quality of care for children between pediatric specialists and generalists in all areas that they examined, the findings were not consistent enough to permit them to make overall recommendations about pediatric care delivery. Only studies of asthma-related care and surgical procedures consistently suggested a beneficial effect of specialty care. The researchers note that some conditions lack useful short-term outcome measures and are better evaluated using process measures (such as adherence to guidelines), while others are amenable to study of clinical outcomes, utilization, and cost.

**M'ikanatha, N. M., Rice, D. H., and Altekruze, S. F. (2008).** "Strategic use of state and local regulatory and public health surveillance resources to address the growing demand for food safety oversight in the United States." (AHRQ grant HS10399). *Foodborne Pathogens and Disease* 5(6), pp. 747-753.

The U.S. Food and Drug Administration is responsible for regulation of about 80 percent of the U.S. food supply. It provides oversight for more than 136,000 domestic food manufacturing facilities and warehouses that sell food across State lines and 189,000 overseas facilities that manufacture, process, pack, or store food sold in the United States. The authors of this study suggest that State-based food safety regulatory and surveillance systems should be better leveraged and integrated to complement the limitations of Federal measures. They recommend that a strengthened national food safety program include implementation of uniform standards of food inspection and

testing, reciprocal acceptance of State and Federal inspection and laboratory findings, and systemic, timely sharing of data on pathogens recovered from contaminated foods and from ill persons.

**Mielenz, T. J., Garrett, J. M., and Carey, T. S. (2008, May).** "Association of psychosocial work characteristics with low back pain outcomes." (AHRQ grants T32 HS00032 and HS08293). *Spine* 33(11), pp. 1270-1275.

Most patients with low back pain will recover quickly from an acute episode, but about 10 percent become chronically disabled. The researchers evaluated the magnitude of the association between three psychosocial work characteristics (supervisor social support, coworker social support, and satisfaction with job tasks) with clinically relevant recovery outcomes 2 months after an acute episode of low back pain across various levels of biomechanical demands at work. The patients were 295 patients with acute low back pain seen by 31 primary care physicians in North Carolina. The researchers found that relative to patients with more social support from coworkers, those with less social support had 1.55 times the risk of not attaining complete recovery from low back pain 8 weeks later. Supervisor support and satisfaction with job tasks were not associated with clinical recovery. In addition, the biomechanical demands of the job did not modify this association.

**Mutter, R. L., Rosko, M. D., and Wong, H. S. (2008).** "Measuring hospital inefficiency: The effects of controlling for quality and patient burden of illness." *HSR: Health Services Research* 43(6), pp. 1992-2013. Reprints (AHRQ

**Publication No. 09-R011) are available from AHRQ.\***

Studies that estimate hospital costs are sometimes criticized for not controlling for quality. In this study, the researchers employed controls for hospital quality and patient burden of illness to study data from 1,290 hospitals, using stochastic frontier analysis (SFA) to estimate hospital cost inefficiency and allow relative ranking of the hospitals. The study found that choices of controls for quality and patient burden of illness can have a nontrivial impact on the inferences derived from SFA about hospital economic performance. For example, using a single measure that combines a number of quality measures blurs insight into hospital performance and may prove misleading. In contrast, multidimensional measures of quality, such as AHRQ's quality indicators (QIs) show that different measures of hospital quality can have conflicting effects on hospital costs. The researchers note that, after controlling for hospital teaching status and patient burden of illness, quality outcome measures have little impact on average institutional cost inefficiency. For this reason, researchers using SFA to estimate overall hospital inefficiency may want to treat the resulting values as an upper bound.

**Nutankalva, L., Wutoh, A. K., McNeil, J., and others. (2008, July).** "Malignancies in HIV: Pre- and post-highly active antiretroviral therapy." (AHRQ grant HS11673). *Journal of the National Medical Association* 100(7), pp. 817-820.

Since 1996, patients with HIV disease have found highly active antiretroviral therapy (HAART) beneficial. This therapy entails

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taking three to four antiretroviral drugs simultaneously to reduce the amount of the immune-system-damaging virus in the body. The researchers examined the prevalence of AIDS- and non-AIDS-defining cancers since the advent of HAART. They reviewed cancer diagnoses of 197 patients with HIV disease over a 13-year period that spanned the pre- (before 1996) and post-HAART timeframes to determine the effect of HAART on AIDS-defining cancers (ADCs) and non-AIDS-defining cancers (NADCs). Overall, 65 percent of cancers in both the pre- and post-HAART groups were ADC, and 35 percent were NADC. Among the 93 patients with cancer in the pre-HAART period, ADCs were more common (74 percent) than NADCs (18 percent). In the post-HAART period, ADCs accounted for 55 percent of malignancies, while NADCs claimed 50 percent. This upswing in NADCs may be due to improved diagnosis, the damage caused by HIV, side effects of HAART, or changes in the immune system that HAART causes, the authors suggest.

**Pronovost, P. J., Goeschel, C. A., Marsteller, J. A., and others. (2009). "Framework for patient safety research and improvement." (AHRQ grant HS14246). *Circulation* 119(1), pp. 330-337.**

Researchers at Johns Hopkins University School of Medicine have developed a simple framework to identify effective patient safety efforts and offer strategies to put these approaches into practice. The five-part framework is also designed to help organize future patient safety research and address emerging issues. The domains in their framework are: (1) evaluating

progress in patient safety; (2) translating evidence into practice; (3) assessing and improving safety culture; (4) identifying and mitigating safety hazards; and (5) evaluating the association between organizational characteristics and outcomes. In their report, the researchers identify as ongoing challenges the need to build capacity among researchers, create a research infrastructure, and evaluate the cost-benefit ratio of safety improvement efforts.

**Sawicki, G. S., Smith, L., Bokhour, B., and others. (2008, June). "Periodic use of inhaled steroids in children with mild persistent asthma: What are pediatricians recommending?" (AHRQ grant T32 HS00063). *Clinical Pediatrics* 47(5), pp. 446-451.**

National asthma treatment guidelines recommend daily use of inhaled corticosteroids (ICS), which reduce the lung inflammation that makes breathing difficult, as first-line controller therapy for children with mild persistent asthma. The researchers surveyed pediatricians about their prescribing patterns for children's mild persistent asthma. More than 99 percent of the 251 survey respondents agreed that periodic ICS could be effective for some asthma patients. More than half (51 percent) said they prescribed daily ICS to most children with mild persistent asthma, whereas 31 percent said they recommended periodic ICS for these children. However, 18 percent of pediatricians prescribed neither daily nor periodic ICS for 50 percent or more of children with this problem. Pediatricians whose patient population was one-fourth or more black were 70 percent less likely to report prescribing daily ICS for mild persistent asthma. They were more likely to prescribe

leukotriene modifiers for most children with persistent asthma.

**Sharek, P. J., McClead, R. E., Taketomo, C., and others. (2008, October). "An intervention to decrease narcotic-related adverse drug events in children's hospitals." (AHRQ grant HS13698). *Pediatrics* 122(4), pp. e861-e866.**

Hospitalized children are harmed more often by prescribed narcotics than any other types of drugs. Efforts to reduce narcotic-related adverse drug events (ADEs) could greatly reduce overall ADEs at children's hospitals. The researchers analyzed data from 13 children's hospitals for 3 months before and 3 months after a 6-month implementation phase for at least 1 of 4 narcotic-related interventions: use of laxatives and stool softeners, limiting opportunities to override automated medication dispensing devices, implementing a standardized procedure for weaning children off extended prescription narcotic use to prevent withdrawal, and implementing consistent strategies to prevent narcotic-related ADEs during the transfer of children to other units in the hospital or their discharge from the hospital. Overall, the intervention program was associated with a significant 67 percent reduction in narcotic-related ADEs at the hospitals during a 3-month period after the interventions were fully implemented.

**Wutoh A. K., Daftary M. N., Nwankwo A. E., and others. (2008, July). "An analysis of antiretroviral adherence, resistance and HIV viral load: A pilot study." (AHRQ grant HS11673). *Journal of the National Medical Association* 100(7), pp. 867-868.**

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In a letter to the editor, the authors share the results of a pilot study that examined 11 patients' adherence to an antiretroviral regimen that included the drug nelfinavir and the patients' HIV viral resistance. When researchers performed baseline testing, they discovered that four patients were resistant to nelfinavir. The authors

suggest that these patients were either infected with nelfinavir-resistant strains of HIV or developed this resistance because of antiretroviral therapy. Current guidelines encourage clinicians to perform resistance testing before making prescription decisions on antiretroviral drugs. This finding on nelfinavir confirms resistance typing's usefulness, the authors suggest. Though testing can be

expensive (more than \$400), it is usually covered by insurance and has an estimated cost-effectiveness ratio of nearly \$24,000 for each quality-adjusted life year (QALY) gained. Health care treatments that cost \$50,000 or less per QALY are considered cost effective. ■



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