



# RESEARCH ACTIVITIES

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## High blood pressure medicines show promise for treating heart disease

Two medications typically used to treat high blood pressure appear to be effective in treating a common type of heart disease known as stable ischemic heart disease, according to a new comparative effectiveness review funded by the Agency for Healthcare Research and Quality (AHRQ). Treatment featuring the two medications—inhibitors of angiotensin-converting enzyme, or ACE inhibitors, and angiotensin receptor blockers, or ARBs—can lead to a reduction in death, lower risk of heart attack and stroke, and fewer hospitalizations for heart failure for patients suffering from stable ischemic heart disease, researchers found.

However, the drugs have risks of their own. Risks associated with ACE inhibitors include a persistent cough, sudden fainting, too much potassium in the blood, and dangerously low blood pressure (hypotension). Risks associated with ARBs include too much potassium in the blood and low blood pressure.

Knowing the risks and benefits of these medications will help patients and their doctors decide the optimal treatment. Stable ischemic heart disease occurs when

the flow of oxygen-rich blood to the heart is reduced because of narrowed or blocked arteries. Symptoms of stable ischemic heart disease include decreased tolerance of exercise and severe chest pain on exertion (known as angina), which afflicts about 9 million U.S. adults. Long-term risks of stable ischemic heart disease include heart failure and heart attack.

Standard treatment of stable ischemic heart disease consists of a modification of diet, exercise, and medications that include aspirin, anticholesterol drugs, nitroglycerin, and beta blockers. While standard treatment usually alleviates chest pain, it is not universally successful in reducing risk of heart failure or heart attack.

The AHRQ report found that patients with stable ischemic heart disease who take an ACE inhibitor in addition to standard treatment can reduce the likelihood of several negative outcomes, including death from heart attack or heart failure, nonfatal heart attacks, hospitalization for heart failure, and revascularization (surgeries that reroute blood to the heart). Patients who take an ARB in addition to standard medications can reduce

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## Heart disease

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their risk of death from a heart-related cause, heart attack, or stroke.

While some patients and clinicians pursue a course of treatment using both ACE inhibitors and ARBs, the report found that combined treatment does not show any benefit over an ACE inhibitor alone and that risks include fainting, diarrhea, low blood pressure, and

kidney problems. The report found that existing studies provide few data on the medications' benefits or harms in specific populations such as people of different genders, ethnicity, diabetic status, or those who have or do not have high blood pressure.

AHRQ's new report, *Comparative Effectiveness of Angiotensin-Converting Enzyme Inhibitors or Angiotensin II Receptor Blockers Added to*

*Standard Medical Therapy for Treating Stable Ischemic Heart Disease*, is the newest research review from the Agency's Effective Health Care Program. The report's findings will soon be available in plain-language summary guides for patients, clinicians, and policymakers. Summary guides and reports on numerous clinical topics can be found at [www.effectivehealthcare.ahrq.gov](http://www.effectivehealthcare.ahrq.gov). ■

## Chronic Disease

### Lifestyle changes are needed in addition to drugs to prevent heart attacks

When factors such as large waistlines, high triglyceride levels, high cholesterol, high blood pressure, and high blood sugar levels work in concert (the so-called metabolic syndrome), they become "perfect storms" for heart attacks. Most of these conditions can be treated with drugs. However, a new study finds that drugs alone do not substantially reduce the risk of a

heart attack, largely because patients do not adopt healthy lifestyle changes. Researchers at the University of Alabama at Birmingham studied 1,125 patients with coronary artery disease who underwent cardiac rehabilitation during two periods, 1996 to 2001 and 2002 to 2006, a period in which guidelines recommended providing medications to get cardiovascular risks under control.

Compared with the first period's patients, those in the second period took more medicines and, subsequently, had lower triglyceride levels, cholesterol levels, and blood pressure. While both groups had similar diets and functional capacities, the second group had lower physical activity levels and larger waistbands than the earlier group, keeping members of both

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AHRQ  
Office of Communications  
and Knowledge Transfer  
540 Gaither Road  
Rockville, MD 20850  
(301) 427-1360

Barbara L. Kass, MPH, CHES  
Managing Editor

Gail Makulowich  
Assistant Managing Editor  
Mark Stanton, Karen Fleming-Michael,  
David Lewin, Kevin Blanchet  
Contributing Editors  
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Design and Production  
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Media Inquiries

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**ADHD drugs and cardiac problems, see page 5**

**Effects of hormone therapy for prostate cancer, see page 10**

**Detecting concussion damage in the ED, see page 13**

**Stress felt by primary care physicians, see page 17**

**Doubling of care costs for middle-aged Americans, see page 19**

## Heart attacks

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groups at the same risk levels for having heart attacks.

The authors suggest that while medication certainly does its part in modifying risk factors, clinicians need to emphasize lifestyle

changes, such as increasing exercise, to truly reduce a patient's risk of heart attack. This study was funded in part by the Agency for Healthcare Research and Quality (HS13852).

See "Drugs are not enough: The metabolic syndrome—A call for

intensive therapeutic lifestyle change," by Todd M. Brown, M.D., Bonnie K. Sanderson, Ph.D., R.N., and Vera Bittner, M.D., M.S.P.H., in the Winter 2009 *Journal of Cardiometabolic Syndrome* 4(1), pp. 20-25. ■

## Best time to start statins in patients with diabetes depends on the cardiovascular risk model used

**P**atients with type 2 diabetes often need to lower their cholesterol levels with statin drugs.

However, a new study finds that the best time to start such therapy depends on the method used to determine a patient's risk for heart disease. Depending on which risk model is used, there are differences in age and gender when it comes to prescribing statins for the first time.

Using clinical data from medical records, researchers identified 683 patients over the age of 40 with at least 10 years of followup. Information was collected on age, gender, number of years with diabetes, different types of cholesterol levels, and blood pressure. Three different cardiovascular risk models were used to determine the optimal time to start statin therapy. One model is based on patients in the United Kingdom (UKPDS), while another is based on patients in the United States (Framingham). The third model, Archimedes, uses a mathematical model to calculate cardiovascular complications based on several clinical study results.

The best time to start statin drugs depended on the cardiovascular risk model used, as well as the age,

gender, metabolic state of the patient, and the societal value associated with quality-adjusted life years. For a selected base case, when the UKPDS model was used, it recommended that all white males with diabetes should start statin therapy. However, for the other two models it was never optimal to start statins in men who were at low risk for cardiovascular problems. Earliest optimal start times for women were 50 years of age for UKPDS, 46 for Framingham, and 40 for Archimedes. In men, the earliest start time was 40 for all three models. According to the researchers, these observed differences in cardiovascular risk models, age, and metabolic factors contribute to current disagreements as to the best time to start statin therapy in patients with type 2 diabetes. The study was supported in part by the Agency for Healthcare Research and Quality (HS17628).

See "Optimizing the start time of statin therapy for patients with diabetes," by Brian T. Denton, Ph.D., Murat Kurt, M.S., Nilay D. Shah, Ph.D., and others, in the May-June 2009 *Medical Decision Making* 29, pp. 351-367. ■

## Care is poor for diabetic patients without insurance and no regular care provider

**H**aving both health insurance coverage and a usual source of care (USC) are critical to receiving proper care for diabetes, concludes a new study. It found that uninsured patients without a USC are not as likely to get diabetes care services as their counterparts with health insurance coverage.

The researchers analyzed data on 6,562 individuals with diabetes who were 18 years of age and older. The

information included whether or not they received recommended diabetes-specific preventive services within the past year. These included screening for hemoglobin A1c (a marker of glucose control), blood pressure check, foot and eye examinations, and routine medical care. Various unmet needs (medical, dental, specialty care, delayed care) were also examined by the researchers.

More than 84 percent of the individuals had both full-year health insurance coverage and a USC. The 2.3 percent who had neither benefit received the fewest services in all seven diabetes care categories. They were only one-fifth as likely to have received A1c screening and one-tenth as likely to have blood pressure checks compared with insured individuals

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## Diabetes care

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with a USC. They were also one-fourth as likely to have received a foot care checkup. The insured group with a USC also had significantly better access to most of the care services. Such individuals had fewer reports of

unmet health care needs in the last year. Those who were uninsured with no USC had 5.5 times the odds of having an unmet medical need and more than 3 times the odds of having delayed urgent care or unmet prescription needs. The study was supported in part by the Agency for Healthcare Research and Quality (HS16181).

See “Usual source of care as a health insurance substitute for U.S. adults with diabetes?” by Jennifer E. DeVoe, M.D., D.Phil., Carrie J. Tillotson, M.P.H., and Lorraine S. Wallace, Ph.D., in the June 2009 *Diabetes Care* 32(6), pp. 983-989. ■

## Patient Safety and Quality

### Specimens from multiple body sites are needed to accurately test for MRSA

When it comes to accurately diagnosing methicillin-resistant *Staphylococcus aureus* (MRSA) colonization, taking swab samples from the nose may not be enough. According to a new study, samples from at least two sites on the body need to be obtained in order to achieve a sensitivity of more than 90 percent for MRSA colonization.

At the Center for Education and Research on Therapeutics (CERT) at the University of Pennsylvania School of Medicine, researchers identified 56 individuals who had swab samples positive for MRSA. Swab specimens were taken from the nose, under the arm, throat, groin, and perineum. Immediately after these were taken, either the patient or the parent (for pediatric patients) took swab samples from the same body sites.

For both provider- and patient-collected samples, the nose was the most common site where MRSA was present, followed by the throat. However, nearly a quarter of individuals would not have been identified as having MRSA if the nose had not been sampled. Likewise, 5 percent of cases would have been missed if samples were not obtained from the throat. Swab

samples from the groin and perineum tested positive for probable community-acquired MRSA significantly more often (75 percent) than they did for hospital-acquired MRSA (33 percent).

The researchers found strong agreement between the findings for patient-collected samples and provider-collected samples. As such, patient-collected sampling may be a way to improve the efficiency of community-based surveillance and research. This study was funded in part by a grant from the Agency for Healthcare Research and Quality (HS10399) to the University of Pennsylvania School of Medicine CERT. For more information on the CERTs program, please visit [www.certs.hhs.gov/](http://www.certs.hhs.gov/).

See “Surveillance cultures for detection of methicillin-resistant *Staphylococcus aureus*: Diagnostic yield of anatomic sites and comparison of provider- and patient-collected samples,” by Ebbing Lautenbach, M.D., M.P.H., M.S.C.E., Irving Nachamkin, Dr.P.H., M.P.H., Baofeng Hu, M.D., and others, in the April 2009 *Infection Control and Hospital Epidemiology* 30(4), pp. 380-382. ■

### 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).

## Using trigger tools to review medical charts helps identify adverse drug events among older adults

Chart review is one way to estimate adverse drug events (ADEs), which are common among older adults. However, using “trigger tools” can improve the identification of ADEs and make the chart review process more efficient and standardized, suggests a new study. A trigger tool uses a set of screening criteria that includes identifying certain words or medical results in charts that may point to an ADE. Such charts are then pulled for additional study and analysis to confirm that an ADE took place.

In this study, 1,289 charts were reviewed at 6 ambulatory primary care practices during a 1-year period. A trigger tool, previously used on ambulatory older adults, was used. This included items under such headings as drug levels, diagnoses, laboratory results, and

treatments. The researchers then added several new triggers, including emergency room visit, unplanned hospitalization, an abrupt medication stop, and death for a total of 39 items.

Upon careful review, half of the charts (645) contained one or more triggers. From this group, a random sample of 383 charts was selected for additional review. This group of charts contained a total of 908 triggers, 232 of which were determined to represent ADEs. Among these identified ADEs, the researchers concluded that 92 of them could have been prevented. These preventable ADEs most often occurred during the prescribing or administration of medications. Thirty percent of these were deemed severe, resulting in hospitalization, permanent disability, or death.

Common triggers were medication stops, hospitalizations, and emergency room visits. Nine triggers were identified as having the highest positive predictive values for ADEs. These triggers were responsible for detecting 94.4 percent of all ADEs identified by the full trigger tool instrument. This suggests the possibility of a much briefer trigger tool. The study was supported in part by the Agency for Healthcare Research and Quality (HS14867).

See “Experience with a trigger tool for identifying adverse drug events among older adults in ambulatory primary care,” by Ranjit Singh, M.D., M.B.A., Elizabeth A. McLean-Plunkett, M.A., R. Kee, M.S., and others, in *Quality and Safety in Health Care* 18, pp. 199-204, 2009. ■

## Pharmaceutical Research

### Common attention deficit-hyperactivity disorder drugs have similar risk for emergency visits for cardiac problems

Amphetamines and methylphenidate are the two most common stimulants used to treat attention deficit-hyperactivity disorder (ADHD). In 2007, the U.S. Food and Drug Administration required that all patient medication guides for ADHD medicines contain information about the risks of taking these medicines, including cardiac events. This requirement was sparked in part because of reports linking ADHD drugs, most notably the amphetamine Adderall®, with cardiac problems.

To determine if the two stimulants were associated with cardiac events, researchers at the University of Florida in collaboration with the Center for Education and Research on Therapeutics (CERT) at Rutgers University studied data from Florida’s Medicaid program. Of 30,576 youth who were newly started on either amphetamines or methylphenidate for their ADHD between January 1995 and June 2004, 456 visited the emergency department (ED) to seek care for cardiac events.

The risk of a trip to the ED was similar for youth taking either ADHD drug. Youth who visited the ED were more likely to use bronchodilators, antidepressants, or antipsychotics; have a history of circulatory or cardiac symptoms or congenital anomalies; or be 15 years or older. The authors suggest that additional studies are needed that examine long-term use and dosages to determine if ADHD drugs are linked with heart disease. This study was funded in part by a grant from the Agency for Healthcare Research and Quality (HS16097) to the CERT at Rutgers University. For more information on the CERTs program, visit [www.certs.hhs.gov/](http://www.certs.hhs.gov/).

See “Cardiac safety of methylphenidate versus amphetamine salts in the treatment of ADHD,” by Almut G. Winterstein, Ph.D., Tobias Gerhard, Ph.D., Jonathan Shuster, Ph.D., and Arwa Saidi, M.B.B.Ch., in the July 2009 *Pediatrics* 124(1), pp. e75-e80. ■

## More antipsychotic medications are being prescribed for youth and nursing home residents, despite lack of evidence

**A**ntipsychotic medications are commonly being prescribed for children, adolescents, and nursing home residents for a variety of conditions not originally intended, despite a dearth of good evidence to warrant their use. The widespread use is due to the availability of newer agents called “atypical antipsychotics.” According to researchers from the Center for Education and Research on Therapeutics (CERT) at Rutgers University, atypical antipsychotics are considered safer than older agents and have all but replaced them. They have also become the most costly drug class for Medicaid programs, far surpassing antidepressants. For Medicare, they are a major expenditure item for the Part D drug program.

Most troubling is atypical antipsychotic use in children and adolescents, where prescriptions

have increased fivefold. Currently, the U.S. Food and Drug Administration (FDA) approves their use to treat schizophrenia, autism, Tourette’s disorder, and bipolar episodes. However, more than three-quarters of Medicaid youth are treated for non-FDA-approved conditions; the proportion is more than 70 percent for youth with private insurance. Such conditions include attention deficit-hyperactivity disorder and aggressive behavior, conditions for which little evidence exists to validate antipsychotic use. A major concern is the side effect of significant weight gain, which may result in obesity, type 2 diabetes, and other problems.

Also, nearly 28 percent of nursing home residents took antipsychotics in 2006, mostly to manage behavioral symptoms of dementia, such as agitation, irritability, and aggression. This was despite an FDA warning in

2005 that antipsychotic use is associated with an increased risk for death. Schizophrenia and bipolar disorder, FDA-approved conditions for antipsychotics, accounted for only 20.7 percent of resident antipsychotic use. The findings were based on several market, State, and national databases. The 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 CERT’s program, please visit [www.certs.hhs.gov/](http://www.certs.hhs.gov/).

See “Broadened use of atypical antipsychotics: Safety, effectiveness, and policy challenges,” by Stephen Crystal, Ph.D., Mark Olfson, M.D., M.P.H., Cecilia Huang, Ph.D., and others, in the July 2009 *Health Affairs* 28(5), pp. w770-w781. ■

## Long-term use of beta blockers is associated with reduced mortality in patients with heart failure

**L**ong-term use of beta blockers is significantly associated with a lower risk of death in patients with heart failure, according to a recent study by Nancy M. Allen LaPointe, Pharm.D, and her associates at Duke University Medical Center. They found a 27 percent lower risk of death for patients with heart failure and coronary artery disease using beta blockers persistently over the first 2 years after a cardiac catheterization when compared with patients who did not use beta blockers in this same time period. They found no significant difference in death between persistent use of evidence-based beta blockers for chronic heart failure and other beta blockers in this group of persistent users. In addition, they found no significant difference in death between heart failure patients who received angiotensin-converting enzyme inhibitors (ACEIs) or angiotensin receptor blockers

(ARBs) persistently over the first 2 years after a cardiac catheterization compared with those who did not use ACEIs or ARBs in this same time period.

The researchers used data from the Duke Databank for Cardiovascular Disease (DDCD), complemented by searches of the National Death Index, to study the use of beta blockers and ACEIs/ARBs in all patients who had undergone a cardiac procedure at Duke and were found to have significant coronary artery disease and a left ventricular ejection fraction of less than 40 percent (fraction of blood pumped out of the heart’s ventricle). Patients with significant coronary artery disease—those with at least one diseased coronary artery, those who had undergone angioplasty, and/or those who had undergone coronary artery bypass—were asked to participate in a clinical followup program that is part of

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## Beta blockers

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the DDCD. Patients (or their families) were contacted by mail or telephone 6 months after their first entry into the database and approximately every year thereafter for the followup.

Of the 3,187 patients identified for beta blocker analysis, 42 percent had persistent use of any beta blocker for at least 2 years after the catheterization. Among those surviving the 2 years, the risk of death was significantly lower in those who had persistent beta blocker use than those with no beta blocker use. Of the 3,166 patients identified for ACEI/ARB analysis, 42.5 percent were considered persistent users during the 2 years after catheterization. These findings underscore

the need to continually encourage and monitor beta blocker use as a key part of the management of chronic heart failure, note the researchers. However, they caution that because the data were collected at a single medical center, the findings may not be generalizable to other health care systems. The study was funded in part by the Agency for Healthcare Research and Quality (HS10548).

More details are in “Association between mortality and persistent use of beta blockers and angiotensin-converting enzyme inhibitors in patients with left ventricular systolic dysfunction and coronary artery disease,” by Dr. Allen LaPointe, Yi Zhou, M.S., Judith A. Stafford, M.S., and others, in the 2009 *American Journal of Cardiology* 103, pp. 1518-1524, 2009. ■

## Disparities/Minority Health

### High blood pressure control is often elusive for blacks and Mexican Americans, despite adherence to treatment and lifestyle changes

**B**lacks and Mexican Americans struggle with uncontrolled blood pressure, despite adherence to treatment and lifestyle modifications, concludes a new study. Researchers studied ethnic differences in treatment, adherence, and control among 5,392 adults with hypertension who participated in the Third National Health and Nutrition Examination Survey (NHANES III), conducted between 1988 and 1994. During their participation in NHANES over 7 years, individuals received home-based interviews and received physical examinations at mobile examination centers.

Blacks were 60 percent more likely than non-Hispanic whites to be prescribed medication and 50 percent more likely to be advised to restrict salt intake (probably due to evidence of impaired renal salt

excretion among blacks). Both blacks and Mexican Americans were twice as likely as whites to report following advice to exercise, quit smoking, restrict alcohol, and reduce stress. Also, blacks were 50 percent more likely to report salt restriction and 70 percent more likely to report weight loss attempts. Despite adherence to medication (which was similar for all three groups) and lifestyle modification, both blacks and Mexican Americans were 40 percent and 50 percent, respectively, more likely than whites to suffer from uncontrolled hypertension.

The researchers cite several reasons to explain these ethnic differences in blood pressure control. These include higher rates of obesity and diabetes in blacks and Mexican Americans,

differences in diet, and the lower responsiveness to certain blood pressure medications among blacks. These findings underscore the point that adherence to treatment alone is not sufficient to adequately control hypertension among blacks and Mexican Americans and highlight the need to monitor blood pressure levels and escalate intensity of treatment in adherent persons to achieve blood pressure control. The study was supported in part by the Agency for Healthcare Research and Quality (HS10871).

See “Effect of treatment and adherence on ethnic differences in blood pressure control among adults with hypertension,” by Sundar Natarajan, M.D., M.Sc., Elizabeth J. Santa Ana, M.A., Youlian Liao, M.D., and others, in the March 2009 *Annals of Epidemiology* 19, pp. 172-179. ■

**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.

## Better educational materials are needed to boost the health literacy of individuals who are deaf

Even after achieving high education levels, people who are deaf do not necessarily have high health literacy levels, a new study finds. Steven Barnett, M.D., of the University of Rochester School of Medicine, and his colleague gave a modified version of a test that measures health literacy to 57 individuals who were deaf. Participants were asked to read 66 health-related words, then circle the ones they understood and cross through those with which they were unfamiliar. More than 68 percent of participants understood more than 90 percent of the words on the test. However, although nearly 81 percent of participants had college degrees, almost a third scored below a ninth grade level on the test, indicating they had low health literacy.

Words on the test are arranged by increasing difficulty. Surprisingly, the words that participants found the most difficult were not necessarily at the

test's end. Further, the authors suggest that participants were more likely to circle a word they did not actually understand than to cross through a word they did not comprehend, so the study's results may actually overestimate this group's health literacy.

Individuals who are unable to read and comprehend health-related words in English are at risk for health disparities, the authors state. For this reason, health care professionals should develop better, accessible health education materials to correct this knowledge gap and prevent adverse health outcomes for individuals who are deaf. This study was funded in part by the Agency for Healthcare Research and Quality (HS15700).

See "Health-related vocabulary knowledge among deaf adults," by Robert Q. Pollard Jr., Ph.D., and Dr. Barnett in the May 2009 *Rehabilitation Psychology* 54(2), pp. 182-185. ■

## Outcomes/Effectiveness Research

### Severity of small blood vessel damage predicts clinical outcome after stroke

Common among the elderly, leukoaraiosis is a disease of the small blood vessels in the brain. It is an independent predictor of risk for symptomatic stroke, recurrence, and poststroke dementia. Now, a new study has found an association between the severity of leukoaraiosis and the clinical outcome after a stroke.

Researchers calculated the volume of leukoaraiosis in 240 patients with stroke. All had magnetic resonance imaging (MRI) within 24 hours of the onset of stroke symptoms such as weakness, blurred vision, confusion, and slurred speech. The average time from symptom onset to MRI was 7.5 hours.

Among the patients studied, the volume of leukoaraiosis ranged from 0.1 to 57.4 mL. Those who had a higher volume of diseased blood vessels at the time of their stroke ended up with more severe

functional deficits after 6 months. They were also more likely to be discharged to a rehabilitation center compared with patients with lower volumes. After the researchers adjusted for factors such as age, initial stroke severity, and the amount of brain tissue damaged, the volume of leukoaraiosis remained a predictor of clinical outcome. The researchers suggest that any therapies that may slow the progression of leukoaraiosis may also reduce how severe a stroke is and improve its clinical outcome. The study was supported in part by the Agency for Healthcare Research and Quality (HS11392).

See "Severity of leukoaraiosis correlates with clinical outcome after ischemic stroke," by Ethem M. Arsava, M.D., Rosanna Rahman, Ph.D., Jonathan Rosand, M.D., M.Sc., and others, in the February 2009 *Neurology* 72, pp. 1403-1410. ■

## Public reporting of hospital antibiotic timing for patients with pneumonia is not linked to antibiotic overuse or overdiagnosis

Releasing information to the public about how hospitals treat patients with pneumonia does not produce any negative consequences for patients. Specifically, reporting how quickly patients receive antibiotics does not lead to overdiagnosis or inappropriate treatment of pneumonia, concludes a new study.

Researchers looked at information from 13,042 visits to hospital emergency departments by adults complaining of respiratory symptoms from 2001 to 2005. In 2004, the majority of hospitals began publicly reporting information on 10 quality measures. This included the percentage of

patients with pneumonia receiving antibiotics within 4 hours. Rates of pneumonia diagnosis, antibiotic use, and physician wait times were compared before and after public reporting.

No major difference was found in the rate of pneumonia diagnosis before public reporting (10 percent) and after public reporting (11 percent). The same was true for antibiotic timing scores (34 percent vs. 35 percent). Any variation in hospital antibiotic timing was due to differences in wait times to see a doctor rather than differences in the rates of pneumonia diagnosis or prescribing antibiotics. The study's results suggest that fears over

indiscriminate antibiotic use and an overdiagnosis of pneumonia as a result of public reporting are unfounded. The study was supported in part by the Agency for Healthcare Research and Quality (HS14563).

See "Reporting hospitals' antibiotic timing in pneumonia: Adverse consequences for patients?" by Mark W. Friedberg, M.D., M.P.P., Ateev Mehrotra, M.D., M.P.H., and Jeffrey A. Linder, M.D., M.P.H., in the February 2009 *American Journal of Managed Care* 15(2), pp. 137-144. ■

## Mysterious skin infection is linked to World War II bomb craters

Shortly after the end of World War II, the first cases of a mysterious skin affliction began to affect taro farmers on the Micronesian island of Satowan. In 2006, after a man from Satowan with a skin infection was diagnosed with *Mycobacterium marinum* at a clinic in Portland, Oregon, government health authorities in Micronesia invited a team of researchers led by Joseph V. Lillis, M.D., of the Oregon Health and Sciences University, to investigate. After evaluation by team members, 39 patients with the disfiguring skin infection were treated with the antibiotic doxycycline for 3 months. Followup evaluation of a few patients showed dramatic improvement among those with limited disease.

The Satowan islanders affected by the skin disease had suffered from symptoms for an average of 13 years. Its principal symptoms were chronic, progressive, large, warty plaques primarily affecting the upper and lower limbs. By 2004, the infection had affected more than 10 percent of the island's population of 650. Up until this point, surgical and other treatments had proved ineffective and there had never been a formal investigation of the condition.

The team's investigation showed that the principal risk factor for the disease was swimming or bathing in the stagnant waters of craters left by Allied bombing in World War II. The craters were filled with large numbers of medaka fish that were originally introduced

to the island during World War II by the Japanese to decrease the mosquito population. The medaka fish is known to tolerate chronic infection with *M. marinum*. This bacterium rarely affects humans except through aquatic exposure of a cut or sore. The second major risk factor for the infection was engaging in taro farming, which requires standing or walking around in water-filled fields. All of those infected were taro farmers and most (95 percent) reported a history of a cut or abrasion near the site of their skin infection.

The investigators were unable to definitively identify *M. marinum* in the 19 tissue samples collected from Satowan patients, possibly because of storage at suboptimal temperatures and a 5-day interval between collection of the tissue and plating the culture. Further microbiological assessment is needed to definitively identify the mycobacterial organism causing this skin disease. With intervention and therapy, the researchers believe that mitigation of this significant public health problem on Satowan is possible. The study was supported by the Agency for Healthcare Research and Quality (HS17552).

See "Sequelae of World War II: An outbreak of chronic cutaneous nontuberculous mycobacterial infection among Satowanese islanders," by Dr. Lillis, Vernon E. Ansdell, M.D., Kino Ruben, M.D., and others, in *Clinical Infectious Diseases* 48, pp. 1541-1546, 2009. ■

## Vigorous physical activity may reduce risk of diverticulitis and diverticular bleeding among men

It has been known for some time that physical activity may reduce the risk of colon cancer and a number of other gastrointestinal disorders by decreasing colon transit time, inflammation, and pressure. Now a new study shows that vigorous physical activity can reduce the risk of diverticular bleeding and diverticulitis by more than a third. Diverticulosis is the condition of having small pouches (diverticula) in the lining of the large intestine that bulge outward through weak spots, which can cause cramps or discomfort in the lower abdomen, bloating, and constipation. Diverticulitis refers to inflammation of the diverticula, which can cause symptoms ranging from cramping, nausea, and vomiting to fever, diarrhea, or constipation.

A team led by Lisa L. Strate, M.D., M.P.H., of the University of Washington, examined the physical activity of 48,000 men over an 18-year period. Those engaging in vigorous physical activity had a 34 percent reduction in the risk of

diverticulitis and a 39 percent reduction in the risk of diverticular bleeding when compared with men who did not exercise vigorously. This reduction in risk occurred in a group who engaged in at least 28 MET-h/week of vigorous physical activity (equivalent to 3 hours of running).

One MET is defined as the energy expended by a 70 kg adult while at rest. Activities assigned a MET score of 6 or greater were classified as vigorous. The MET score was multiplied by the duration of activity in hours and expressed in MET-h/week.

Running was the only specific activity associated with a significantly decreased risk of diverticulitis. This finding contrasts to many other medical disorders, for which walking and other moderate activities help reduce risks.

Study patients were participants in the Health Professionals Follow up Study, who were free of diverticulosis or its complications at baseline (1986). In the period 1986-

2004, the researchers identified 800 incident cases of diverticulitis and 383 cases of diverticular bleeding. The patients' physical activity levels were assessed on a biennial basis. Average weekly time spent in various recreational activities was measured according to 13 different categories. The activities included walking, jogging, running, bicycling, lap swimming, tennis, squash or racquet ball, calisthenics, rowing, and using a stair climber or ski machine. Each activity was assigned a MET score based on energy expenditure. Other risk factors such as sedentary behavior, diet, medication use, and body mass index were also measured. The study was supported by the Agency for Healthcare Research and Quality (HS14062).

See "Physical activity decreases diverticular complications," by Dr. Strate, Yan L. Liu, M.S., Walid H. Aldoori, M.D., and Edward L. Giovannucci, M.D., Sc.D. in the *American Journal of Gastroenterology* 104, pp. 1221-1230, 2009. ■

## Men with prostate cancer who receive androgen deprivation therapy are at elevated risk of bone fractures, cardiovascular mortality, and diabetes

Androgen-deprivation therapy (ADT) is a widely used treatment for men with either localized or advanced prostate cancer. A new review by researchers at the University of Texas Health Sciences Center in Houston has found that the use of ADT increases the chances of bone fracture by 23 percent and cardiovascular mortality by 17 percent. However, in absolute terms, the risk for either remained low. Bone fracture risk rose only from 6.5 per 100 person-years to 7.2 per 100 person-years, while cardiovascular-related mortality risk rose from between 9 and 10 deaths per

1,000 person-years to between 10.5 and 11.7 deaths per 1,000 person-years. The review scrutinized studies on the major side effects of ADT published between 1966 and 2008.

The goal of ADT is to reduce the level of male hormones (androgens) produced mainly by the testicles, which stimulate prostate cancer cells to grow. ADT can take the form either of surgical castration (orchiectomy) or chemical castration with gonadotropin-releasing hormone. It is used as either primary or

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## Prostate cancer

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adjuvant therapy (in combination with radiation) and is effective in alleviating disease-specific symptoms and prolonging survival. Its side effects, in addition to skeletal and cardiovascular complications, include metabolic complications leading to diabetes. On the subject of ADT's effects on bone and cardiovascular-related outcomes, researchers found 683 articles published during the review period, but only 14 were considered rigorous enough to meet the study's inclusion criteria.

The five studies that investigated the risk of fracture as a major side effect of ADT all reported significantly increased risks of overall fracture in patients with prostate cancer who underwent ADT compared with patients who did not undergo ADT. Of the four studies investigating cardiovascular-related mortality, two were randomized clinical trials that reported slightly elevated

but nonsignificant increases in cardiovascular mortality related to ADT. The other two studies were retrospective studies, both of which reported significantly increased risks of cardiovascular-related mortality. Also, two studies investigating the risk of diabetes related to ADT found a significant 36 to 39 percent increase in the risk of incident diabetes. Although the absolute risks of fracture and cardiovascular mortality are low among men treated with ADT, the researchers recommend consideration of preventive treatments, such as the use of bisphosphonates to increase bone density. The study was supported by the Agency for Healthcare Research and Quality (HS16743).

See "Review of major adverse effects of androgen-deprivation therapy in men with prostate cancer," by Lockwood G. Taylor, M.P.H., Steven E. Canfield, M.D., and Xianglin L. Du, M.D., Ph.D., in the June 1, 2009 *Cancer* 115, pp. 2388-2399. ■

## Women's Health

### Women in Michigan who suffer miscarriages may not be receiving patient-centered care

A woman who suffers a miscarriage has several treatment options. She can wait to see if the miscarriage progresses naturally (expectant management), take a drug called misoprostol to speed up the miscarriage, or have surgery (uterine evacuation) in a medical office or a hospital. In Michigan, however, providers' attitudes appear to be dictating treatment by expectant management or surgery in a hospital operating room, a new study finds.

Vanessa K. Dalton, M.D., M.P.H., of the University of Michigan Medical School, and colleagues identified 21,311 women enrolled in Michigan's Medicaid program and 1,493 women from a university-affiliated health plan in Michigan who experienced miscarriages. The women covered by Medicaid were

more likely to be treated with surgery (35 percent) than the women enrolled in the university plan (18 percent). In addition, just 0.5 percent of the Medicaid enrollees had surgery in medical offices, while nearly 31 percent of the university plan's women underwent office procedures. This most likely occurred because the latter women had access to a network of providers who offered this service while the Medicaid-insured women did not.

Once the university plan offered office uterine evacuations, researchers saw a movement away from hospitals and toward medical offices. However, this option may have also led some women and providers to choose surgery in lieu of expectant management or misoprostol use, which was low for both the Medicaid group and the university plan.

The primary factor in determining treatment patterns for miscarriages appears to be having access to providers who offer a range of services, the authors suggest. Some providers may shy away from in-office surgeries because the procedure is so similar to induced abortions. Expanding treatment options for miscarriage so that they reflect patient preferences will have the dual effect of improving patient care and decreasing health care resource use, the authors suggest. This study was funded in part by the Agency for Healthcare Research and Quality (HS15491).

See "Treatment patterns for early pregnancy failure in Michigan," by Dr. Dalton, Lisa H. Harris, M.D., Ph.D., Sarah J. Clark, M.P.H., and others in the June 2009 *Journal of Women's Health* 18(6), pp. 787-793. ■

## Child/Adolescent Health

### New guidelines issued for nephrotic syndrome in children

**N**ew guidelines have been released on the diagnosis and management of childhood nephrotic syndrome. The syndrome, which can lead to kidney failure, is characterized by large amounts of protein in the urine, increased cholesterol levels, and fluid retention. Development of the guidelines was prompted by changes in the incidence of different forms of the condition, with increases over the past decade in one type (focal segmental glomerulosclerosis). This type of nephrotic syndrome is less responsive to glucocorticoid treatment (the gold standard initial treatment) and also has a greater risk for progressive kidney failure.

In addition, the greater prevalence of obesity and diabetes among U.S. children may be exacerbated by long-term glucocorticoid (steroid) therapy. The current recommendations are based on an extensive literature search, analysis of the data, and expert opinion from a consensus study group on the topic.

The guidelines offer recommendations to physicians for the initial evaluation of children with nephrotic syndrome who are aged 1 to 18 years old. Important to its treatment and management are defining key descriptors of nephrotic syndrome management, including remission, relapse, frequently relapsing, steroid-dependent, and steroid-resistant.

The guidelines offer definitions for these categories of treatment response, which form the basis of implementing appropriate therapy. Clinicians will also find a section on complications, including growth disturbances, lipid abnormalities, infection, and blood clots.

For children who are responsive to steroids, the guidelines recommend an initial, 12-week glucocorticoid regimen in order to decrease the chance of a relapse. The guidelines also note that children who are overweight at the start of steroid therapy are more likely to remain overweight after treatment. The use of glucocorticoids may impair growth and increase body mass index. Both patients and their caregivers need to be educated in the complex treatment of this chronic condition. They should receive specialized instruction in the proper administration of medications, how to deal with dietary restrictions, and the need for ongoing medical monitoring. The study was supported in part by the Agency for Healthcare Research and Quality (HS10397).

See "Management of childhood onset nephrotic syndrome," by Debbie S. Gipson, M.D., M.S., Susan F. Massengill, M.D., Lynne Yao, M.D., and others, in the August 2009 *Pediatrics* 124(2), pp. 747-757. ■

## Emergency Medicine

### Telemedicine reduces children's emergency department visits for nonemergency problems

**W**hen telemedicine is available in child care centers and schools for urban children with acute illnesses, the use of emergency departments (EDs) decreases substantially, according to a new study. In turn, the decline in ED use for nonemergency problems reduces health care costs. This finding is based on the experience of Health-e-Access, a telemedicine service

that provides pediatric care for acute illnesses through 10 primary care practices in Rochester, New York. In their study, researchers from the University of Rochester examined use of telemedicine access at 22 child care and school sites, office visits, and ED care. Children at telemedicine access sites had 22.2 percent fewer visits to EDs than those without access. However, they had 23.5 percent

greater illness visits overall (i.e., visits to any site).

Based on observed differences in use rates among children at telemedicine access sites, the researchers calculated a break-even ratio, where the payment for ED visits would be sufficiently greater than the payment for telemedicine visits so that the cost decrease due to fewer ED visits would equal the

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## Telemedicine

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cost increase due to more overall visits. Based on this calculation, if the mean payment for ED visits is at least fivefold greater than the mean payment for telemedicine visits, then the health care system will at least break even with the introduction of telemedicine. The 5

to 1 break-even ratio was exceeded by current reimbursement rates in the Rochester study community, where the ED to telemedicine payment ratio was 7 to 1.

Thus, the study's findings support reimbursing telemedicine providers for services with an expected financial gain for insurance companies and payers.

The study was supported in part by the Agency for Healthcare Research and Quality (HS15165).

See "Acute illness care patterns change with use of telemedicine," by Kenneth M. McConnochie, M.D., M.P.H., Nancy E. Wood, B.A., C.C.R.A., Neil E. Herendeen, M.D., and others, in the June 2009 *Pediatrics* 123(6), pp. e989-e995. ■

## Laptop test in an emergency department can help detect subtle cognitive deficits following concussions

Mild traumatic brain injury (MTBI), also known as concussion, is one of the most common neurologic conditions. While some patients bounce back with no complications in the days and weeks after suffering MTBI, studies show that up to 15 percent of patients can experience disability long after their injury. Thus, tests that help flag impairments early can lead to better treatments and outcomes for patients with MTBI. After administering computer tests that detect concussions, researchers found that patients with MTBIs are not as quick at recognizing or reacting to visual objects as patients with no concussions.

Researchers gave the Immediate Post-concussion Assessment and Cognitive Testing battery to 23 patients with concussions and 31 patients with hand injuries over a 3-month period in 2007 at a university-affiliated hospital emergency department. Patients with MTBI had slower visual motor speeds and reaction times than patients with hand injuries. Scores for visual and verbal

memory were similar for both groups; however, the researchers indicate that these findings might have been different if a larger group had been observed and if trauma patients had been included.

The authors believe that administering the Immediate Post-concussion Assessment and Cognitive Testing to detect cognitive deficits can be done effectively in the emergency department. The patients who took the test completed it without assistance in 25 minutes or less, although some suggested that it could stand to be shortened. This study was funded in part by the Agency for Healthcare Research and Quality (HS13628).

See "Neurocognitive function of emergency department patients with mild traumatic brain injury," by Shane E. Peterson, B.S., Matthew J. Stull, B.S., B.A., Michael W. Collins, Ph.D., and Henry E. Wang, M.D., M.S., in the June 2009 *Annals of Emergency Medicine* 53(6), pp. 796-803. ■

## Health Information Technology

### Electronic patient-provider messaging is linked to good diabetes control

Debate continues over the value, usefulness, and privacy concerns of electronic patient-provider messaging. A recent study looked at what happens when patients with diabetes are given the option to communicate with their provider by e-mail. The patients who established an e-mail relationship with their care providers were more

likely to have their diabetes well controlled than the group who chose not to e-mail their providers. The e-mailing patients also made more in-person visits to their providers.

Over a 15-month period, researchers analyzed electronic patient-provider messaging at Group Health Cooperative, which operates in Washington and Idaho.

Patients with diabetes had the option to use electronic messaging to communicate with their care providers over a secure Web site. In addition to measuring message threads, the researchers also measured three diabetes-related quality-of-care indicators. These were hemoglobin A1c (a marker of glucose control), blood pressure,

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## Diabetes control

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and LDL-cholesterol (“bad” cholesterol).

A total of 2,924 patients (19 percent) with diabetes used the secure messaging option on the Web site. Each user participated in an average of 5.3 message threads consisting of 11.8 individual messages. The vast majority (86.9 percent) of message threads were started by the patient. The rate of A1c at or below 7 percent (which indicates good glycemic control)

was 36 percent higher in patients who had the highest rate of secure messaging use (defined as 12 or more threads per year) compared with nonmessaging patients. Electronic messaging, however, was not strongly associated with adequate blood pressure control or lower LDL cholesterol.

High messaging users also made 32 percent more primary care visits than nonusers, which was surprising. High messaging users also had more outpatient specialty and emergency care visits. Patients who use electronic messaging may

be more proactive with providers both online and in person, suggest the researchers. Their study was supported in part by the Agency for Healthcare Research and Quality (HS14625).

See “Diabetes quality of care and outpatient utilization associated with electronic patient-provider messaging: A cross-sectional analysis,” by Lynne T. Harris, Sebastien J. Haneuse, Ph.D., Diane P. Martin, M.A., Ph.D., and James D. Ralston, M.D., M.P.H., in the July 2009 *Diabetes Care* 32(7), 1182-1187. ■

## Certain types of hospitals are more likely to use computerized physician order entry

Hospitals across the country continue to adopt computerized physician order entry (CPOE), although it is still not widespread. A study of hospitals that care for children found that hospitals that became early adopters of CPOE had certain characteristics. Researchers from the Medical University of South Carolina in Charleston reviewed 2 large databases to identify 2,145 hospitals that care for children that used CPOE in 2003. They analyzed hospital characteristics, including hospital type, bed size, ownership, health system affiliation, rural/urban location, and U.S. region.

At the time of the study, only 6 percent of the hospitals were using CPOE. Dedicated children’s hospitals were six times more likely to be early adopters of CPOE compared with general hospitals with pediatric units. Private for-profit hospitals were 26.5 times more likely than public hospitals to use

CPOE, and urban teaching hospitals were nearly 4 times more likely than rural hospitals to use CPOE.

The researchers also found geographic differences. Hospitals located in the Northeast, Midwest, and the South were 11.2, 4.2, and 3.1 times respectively more likely to use CPOE than hospitals located out West. The researchers call for future studies to look at the financial benefits of CPOE use in children’s health care. Their study was supported in part by the Agency for Healthcare Research and Quality (HS15679).

See “Early adopters of computerized physician order entry in hospitals that care for children: A picture of US health care shortly after the Institute of Medicine reports on quality,” by Ronald J. Teufel II, M.D., M.S.C.R., Abby Swanson Kazley, Ph.D., and William T. Basco Jr., M.D., in the May 2009 *Clinical Pediatrics* 48(4), pp. 389-396. ■

## Staff willingness to change and adapt is important when implementing electronic pharmacy systems

Electronic pharmacy systems can do much to improve patient safety and reduce medication errors in hospitals. Implementing these systems requires putting into place a number of facilitators as well as overcoming identified barriers. A new study points to the willingness of hospital employees to change

and adapt to the system as factors critical to success.

These insights come from Children’s Healthcare of Atlanta, a two-hospital pediatric health care system that began implementing an electronic pharmacy system in 2005. Information was gathered from pharmacists and clinical managers at approximately 3

months prior to the system being introduced and then again at 3 months after implementation.

While interviewed pharmacists believed the system’s implementation would mainly affect pharmacists, clinical managers felt that frontline nurses and respiratory therapists would be most affected.

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## Electronic pharmacy systems

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Both pharmacists and clinical managers generally agreed that the three main goals for implementation were to improve patient safety, increase job efficiency, and update the existing hospital system.

Staff readiness-to-change was the most significant facilitator of adoption, according to the pharmacists. On the other hand, clinical managers identified system training and education as their most significant facilitator. Other

identified facilitators included having an effective implementation plan and having a user-friendly, flexible system. Pharmacists cited the most important barrier as staff concerns with the usability of information in the pediatric drug file. Clinical managers, however, felt that adjusting to new work processes was the biggest barrier. Other barriers included staff apprehension and resistance, potential problems transferring active orders, and poor communication and feedback. The researchers recommend that hospitals implementing an

electronic pharmacy system consider training super users, providing formal feedback mechanisms, and understanding how implementation may affect various hospital staff groups differently. The study was supported in part by the Agency for Healthcare Research and Quality (HS15236).

See "Implementing a pharmacy system: Facilitators and barriers," by Steven D. Culler, Ph.D., James Jose, M.D., Susan Kohler, R.N., M.P.H., and others, in the *Journal of Medical Systems* 33, pp. 81-90, 2009. ■

## Public Health Preparedness

### A substantial number of adults stockpiled drugs for the avian flu outbreak in 2005

During the fall of 2005, amidst media reports of a worldwide H5N1 influenza (bird flu) outbreak, a substantial number of adults stockpiled prescribed Tamiflu® (oseltamivir), reports a new study. Stockpilers were more often older and of white race. They more often reported greater worry about the flu, felt more vulnerable to getting infected, and expected that it would spread to the United States.

Researchers at the Center for Education and Research on Therapeutics (CERT) at the University of Pennsylvania School of Medicine identified 109 individuals who received prescriptions for the influenza medication oseltamivir from 45 providers.

They examined medical records and supplemental questionnaires to determine drug usage patterns. They compared individuals who received oseltamivir prescriptions with those who did not receive oseltamivir prescriptions. The study period was between September 1, 2005 and December 31, 2005, when there was intense media coverage about avian flu outbreaks in certain regions.

The majority of oseltamivir prescriptions were written by internists (47.7 percent) and family

medicine practitioners (39.4 percent). Only 33 percent of individuals received a prescription for an appropriate indication. Oseltamivir is appropriately prescribed within 12 to 48 hours of initial flu symptoms to be effective in alleviating duration and severity of symptoms. It is also used to prevent the flu among persons exposed to infected individuals. Among those getting inappropriate prescriptions, 15.1 percent specifically requested the drug for stockpiling. Another 24.7 percent requested it without giving a reason. The study was funded in part by a grant from the Agency for Healthcare Research and Quality (HS10399) to the University of Pennsylvania School of Medicine CERT. For more information on the CERTs program, please visit [www.certs.hhs.gov/](http://www.certs.hhs.gov/).

See "Stockpiling drugs for an avian influenza outbreak: Examining the surge in oseltamivir prescriptions during heightened media coverage of the potential for a worldwide pandemic," by Leanne B. Gasink, M.D., M.S.C.E., Darren R. Linkin, M.D., M.S.C.E., Neil O. Fishman, M.D., and others, in the April 2009 *Infection Control and Hospital Epidemiology* 30(4), pp. 370-376. ■

## Primary Care

### Majority of primary care physicians now recommend colonoscopy

About 95 percent of primary care physicians routinely recommend screening colonoscopy to patients with average risk for colorectal cancer (CRC). Procedures once recommended in the past, such as sigmoidoscopy (where only a third of the colon is examined), are now only rarely suggested to patients, reveals a new study. Researchers analyzed responses from 1,266 primary care physicians who responded to a 2006-2007 survey on recommendations and practices for colorectal and other commonly screened cancers. Results were then compared with responses from an earlier nationwide survey conducted in 1999-2000.

Whereas 86 percent of physicians in the earlier survey perceived colonoscopy to be very

effective at reducing mortality from CRC, 95 percent felt this way in the latest survey. In the older survey, the fecal occult blood test (FOBT) was the screening modality most recommended (95 percent). Colonoscopy was a distant third at only 38 percent, behind sigmoidoscopy (78 percent). Now, 95 percent of primary care physicians routinely recommend colonoscopy, followed by FOBT (80 percent) and sigmoidoscopy (26 percent). There has been a 25 percent drop in the number of primary care physicians who perform flexible sigmoidoscopies. While many have been trained in the procedure, they now only rarely recommend or perform it, note the researchers.

The U.S. Preventive Services Task Force on CRC screening

recommends, but does not distinguish among, all three procedures. According to the latest survey, the majority of primary care physicians recommend age 50 years for the start of CRC screening, with colonoscopy performed once every 10 years. Close to two-thirds (61 percent) of physicians reported having implemented guidelines for CRC screening..

See "Colorectal cancer screening by primary care physicians: Recommendations and practices, 2006-2007," by Carrie N. Klabunde, Ph.D., David Lanier, M.D., Marion R. Nadel, Ph.D., and others, in the July 2009 *American Journal of Preventive Medicine* 37(1), pp. 8-16. Reprints (AHRQ Publication No. 09-RA076) are available from AHRQ\*. ■

### Primary care physicians do not always discuss the risks and benefits of prostate cancer screening with patients

There is insufficient evidence to recommend for or against routine prostate cancer screening. Thus, guidelines recommend that doctors discuss the risks and benefits of prostate cancer screening, so that men can decide for themselves about prostate-specific antigen (PSA) testing. However, one in five primary care physicians (PCPs) do not have this discussion with their patients, according to a new study. Primary care physicians filled out a survey that included open-ended questions about their use of prostate cancer screening practices and patient discussions. Among the 63 physicians surveyed, 20.6 percent ordered a PSA test without any discussion with the patient and 71.4 percent ordered the test after a prescreening discussion. Three physicians did not order a PSA test or discuss it with the patient.

Ordering a PSA test was highest among PCPs who did not discuss screening with their patients, followed by PCPs who engaged in discussions and recommended the PSA test for their patients. PSA test orders were

lowest among PCPs who discussed testing with their patients and let them decide. Patient risk factors also played a role in how likely physicians were to screen men. For example, 69 percent of nondiscussion physicians and 50 percent of discussion physicians said they were more likely to screen black men (who have a higher risk for the disease). Also, 91 percent of nondiscussion physicians and 46 percent of discussion physicians indicated they were more likely to screen patients with family histories of prostate cancer.

Among the nearly three-fourths of PCPs who used prescreening discussions, the role of decisionmaker varied. Some PCPs let patients decide, while others recommended testing. Physicians who tried to persuade men to get tested believed in the efficacy of screening and PSA testing. Physicians who did not try to persuade men to be tested questioned the lack of scientific evidence and efficacy of the PSA test and some were concerned about treatment side effects

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## Prostate cancer screening

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(e.g., incontinence and impotence from surgery or radiation). None of the surveyed physicians reported recommending against the test. The study was supported in part by the Agency for Healthcare Research and Quality (HS10612).

See "Primary care physicians' reported use of pre-screening discussions for prostate cancer screening: A cross-sectional survey," by Suzanne K. Linder, M.D., Sarah T. Hawley, Ph.D., Crystale P. Cooper, Ph.D., and others, in the March 18, 2009 online issue of *BMC Family Practice* 10(19) at [www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2666644](http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2666644). ■

## More than half of primary care physicians report stressful working conditions

Primary care physicians are not having an easy time at work these days. According to a new study on working conditions, more than half report feeling stressed over time pressures during office visits. They also report other stress-related problems that affect their daily practice. However, the good news is that while these physicians report stress, their reactions to it do not affect the quality of care they provide to patients.

Researchers surveyed 422 family physicians and general internists who worked in 119 ambulatory care clinics located in New York City, Chicago, Milwaukee, Madison, and rural Wisconsin. They also surveyed 1,795 patients from these clinics and reviewed their medical records for information on care quality and medical errors.

More than half (53.1 percent) of the physicians reported

experiencing time pressures when conducting physical examinations. Nearly a third (30.3 percent) felt they needed at least 50 percent more time than was allotted for this patient care function. In addition, 21.3 percent said they needed at least 50 percent more time for followup appointments. Time pressure was strongly associated with feelings of dissatisfaction, stress, burnout, and intent to leave the practice. Nearly half of the physicians (48.1 percent) reported chaotic environments. A minority (21.6 percent) felt they had moderate control over their work environment.

Despite these survey responses, chart review data produced an average overall quality score (average proportion of quality outcomes for all patients across clinics) of 57.8 percent and an average error score (average proportion of processes of care

missing from care of all patients across clinics) of only 33.5 percent. According to the researchers, physicians may act as buffers between adverse work conditions and patient care, as their reactions do not appear to translate into lower quality care. However, some direct relationships were seen between adverse work conditions and some patient outcomes. These findings require further study, and could provide a link between the primary care work environment and quality of care. The study was supported by the Agency for Healthcare Research and Quality (HS11955).

See "Working conditions in primary care: Physician reactions and care quality," by Mark Linzer, M.D., Linda Baier Manwell, M.S., Eric S. Williams, Ph.D., and others, in the July 7, 2009 *Annals of Internal Medicine* 151(1), pp. 28-36. ■

## HIV/AIDS Research

### Smoking is particularly hazardous for individuals with HIV infection

Everyone knows smoking is a leading cause of death and disease. But for persons living with HIV, smoking is particularly hazardous, concludes a study of veterans. Researchers compared overall mortality in 1,034 HIV-positive veterans and 739 HIV-negative veterans. Both groups were matched according to age, race, sex, and demographics. Information was obtained on smoking status (current or

former smoker), the number of pack-years (based on cigarettes smoked per day and years), coexisting diseases, respiratory symptoms, substance abuse, and quality of life. They were followed for a median of 5.3 years.

There were 200 deaths in the HIV-positive group, resulting in a mortality rate of 4.1 per 100 person-years

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## Smoking

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(PY). This was double the mortality rate of 2.0 per 100 PY (72 deaths) in the HIV-negative group. However, HIV-positive current smokers had the highest mortality rate of 5.48 per 100 PY, followed by 3.41 for HIV-positive former smokers, and 2.45 for never smokers infected with HIV. When the researchers stratified patients by pack-years of smoking, there was a decreased survival among HIV-positive veterans with any degree of smoking exposure. Mortality rates were significantly higher in HIV-positive smokers compared with HIV-positive veterans who never smoked for both less than 20 and greater than or equal to 20 pack-years of exposure.

Smoking was also linked to increased respiratory symptoms and coexisting diseases, as well as a decreased quality of life. The researchers recommend that encouraging individuals with HIV infection to quit smoking, regardless of pack-year history, should be an important part of their ongoing care. The study was supported in part by the Agency for Healthcare Research and Quality (HS16097).

See “Impact of cigarette smoking on mortality in HIV-positive and HIV-negative veterans,” by Kristina Crothers, M.D., Joseph L. Goulet, Ph.D., M.S., Maria C. Rodriguez-Barradas, M.D. and others, in the 2009 *AIDS Education and Prevention* 21(Suppl A), pp. 40-53. ■

## Observing patients swallowing one HIV drug on weekdays has little impact on drug adherence

**D**irectly-observed therapy (DOT), where providers watch patients take their medications every day, is often used to improve adherence to a drug regimen, including medications used to treat HIV infection. A modified version of this technique (mDOT) only observes patients during weekdays and focuses on one drug in the regimen. The goal is to ensure that patients just starting HIV therapy adhere to their regimen and continue to do so after mDOT is stopped. A new study, however, has found that such a strategy only produces marginal results. In addition, once mDOT is stopped after 6 months, any benefits to adherence are not sustained.

Researchers randomized 243 patients, who had never before taken HIV medication, into two groups. One group (161 participants) took their HIV medications without any provider supervision. The second group (82 participants) was given mDOT. As part of their antiretroviral therapy regimen, all patients were prescribed lopinavir/ritonavir once

daily. Participants in the mDOT group received lopinavir/ritonavir under direct supervision by a care provider during weekdays and self-administered the drug on weekends, holidays, and days in which they could not reach the site.

Compared with self-administered therapy participants, a higher proportion of those on mDOT remained on their dose schedule at week 24 (84 versus 78 percent). By week 48, however, the proportions had dropped to 73 percent and 68 percent, respectively. The difference in adherence level between the two groups at this point was not considered significant. Although the proportion of participants with adequate suppression of HIV at week 24 was higher in the mDOT group, the difference was once again not large enough to be deemed superior to self-administered therapy.

Interestingly, after the mDOT was stopped and mDOT participants switched to fully self-administered therapy for the final 24 weeks, there was some

evidence that the group originally on mDOT did worse than the group that started and stayed with self-administered therapy. This suggests that changing an individual's adherence support may have detrimental effects. While participants did accept mDOT and found it appealing, the researchers concluded that mDOT should not be incorporated routinely into HIV care. However, they believe it may be useful in patients with a high risk for nonadherence, particularly those who have failed treatment. Their study was supported in part by the Agency for Healthcare Research and Quality (HS16946).

See “Modified directly observed antiretroviral therapy compared with self-administered therapy in treatment-naïve HIV-1-infected patients,” by Robert Gross, M.D., M.S.C.E., Camlin Tierney, Ph.D., Andriana Andrade, M.D., M.P.H., and others, in the July 13, 2009 *Archives of Internal Medicine* 169(13), pp. 1224-1232. ■

## Agency News and Notes

### Care costs for middle-aged Americans have doubled in the past decade

The \$370 billion in health care expenses for Americans aged 45 to 64 in 2006 were about double the inflation-adjusted total for 1996 (\$187 billion), according to the latest data from the Agency for Healthcare Research and Quality (AHRQ). The Agency examined costs for all Americans aged 45 to 64 other than those residing in nursing homes and other institutions.

AHRQ also found that during this period:

- The proportion of people aged 45 to 64 who incurred medical expenses did not change (about 89 percent), but average annual health care expenses for those with expenses increased from \$3,849 (after adjusting for inflation) to \$5,455.
- Prescribed medicines were a substantially higher proportion of total expenses in 2006 compared with 1996 (25 percent and 15 percent, respectively).
- The proportion of total expenses for hospital inpatient care decreased (from 36 percent to 26 percent).
- The average expense per service rendered grew significantly (in 2006 dollars):
  - Physician office visit, \$128 to \$207
  - Inpatient hospital day, \$3,005 to \$3,491
  - Emergency room visit, \$563 to \$947
  - Dental visit, \$195 to \$265
  - Prescription medicines, \$103 to \$199

These findings were based on analysis of the Medical Expenditure Panel Survey (MEPS), a detailed source of information on the health services used by Americans, the frequency of use, cost of services, and how they are paid. For more information, see *Trends in Health Care Expenditures for Adults Ages 45-64: 2006 versus 1996* at [www.meps.ahrq.gov/mepsweb/data\\_files/publications/st255/stat255.pdf](http://www.meps.ahrq.gov/mepsweb/data_files/publications/st255/stat255.pdf). ■

### Patient deaths in hospitals cost nearly \$20 billion

One of every three people who died in 2007 in the United States were in the hospital for treatment at the time of their deaths, according to the latest data from the Agency for Healthcare Research and Quality (AHRQ). The cost of their hospital stays was about \$20 billion. AHRQ's analysis of 765,651 hospital patient deaths in 2007 found that the average cost of hospital stays in which patients died was \$26,035, versus an average of \$9,447 for patients who were discharged alive. The costs were higher for patients who died, because their hospital stays were longer than those of patients who lived (8.8 days vs. 4.5 days).

The study also found that:

- Medicare patients accounted for 67 percent of in-hospital deaths and \$12 billion in hospital costs, while privately insured patients accounted for 20 percent of deaths and \$4 billion. Medicaid patients accounted for 2 percent of deaths and \$2.4 billion, and uninsured patients, 3 percent and \$630 million.
- The average cost for each Medicaid patient who died was \$38,939 – roughly \$15,000 more than the average cost of a Medicare or uninsured patient who died, and about \$10,000 more than a privately insured patient who died.
- About 12 percent of patients who died had been admitted for an elective procedure or other non-urgent reason and 72 percent were emergency admissions. Roughly 7 percent of patients who died were admitted for accidents or intentional injury and about 2 percent were newborn infants.
- Septicemia, a life-threatening blood infection, was the major cause of death, accounting for 15 percent of all deaths, followed by respiratory failure (8 percent); stroke (6 percent); pneumonia (5 percent); heart attack (5 percent); and congestive heart failure (4 percent). Other leading causes of death included cancer, aspiration pneumonia, and kidney failure.

These findings are based on data in *The Costs of End-of-Life Hospitalizations, 2007*, Statistical Brief #82. The report uses statistics from the 2007 Nationwide

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## Patient deaths

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Inpatient Sample, a database of hospital inpatient stays drawn from

hospitals that comprise 90 percent of all discharges in the United States and include all patients, regardless of insurance type, as well as the

uninsured. You can view the report at [www.hcup-us.ahrq.gov/reports/statbriefs/sb82.pdf](http://www.hcup-us.ahrq.gov/reports/statbriefs/sb82.pdf). ■

## Georgians and Ohioans pay less for dental care than the national average

The annual amount spent by Georgians and Ohioans or their insurers for dental care in 2006 averaged about \$150 less than the national average of \$607, according to the latest data from the Agency for Healthcare Research and Quality (AHRQ). The average annual dental expenditure for each Georgian who had dental care was \$466, while for Ohioans, it was \$474.

AHRQ's analysis of average annual dental expenditures in the 10 States with the highest populations in 2006 also found that:

- Michigan had the highest proportion of residents with dental expenses (52.5 percent) and Texas had the least (30 percent).

- Compared to the national average of 49 percent for out-of-pocket payment for dental care, Floridians paid more (62.5 percent) and Pennsylvanians paid less (42 percent).
- Nationally, private insurers paid 43 percent of all dental expenditures.

These findings are taken from the Medical Expenditure Panel Survey (MEPS), a detailed source of information on the health services used by Americans, the frequency with which they are used, the cost of those services, and how they are paid. For more information, view *Dental Expenditures in the 10 Largest States, 2006* at [www.meps.ahrq.gov/mepsweb/data\\_files/publications/st263/stat263.pdf](http://www.meps.ahrq.gov/mepsweb/data_files/publications/st263/stat263.pdf). ■

## Announcements

### AHRQ awarded \$17 million to fund projects to fight health care-associated infections

The Department of Health and Human Services (HHS) has awarded the Agency for Healthcare Research and Quality (AHRQ) \$17 million to fund projects to fight costly and dangerous health care-associated infections (HAIs). These infections are one of the most common complications of hospital care. Nearly 2 million patients develop HAIs, which contribute to 99,000 deaths each year and \$28 billion to \$33 billion in health care costs. HAIs are caused by different types of bacteria that infect patients being treated in a hospital or health care setting for other conditions. The most common HAI-causing bacteria is methicillin-resistant *Staphylococcus aureus*, or MRSA.

The number of MRSA-associated hospital stays has more than tripled since 2000, reaching 368,600 in 2005, according to AHRQ's Healthcare Cost and Utilization Project.

Of the \$17 million, \$8 million will fund a national expansion of the Keystone Project, which within 18 months successfully reduced the rate of central-line blood stream infections in more than 100 Michigan intensive care units (ICUs) and saved 1,500 lives and \$200 million. The project was originally started by the Johns Hopkins University in Baltimore and the Michigan Health & Hospital Association to implement a comprehensive unit-based safety program. The program involves

using a checklist of evidence-based safety practices; staff training and other tools for preventing infections that can be implemented in hospital units; standard and consistent measurement of infection rates; and tools to improve teamwork among doctors, nurses, and hospital leaders.

Last year, AHRQ funded an expansion of this project to 10 States. With additional funding from AHRQ and a private foundation, the Keystone Project is now operating in all 50 States, Puerto Rico, and the District of Columbia. The new HHS funding will expand the effort to more hospitals, extend it to other settings

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## Health care-associated infections

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in addition to ICUs, and broaden the focus to address other types of infections.

In collaboration with the Centers for Disease Control and Prevention

(CDC), AHRQ also identified several high-priority areas to apply the remaining \$9 million toward reducing MRSA and other types of HAIs. These projects will range from reducing *Clostridium difficile* infections through a regional hospital collaborative to evaluating

new ways to eliminate MRSA in ICUs. A complete list of institutions funded by the \$17 million awarded to AHRQ is available at [www.ahrq.gov/qual/haify09.htm](http://www.ahrq.gov/qual/haify09.htm). ■

## AHRQ introduces new Pharmacy Health Literacy Center

AHRQ recently announced the completion of its Pharmacy Health Literacy Center to help retail pharmacists meet the needs of customers with low or limited health literacy. Research shows that many people misread or misunderstand instructions on how to take medications as prescribed. But effective communication can reduce medication errors and the adverse outcomes they may cause.

The AHRQ Pharmacy Health Literacy Center features four tools for retail pharmacies: *Is Our Pharmacy Meeting Patients' Needs: A Pharmacy Health Literacy Assessment Tool User's Guide*;

*Strategies to Improve Communication between Staff and Patients: Training Program for Pharmacy Staff*; *How to Create a Pill Card*; and *Telephone Reminders: A Tool to Help Refill Medications on Time*. The Web site, <http://pharmacyhealthliteracy.ahrq.gov/sites/PharmHealthLiteracy/default.aspx>, also features additional assistance for pharmacies interested in using the assessment tool; a list of resources to learn more about health literacy; and a discussion board for visitors to post comments and questions to learn from other pharmacists. ■

## Research Briefs

**Clancy, C. (2009). "Building the path to high-quality care." *HSR: Health Services Research* 44(1), pp. 1-4. Reprints (AHRQ Publication No. 09-R090) are available from AHRQ.\***

Recent assessments of health care quality consistently reflect a substantial and persistent gap between high-quality evidence-based care and that which is routinely delivered, according to the director of the Agency for Healthcare Research and Quality. She discusses two studies in this issue of the journal on the science of improvement. The first study reported on the outcome of a multifaceted intervention to improve pain management for elderly patients with hip fractures. The second study focused on the organizational costs of a depression

care quality improvement program. The work described in these studies is far more challenging than some traditional research areas because it requires effective engagement with policymakers, clinicians, health care leaders, and patients, notes the author. She encourages investments in improvement methods, new approaches to training, and demonstrations.

**Donihi, A. C., Weber, R. J., Sirio, C. A., and others. (2009). "Instructional design and assessment. An advanced pharmacy practice experience in inpatient medication education." (AHRQ grant HS15851). *American Journal of Pharmaceutical Education* 73(1), pp. 1-6.**

This report describes how a multidisciplinary medication education program was modified to include pharmacy students in providing medication education to high-risk patients. The program, called the Enhanced Patient Safety Intervention to Optimize Medication Education (EPITOME), had already been implemented in a 674-bed academic hospital but time constraints made it difficult for pharmacists to provide a meaningful education experience for the patients. After consultation, hospital and pharmacy school staff proposed an Inpatient Medication Education advanced pharmacy practice experience. Students were trained to independently assess patients' needs and identify drug-related problems.

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Under supervision by clinical staff pharmacists, they provided medication education and performed medication therapy management. In the first 3 months of the program, more than twice as many patients were assessed than in the 3 months prior to the program.

**Facco, F., You, W., and Grobman, W. (2009, June). "Genetic thrombophilias and intrauterine growth restriction: A meta-analysis." (AHRQ grant T32 HS00078). *Obstetrics and Gynecology* 113(6), pp. 1206-1216.**

Pregnant women who suffer from blood disorders that cause excessive clotting (thrombophilias) are sometimes given blood thinning medication to prevent intrauterine growth restriction (IUGR). IUGR is a term used to describe a fetus that is smaller than normal (below the 10th percentile for a given gestational age), a condition associated with fetal death and long-term illnesses, including cardiovascular disease. The authors performed a literature review for three inherited thrombophilic mutations: homozygous or heterozygous factor V Leiden, prothrombin G20210A mutations, and homozygous methylenetetrahydrofolate reductase (MTHFR) C677T mutation. For the 19 studies that were included in the meta-analysis, they found no clear association between inherited thrombophilias and IUGR. The findings of statistically significant associations between IUGR and two of the mutations (MTHFR and Factor V Leiden) appeared to be influenced by publication bias in case-control studies.

**Friedman, B., Encinosa, W., Jiang, H. J., and Mutter, R. (2009, May). "Do patient safety**

**events increase readmission?"**

***Medical Care* 47(5), pp. 1-8.**

**Reprints (AHRQ Publication No. 09-R051) are available from AHRQ.\***

The effects of patient safety events in hospitals on readmissions have rarely been analyzed. The researchers examined nine types of patient safety events developed by AHRQ's Healthcare Cost and Utilization Project. These safety problems ranged from postoperative sepsis to health care-associated infections. The study included nearly 1.5 million surgery patients from 1,088 short-stay hospitals. Hospitalized patients who experienced one or more events that jeopardized their safety had a 3-month readmission rate of 25 percent (compared with 17 percent for patients with no safety events). The study also found that patients experiencing a safety event had a higher in-hospital death rate (9.2 percent vs. 1.3 percent for patients with no safety events). Two safety events, pulmonary embolism/deep vein thrombosis and accidental puncture or laceration, had the highest event rates, with large patient populations at risk for these events.

**Gallagher, T.H. (August 2009). "Clinical Crossroads: A 62-year-old woman with skin cancer who experienced wrong-site surgery." (AHRQ grant HS16097). *Academic Medicine* 84(8), pp. 1135-1143.**

A case of wrong-site surgery for skin cancer served as the framework for a discussion of medical error and its disclosure to the patient by the surgeon and the hospital. The case, in which a woman had skin adjacent to her squamous cell carcinoma removed instead of the cancerous skin, is put into a larger context by the author. He notes that while medication

errors are relatively common (approximately 3 per 1,000 prescription orders), wrong-site surgeries are relatively rare. A study published in 2006 of 2.8 million U.S. operations uncovered only 25 wrong-site surgeries, a rate of 1 error per 112,994 operations. Only one of these errors was associated with permanent injury. The error was apparent to the patient as soon as she removed the bandages, and her doctor and the hospital administration made themselves available to apologize for the error and discuss possible compensation. The author reviews the state of error disclosure in U.S. hospitals, discussing studies that suggest that error disclosure can reduce lawsuits and the amount of damages if a suit goes to trial. He summarizes the barriers to disclosure and potential solutions—as well as recent developments in disclosure undertaken by Federal agencies, universities, and national quality organizations.

**Gerhard, T., Chavez, B., Olfson, M., and Crystal, S. (2009). "National patterns in the outpatient pharmacological management of children and adolescents with autism spectrum disorder." (AHRQ grant HS16097). *Journal of Clinical Psychopharmacology* 29(3), pp. 307-310.**

The authors characterize national trends and patterns in the outpatient pharmacological management of children and adolescents with autism spectrum disorder (ASD). Ten years of data (1996-2000, 2001-2005) from the National Ambulatory Medical Care Survey and the outpatient portion of the National Hospital Ambulatory Medical Care Survey were analyzed. During the study period, annual nonadult ASD visits per

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100,000 people increased from 168 in 1996-2000 to 543 in 2001-2005. During this latter period, visits were made by patients who were overwhelmingly male, white, and non-Hispanic, with a mean age of 10.6 years. Over this same period, the proportion of ASD visits with psychotropic prescriptions significantly increased from 39 percent to 79 percent. Stimulants, antidepressants, and antipsychotics were the most commonly prescribed medications. The mean number of psychotropic medication classes prescribed at a given visit was 2.4. Almost one-half of visits reported a comorbid mental disorder, often a disruptive behavioral disorder (30 percent). A limitation of this study is that it cannot determine to what extent psychotropic medications are being prescribed for ASDs or the codiagnosed mental disorders.

**Glance, L. G., Osler, T. M., Mukamel, D. B., and Dick, A. W. (2009).** "Grading intensive care unit performance—Does one size fit all?" (AHRQ grant HS16737). *Critical Care Medicine* 37(8), pp. 2479-2480.

It is impossible to compare the performance of intensive care units (ICUs) without accounting for differences in inpatient case mix, assert these authors. They comment on another article in the issue by Nathanson and colleagues that explored whether the quality ranking of ICUs in the Project IMPACT database changes when subgroup models based on the Mortality Probability Models (MPM-III), but customized to specific subgroups of patients (e.g., trauma, neurosurgical patients), are used for risk adjustment instead of a single general MPM-III. They found that the use of subgroup

models yields virtually identical observed-to-expected mortality rates, irrespective of whether MPM-III or subgroup models based on MPM-III are used to assess overall ICU quality. Outside the ICU, where the use of a single risk adjustment model for diverse surgical procedures may lack face validity, separate risk-adjustment models can be used to estimate the expected mortality rates for patients undergoing high-risk procedures. The observed and expected mortality rates could be aggregated together to jointly produce a hospital quality metric for several high-risk procedures. The work of Nathanson, et al. suggests a simple solution to the problem caused by small sample sizes for patient populations outside the ICU.

**Hellinger, F. J. (2009, February).** "Tax-exempt hospitals and community benefits: A review of state reporting requirements." *Journal of Health Politics, Policy and Law* 34(1), pp. 37-61. Reprints (AHRQ Publication No. 09-R048) are available from AHRQ.\*

The Internal Revenue Service (IRS) has made major changes in its reporting requirements for tax-exempt hospitals starting this year. Hospitals must now submit detailed information on the percentage of total expenses attributable to charity care, unreimbursed Medicaid costs, and community health improvement programs. The researcher summarizes information from 16 States that already have laws requiring hospitals to place a monetary value on community benefits they provide. Under these various State laws, hospitals appear to have no trouble quantifying such things as charity and uncompensated care. These should be easily reportable on the newly redesigned IRS Form 990 for 2009

tax returns submitted. Other services, such as health promotion and disease prevention programs, are more difficult to quantify. In order to keep their Federal tax exemption, not-for-profit hospitals will have to submit a detailed Schedule H as part of Form 990. State officials will use these data to set guidelines for determining if community-benefit levels are large enough to justify exclusion from State taxes.

**Ito, K., Hollenberg, J. P., and Charlson, M. E. (2009).** "Using the osteoporosis self-assessment tool for referring older men for bone densitometry: A decision analysis." (AHRQ grant T32 HS00066). *Journal of the American Geriatric Society* 57, pp. 218-224.

As the U.S. population ages, men are developing osteoporosis and related fractures, which cost an estimated \$4.1 billion in 2005. Since osteoporosis in men is rarely identified and treated, the researchers compared the health benefits and costs of three screening strategies for 70-year-old community-dwelling white men with no history of osteoporotic fractures: no bone densitometry, selective bone densitometry using the Osteoporosis Self-Assessment Tool (OST), and universal bone densitometry screening. They calculated that selective bone densitometry using the OST would cost \$100,000 per additional life year gained, compared with no bone densitometry. Universal bone densitometry would cost \$483,500 for additional life year gained, compared with selective bone densitometry. They concluded that a reasonably cost-effective strategy is to stratify 70-year-old men for osteoporosis risk using a questionnaire (OST), perform bone

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densitometry to diagnose osteoporosis only for the high-risk group (OST score of -2 or less), and then give men diagnosed with osteoporosis generic alendronate, an antiosteoporotic medication.

**Kitahata, M. M., Gange, S. J., Abraham, A. G., and others. (2009, April 20). “Effect of early versus deferred antiretroviral therapy for HIV on survival.” (AHRQ Contract No. 290-01-0012). *New England Journal of Medicine* 360(18), pp. 1815-1826.**

The availability of antiretroviral medications to treat HIV infection has done much to reduce disease progression and death among patients. Yet when to start treatment remains uncertain. Current guidelines recommend starting therapy for asymptomatic patients with CD4+ cell counts (a marker of how well the immune system is performing) of less than 350 cells per cubic millimeter.

The researchers studied a total of 17,517 asymptomatic patients with HIV infection in the U.S. and Canada. In the first analysis, among the 8,362 patients who had CD4+ cell counts of 351 to 500 cells per cubic millimeter, those who deferred therapy until their CD4+ cell count fell below the range had a 60 percent greater risk of death than patients who began therapy while in the range. In a second analysis, the 76 percent of patients who deferred therapy until their CD4+ cell counts fell below 500 had a 94 percent greater risk of death than those who began therapy at a count above 500. The researchers suggest starting antiretroviral therapy even earlier (when CD4+ cell count is higher) to improve survival in patients with HIV infection.

**Levtzion-Korach, O., Alcalai, H., Orav, E. J., and others (2009, March). “Evaluation of the contributions of an electronic web-based reporting system: Enabling action.” (AHRQ grant HS11046). *Journal of Patient Safety* 5(1), pp. 9-15.**

Incident reporting represents a key tool in safety improvement. The researchers sought to characterize a Web-based reporting system by evaluating the rate and content of the incident reports and their consequent actions and followup. The system they studied was implemented at a large urban hospital, where 14,179 reports were submitted over a 31-month period. Researchers looked at the frequency of reporting, severity of patient harm, location in the hospital, followup actions, and ease of reporting. Most reports involved laboratory results (30.4 percent), followed by medications (17.2 percent), and falls (10.9 percent), among others. Personnel found the system easy to use and submitted most reports within 24 hours. The majority of reports (70 percent) were reviewed by an average of four people within 72 hours. As a result of the system, a number of actions were implemented to facilitate and improve patient safety hospital-wide. The researchers concluded that this Web-based hospital reporting system effectively captured patient safety incidents, the actions taken in response, and the followup.

**Likosky, D. S. (2009). “Optimizing multi-center perfusion data.” (AHRQ grant HS15663). *The Journal of ExtraCorporeal Technology* 41, pp. P7-P10.**

This commentary provides some insight on how to optimize the quality of a multicenter registry and how to ensure that perfusion data collected through such a

consortium may be perfected and used effectively. The key principles discussed are the quality of datasets, the use of the data to inform practice, and developing and maintaining social capital. To ensure the quality of the dataset, the author emphasizes the importance of involving frontline teams in developing and defining variables. To effectively use data to inform clinical practice, the registry consortium should focus on understanding the root cause of variability in key processes of care. To develop and maintain social capital, each of the units in every medical center in the consortium should participate in all facets of the consortium, including social events. Although the discussion focuses on the structure and function of the Perfusion Down Under Consortium to maximize the opportunity to improve the quality of care delivered to a specific patient population, these principles are applicable to any perfusion registry.

**Likosky, D. S. (2009). “An epidemiologist’s review of the case for pulsatile flow during cardiopulmonary bypass.” (AHRQ grant HS15663). *The Journal of ExtraCorporeal Technology* 41, pp. P30-P32.**

During cardiopulmonary bypass (CPB), continuous rather than pulsatile flow has been used since it is technologically easier to accomplish. However, pulsatile flow has many inherent and theoretical advantages over continuous flow. Although ample reviews have focused on addressing the efficacy and effectiveness of pulsatile flow in the setting of CPB, few have focused their attention on critically appraising the methodology of the literature. Using a previously published review article by

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Alghamdi and Latter on pulsatility with respect to patients undergoing elective coronary artery bypass grafting procedures, the author focuses on sample size and statistical power as it relates to pulsatile flow. The author mostly agrees with the reviewers' analysis of the eight articles meeting the review's inclusion criteria. However, he identifies either inadequate sample size or inadequate statistical power in these studies, which can prevent knowing whether the reported findings of the relationship between pulsatile flow and the outcomes of mortality, myocardial infarction, stroke, and renal failure are real or chance-related.

**Likosky, D. S. (2009). "Forming a research question from a multicenter database." (AHRQ grant HS15663). *The Journal of ExtraCorporeal Technology* 41, pp. P33-P36.**

The author highlights the principles for formulating a research question from an existing multicenter consortium, the Northern New England Cardiovascular Disease Study Group (NNECDSG). The author first describes the general process which the NNECDSG uses to translate ideas to research questions. This process includes the sorts of questions that must be addressed, the review of the peer-reviewed literature, and the series of steps (meetings, conference calls) taken to solicit critique, feedback, and general comments. He also stresses the importance of considering questions of sample size and statistical power during the development of the project, and not just at the end. The author then describes the steps taken and the results achieved when the group

sought to determine whether a survival benefit exists from the use of an intra-aortic balloon pump. His conclusion is that the model he describes is generalizable and applicable to the formulation and execution of sound observational studies.

**Miller, E. K., Edwards, K. M., Weinberg, G. A., and others. (2009, January). "A novel group of rhinoviruses is associated with asthma hospitalizations." (AHRQ grant HS13833). *Journal of Allergy and Clinical Immunology* 123(1), pp. 98-104.**

Human rhinoviruses (HRVs) can cause a variety of respiratory tract infections in children and are linked to asthma episodes in adults and children. A third group of HRVs, called group C (HRVC), has been identified. Researchers sought to determine how HRVC affected disease among young hospitalized children. They studied 1,123 children admitted to hospitals during a 2-year period. All had either respiratory symptoms or fever. Out of 1,052 viral samples tested, 167 were positive for HRVs. HRVC accounted for at least half of all HRV-associated illnesses, particularly asthma. Older children with HRVs were more likely to have HRVCs. Children with Group C strains tended to have underlying high-risk conditions (41.6 percent) compared with children with Group A strains (23.4 percent). More HRVC strains were detected in October, compared with more HRVA strains detected in April. This may explain the seasonal peak in asthma hospitalizations during the month of September.

**Napoles, A. M., Gregorich, S. E., Santoyo-Olsson, J., and others. (2009, August). "Interpersonal processes of care and patient satisfaction: Do associations**

**differ by race, ethnicity, and language?" (HS10599). *HSR: Health Services Research* 44(4), pp. 1326-1344.**

This study sought to explore whether patient satisfaction differed among blacks, English- and Spanish-speaking Latinos, and whites. The researchers interviewed 1,664 adult general medicine patients from 9 university-based practices in San Francisco staffed by general internists, family medicine physicians, and nurse practitioners. The survey related the effects of seven interpersonal processes of care (IPC) on three measures of patient satisfaction (satisfaction with health care, satisfaction with physician, and whether the patient would recommend the physician to family or friends). Among Spanish-speaking Latinos (but not for the other three groups) lack of clarity was significantly and negatively related to satisfaction with physicians and health care. The association of four IPC scales (lack of clarity, explained results, compassionate/respectful, and disrespectful staff) with the two global satisfaction measures (satisfaction with health care and satisfaction with physician) differed by race/ethnicity, suggesting that some interpersonal processes may be more important to patients from some groups than others.

**Selden, T. M. (2009, June). "The within-year concentration of medical care: Implications for family out-of-pocket expenditure burdens." *Health Services Research* 44(3), pp. 1029-1051. Reprints (AHRQ Publication No. 09-R070) are available from AHRQ.\***

Researchers and policymakers often use annual out-of-pocket expenses to describe the burden

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U.S. families face in affording health care. Using 2003 and 2004 AHRQ Medical Expenditure Panel Survey data, the author found that nearly half of all families' medical care occurred within a single month, and 63 percent happened in a single quarter.

Accompanying the surge in care use was an upswell in expenses, so that 27 percent of families had at least 1 month in which their out-of-pocket expenses totaled more than 20 percent of their incomes. Low-income families were especially vulnerable to these cost surges, because they were unlikely to have ample savings or extra money each month to allot for a payment plan. These findings suggest that viewing care use within the year, and not annually, gives a more realistic view of the financial pressures that families face in paying for surges in medical expenses.

**Selden, T. M., Kenney, G. M., Pantell, M. S., and Ruhter, J. (2009, July-August). "Cost sharing in Medicaid and CHIP: How does it affect out-of-pocket spending?" *Health Affairs* 28(4), pp. w607-w619. Reprints (AHRQ Publication No. 09-R072) are available from AHRQ.\***

In 2007, many States increased the premiums and copayments charged for health care received by children insured by the Children's Health Insurance Program (CHIP). To determine the effect of increased cost-sharing arrangements, the researchers developed cost scenarios using data from AHRQ's Medical Expenditure Panel Survey.

They found that parents would struggle with high out-of-pocket costs and financial burdens if premiums or copayments were

increased for their children covered by CHIP. This burden would force many families to choose between pursuing medical care for their children or facing financial hardship. Cost-sharing arrangements may seem attractive to policymakers grappling with ways to reduce public spending. However, because half of the publicly insured children in the study were poor, even modest increases in cost-sharing arrangements would be burdensome for their families. Implementing caps on out-of-pocket spending, which are generally set at 5 percent of family income, can help address the spending burden for low-income families without reducing potential budgetary savings, the authors suggest.

**Smith, R. C., Gardiner, J. C., Luo, Z., and Rost, K. (2009, April). "The diagnostic accuracy of predicting somatization from patients' ICD diagnoses." (AHRQ grant HS14206). *Psychosomatic Medicine* 71(3), pp. 366-371.**

Somatization is defined as having physical symptoms with little or no documented basis in underlying organic disease; when organic disease exists, the symptoms are inconsistent with or out of proportion to it. An earlier study had shown that ICD-9 diagnostic codes and other data from the administrative database (ADB) could identify somatization. In this study, the researchers sought to identify somatization in a new population through ADB screening based on increasing numbers of visits, female gender, and greater percent of ICD-9 primary diagnosis codes in musculoskeletal, nervous, gastrointestinal, and ill-defined body systems. All patients selected

were 18-65 years old, enrolled in a staff-model HMO, with at least eight visits per year for the each of the 2 years prior to the study. Of the 1,364 patients studied, 319 who were high utilizers (12.8 visits per year) met the criterion standard for somatization. The somatizers differed in age, gender, total visits, and somatization potential.

**Tebb, K. P., Wibbelsman, C., Neuhaus, J. M., and Shafer, M. (2009, June). "Screening for asymptomatic chlamydia infections among sexually active adolescent girls during pediatric urgent care." (AHRQ grant HS10537). *Archives of Pediatric and Adolescent Medicine* 163(6), pp. 559-564.**

Untreated *Chlamydia trachomatis* (CT) infections can lead to pelvic inflammatory disease, ectopic pregnancy, and infertility. Since most of these infections have no symptoms, routine screening is the only way to detect the majority of CT cases. Despite recommendations for annual screenings, screening rates remain low among all sexually active adolescents and young adults under 26 years of age. In a large California HMO, a team of providers and clinic staff redesigned their clinic system to improve CT screening during urgent care. As a result of the intervention, the change in the proportions of adolescent girls screened for CT in urgent care increased by almost 16 percent in the five intervention clinics compared with a decrease of over 2 percent in the comparison clinics. The intervention stressed patient confidentiality, education, and followup about the CT test results. It also addressed processes such as specimen collection, storage, and delivery. ■



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