



# RESEARCH ACTIVITIES

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## Research comparing diabetes medications helps patients and clinicians choose the right one

Viper’s flesh versus sweet almonds? If only it were that easy. Doctors researching diabetes treatments in the 17th century might have studied which treatment worked better: broken red coral or sweet almonds? Or maybe viper’s flesh versus the fresh flowers of blind nettles? Some creative types may have even studied combinations of treatments.

Unfortunately, these exotic treatments didn’t work. For centuries, diabetes was a death sentence. Today this once-rare condition is a chronic disease that

can be treated with a wide range of medications.

To discover which diabetes medications work best for which patients, researchers supported by the Agency for Healthcare Research and Quality (AHRQ) are doing patient-centered outcomes research, also known as comparative effectiveness research. They are finding out which medications work best in certain circumstances and which ones are more likely to cause weight gain, reduce cholesterol, or cause side effects such as hypoglycemia (low blood sugar).

with exercise, proper diet, and medication.

The disease that was once considered a medical curiosity now affects millions of Americans. According to AHRQ, approximately 19 million U.S. adults reported receiving treatment for diabetes in 2007, more than double the 9 million who said they received care in 1996.

Diabetes is also expensive. Outpatient costs doubled to about \$10 billion in 2007 from \$5 billion in 1996, according to AHRQ.

Complex, common, and costly, diabetes remains tough to treat, despite the new classes of medications that have become available and new choices for patients that may include combinations of treatments. Complicating treatment even more, patients with diabetes often suffer from other conditions such as obesity, which further increase their risk for heart attack and stroke, and that clinicians must consider when prescribing medication.

### A complex, common, and costly condition

Type 2 diabetes is a complex metabolic disorder that affects how the body stores and uses sugar from food. In this condition, either the pancreas does not produce enough insulin to metabolize the sugar for energy or the body is unable to recognize insulin and use it properly (insulin resistance). Uncontrolled high blood-sugar levels in diabetes are associated with heart disease, eye and kidney problems, poor circulation, and nerve damage. Patients with diabetes must struggle daily to control their blood-sugar levels

### Determining the best treatment for each patient

Clinicians and patients want to know: Which diabetes treatment is best for an individual patient?

#### Highlights

##### Topics

Patient Safety and Quality	5
Health Care Costs and Financing	7
Emergency Medicine	9
Child/Adolescent Health	11
Women’s Health	13
Elderly/Long-Term Care	15
Outcomes/Effectiveness Research	16
Disparities/Minority Health	19
Primary Care Research	20
Health Information Technology	22

##### Regular Features

Director’s Column	2
Agency News and Notes	22
Announcements	25
Research Briefs	27

*continued on page 3*

## From the Director



Each patient wants to know which drug, medical device, test, or surgery is best for them. But figuring out what's best can be challenging,

particularly for patients with diabetes.

They not only have a bewildering array of medications and treatments to choose from, they also must check their blood-glucose levels, follow a proper diet, and get enough exercise to control their diabetes. Patient-centered outcomes research, also known as comparative effectiveness research, can help. Some medications cause weight gain, some more effectively reduce high blood-sugar levels than others, while still others can cause low blood sugar. For patients who need insulin, comparative effectiveness research confirmed that newer premixed insulin is better than diabetes pills at

lowering blood sugar. However, this type of insulin is more likely to cause very low blood sugar and cause more weight gain compared with diabetes pills. These are outcomes that are important to patients and their families.

Armed with this comparative information about diabetes medications from AHRQ's reviews of studies on the topic, doctors and patients can discuss the pros and cons of medications to come up with one that best fits that patient's needs and preferences.

The research is being used in creative ways. At the Mayo Clinic referred to in our cover story, clinicians have made cards comparing diabetes medications to facilitate conversations with patients about which medication may be best for them.

Through our Effective Health Care Program, the Agency uses patient-centered outcomes research to compare medical approaches for 14 priority conditions Americans care

about, including arthritis, cancer, depression, and diabetes.

At AHRQ, it's not only what we do before the research starts that sets us apart, it's what we do during and after. In the beginning, we ask for—and get—input from many sources. Physicians, educators, the private sector, advocacy groups, and others are invited to suggest ideas for research topics. When researchers develop drafts of their proposed research questions, we post them online for comments and feedback. To protect against potential conflicts of interest, researchers must disclose potential conflicts of interest. Every report we produce is peer-reviewed.

When the research is complete, the in-depth analysis not only gets published and posted online, the results are shared so that they can be used. For clinicians, we condense the information into two- to four-page fact sheets with the evidence clearly summarized and rated. For clinicians, researchers, and instructors in the medical field, we provide opportunities for continuing education. For patients, we publish brochures and make audiocasts in plain language—in both English and Spanish.

Topics for future patient-centered outcomes research include chemotherapies for advanced colorectal cancer, options for urinary incontinence in adult women, and treatments for difficult-to-treat depression. No matter what the topic is, the research constantly raises more questions, which requires more research. This is okay with us. It's what we do. We're constantly striving to answer the core question: What treatment works best, for whom, and under which circumstances?

Carolyn M. Clancy, M.D.

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## Diabetes

*continued from page 1*

AHRQ is taking a lead in the quest for answers through its Effective Health Care Program.

Initiated in 2005, the Effective Health Care Program provides valid evidence about the comparative effectiveness of different medical interventions. Diabetes is one of 14 priority conditions established by the Secretary of Health and Human Services for the Effective Health Care Program.

Since 2007, the Program has generated two comprehensive comparative effectiveness reviews of diabetes treatments. The reviews support systematic appraisals of existing scientific evidence on treatment of many common and chronic conditions. Both reviews about diabetes treatments were prepared by the Johns Hopkins Evidence-based Practice Center, one of the Effective Health Care Program's research partners.

These pioneering reviews compare the effectiveness of different types of medications typically used to treat type 2 diabetes. Some medications stimulate the pancreas to produce more insulin, others increase the body's sensitivity to insulin, while others alter the body's metabolism in other ways. The medications vary in their effect on weight, their reduction of blood-glucose levels, their risk of dropping blood-glucose levels too low (hypoglycemia), and in their side effects – outcomes that are important to patients and their families. They also differ in how often and how they are taken (with or without food, by mouth or injection), how often patients have to check their blood-sugar levels, and how much they cost—factors

also important to patients and their families. Patients and their doctors can now rely on this research to decide which of a confusing array of medications is right for each patient.

The first review on diabetes, “Comparative Effectiveness and Safety of Oral Diabetes Medications for Adults with Type 2 Diabetes,” was published in 2007 and will be updated in 2011. The initial review established that most oral medications prescribed for type 2 diabetes are similarly effective for reducing blood glucose, but the drug metformin is less likely to cause weight gain and may be more likely than other treatments to decrease LDL (“bad”) cholesterol. “It was one of our first research reviews on this important topic,” said Jean Slutsky, director of AHRQ's Center for Outcomes and Evidence. “It summarized scientific evidence on the benefits and risks of all approved oral medications commonly used in the U.S. for type 2 diabetes in 2007.”

The Program's second review, “Comparative Effectiveness, Safety, and Indications of Insulin Analogues in Premixed Formulations for Adults with Type 2 Diabetes,” was published in September 2008. According to the review, pre-mixed insulin analogues (genetically altered insulin) are more effective than long-acting analogues for controlling high blood-sugar levels after meals in patients with type 2 diabetes. Yet, conventional pre-mixed insulin appears to be as effective as pre-mixed insulin analogues for lowering blood-sugar levels when patients go 8 or more hours without eating.

## Getting medication evidence to clinicians and patients

At AHRQ, every comparative effectiveness review becomes more than a published report. Clinicians access printed and online guides with charts that rate the evidence, faculty slide sets, and continuing education modules. Health organizations, including the American Academy of Nurse Practitioners, have tapped into the Program's diabetes research for their own online continuing education program.

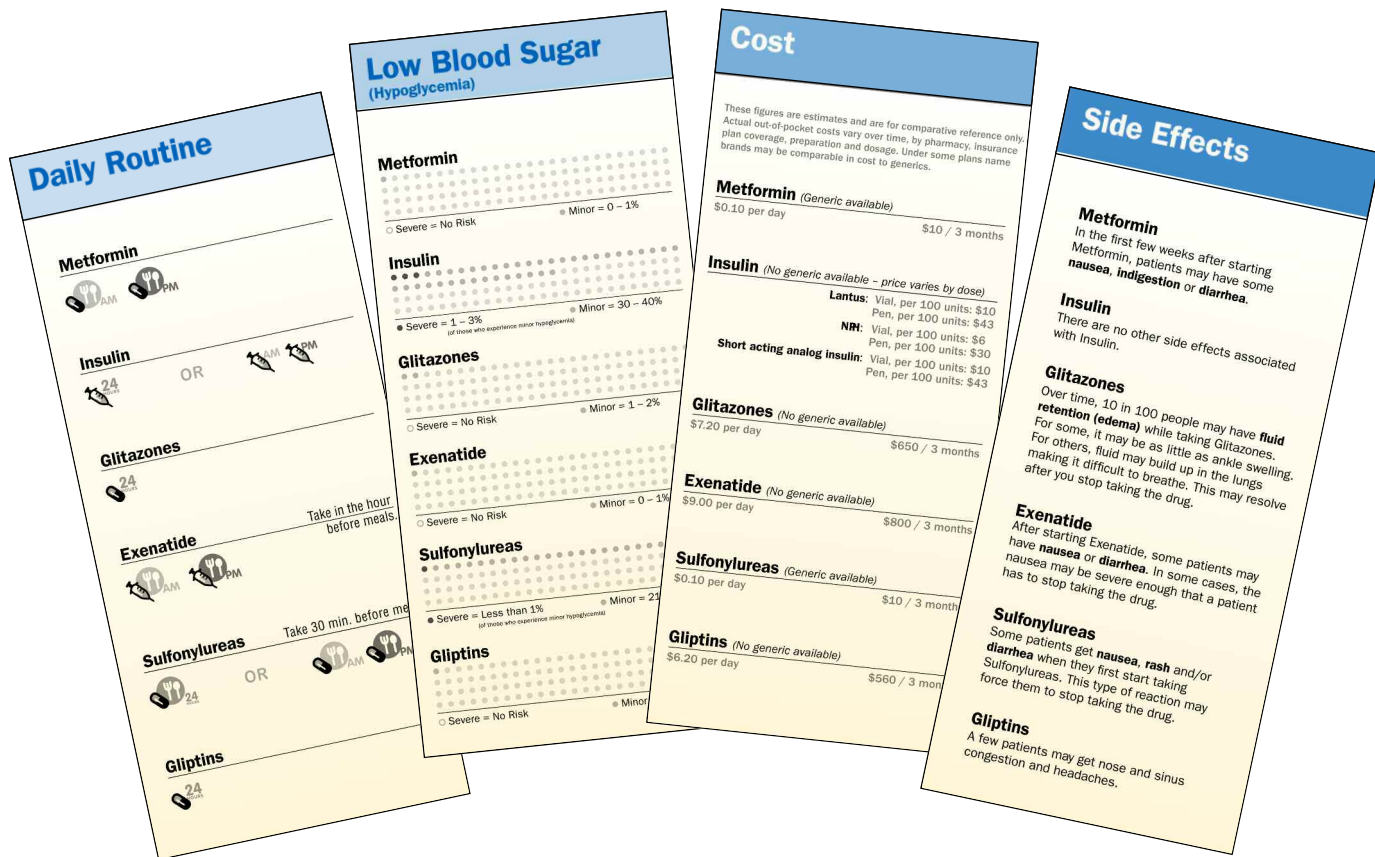
Free, plain-language guides on diabetes are printed in both English and Spanish for consumers. “Pills for Diabetes” covers the effectiveness, side effects, and costs of diabetes pills and is the Effective Health Care Program's most requested guide. “Premixed Insulin for Type 2 Diabetes” compares the benefits, side effects, and costs of newer premixed insulin with other kinds of insulin and pills for diabetes.

Both guides for consumers, which include price comparison charts, are available at many pharmacy stores, including Safeway. AHRQ audio spots in stores announce that the brochures are available. In addition, AARP (formerly the American Association of Retired Persons) recently printed the diabetes guides.

“We're excited to bring our members and all Americans access to unbiased, evidence-based information about the price and effectiveness of the diabetes drugs they take,” Margaret Hawkins, AARP manager of health promotion, told *Research Activities*. “Giving people clear, concise

*continued on page 4*





A sample of Mayo Clinic issue cards on diabetes medications to aid conversations between clinicians and patients.

## Diabetes

*continued from page 3*

information about cost, safety, and quality can help them start an informed conversation with their doctor about the best choice for them.”

### Using the evidence to make medication decisions

The Mayo Clinic’s Knowledge and Evaluation Research (KER) Unit is taking a different approach to getting conversations started. “A lot of recent data suggests about 20 percent primary nonadherence related to medications for diabetes,” said Nilay Shah, Ph.D., an investigator in the unit. “Our hope is to get a conversation started in the clinical encounter that involves the patient in decisionmaking and hopefully leads to higher adherence.”

Using AHRQ’s comparative effectiveness research on oral medications for adults with type 2 diabetes and funding from the American Diabetes Association, the Center developed a deck of diabetes cards for clinicians and patients to review together.

Dr. Shah and his colleagues called the first deck “baseball cards.” Each card was devoted to an individual drug and statistical information on concerns, such as effectiveness and side effects. “We realized these were great,” said Dr. Shah, “Everyone liked them, but we wanted to create more of a conversation between the clinician and patient.”

So, they cut the deck, so to speak. They developed “narrative cards” with written descriptions of each drug. But patients and clinicians

still weren’t talking enough. Dr. Shah and his colleagues did more research. They “shuffled” the deck and came up with “issue cards” depicted here. Each card deals with a different medication issue or concern for patients.

The initial six issue cards covered patient’s concerns in plain language: weight change, low blood sugar, improved blood-sugar control, side effects, daily routine, and monitoring. The most popular? “Weight change was most important to the patients,” said Dr. Shah. “But then they’d see the daily routine for that: ‘Oh, it’s an injection twice a day?’”

After more discussion, the Mayo group added another issue: cost. “We want patients to be able to

*continued on page 5*

## Diabetes

*continued from page 4*

make decisions more aligned with their values and preferences,” said Dr. Shah. With AHRQ-funding, the Mayo Clinic’s KER Unit is testing how the cards are used and their effectiveness in 20 different clinical sites in Wisconsin, Iowa, and Minnesota. “It’s a fascinating way

to get patients involved in having their say.”

Today, patient-centered outcomes research for diabetes is helping clinicians and patients find the best available treatments for an individual patient. But more research is still needed and will be for the foreseeable future—at least

until diabetes becomes rare and today’s treatments seem as odd as viper’s flesh and blind nettles. *KM*

**Editor’s Note:** AHRQ’s Effective Health Care Program and its many comparative effectiveness reviews and related publications can be viewed at [www.effectivehealthcare.ahrq.gov](http://www.effectivehealthcare.ahrq.gov). ■

## Patient Safety and Quality

### Hospitals vary greatly in the quality of their trauma care

Patients treated in the worst-performing hospital trauma centers have a 50 percent higher chance of dying than those treated at the average-performing trauma centers, even after adjusting for severity of patient injury. Patients treated in the best-performing hospitals had a comparable reduction in risk of death. These findings from a new study suggest that hospitals vary greatly in the quality of their trauma care. Interventions to improve patient outcomes in trauma care need to be developed and tested, suggest Laurent G. Glance, M.D., of the University of Rochester Medical Center, and colleagues.

Their study was based on 157,045 trauma patients admitted to 1 of 125 hospitals that contribute patient information to the American College of Surgeons’ National Trauma Databank (NTDB) and that treat at least 250 trauma patients each year. The NTDB also includes information on hospital characteristics (trauma certification level, number of beds, teaching status, geographic region, and whether nonprofit or for-profit)

and patient characteristics (including mechanism of injury). Seventy percent of the hospitals were either Level I or Level II trauma centers, and nearly two-fifths of the hospitals had more than 400 beds.

The researchers adjusted mortality outcomes for patient injury severity, age, gender, mechanism of injury, physiologic information, and whether the patient was admitted from another hospital. The researchers calculated an adjusted odds ratio (OR) for each hospital (OR <1 if the patient was less likely to die than if treated at an average hospital; OR >1 if the patient was more likely to die than at an average hospital). The study was funded by the Agency for Healthcare Research and Quality (HS16737).

More details are in “The Survival Measurement and Reporting Trial for Trauma (SMARTT): Background and study design,” by Dr. Glance, Turner M. Osler, M.D., Andrew W. Dick, Ph.D., and others in the June 2010 *Journal of Trauma* 68(6), pp. 1491-1497. ■ *DIL*

### Flawed State apology and disclosure laws dilute their intended impact on malpractice suits

Patients expect that they will be told about medical mistakes or errors—an expectation that is increasingly being codified into State laws. A key barrier to more open communication between providers and patients is the concern that such conversations might precipitate lawsuits,

especially when an adverse health outcome may have been preventable. Many States have responded by passing laws encouraging health care providers to discuss unanticipated outcomes with patients. One approach uses “apology laws” to protect aspects of a provider’s conversations with a

patient from use as evidence of liability in a lawsuit. A second approach, using “disclosure laws,” typically mandates disclosure of certain unanticipated outcomes to patients and may protect the communication from being used in a legal or administrative action.

*continued on page 6*

## Malpractice suits *continued from page 5*

An analysis of apology and disclosure laws in 34 States and the District of Columbia has found that most of these laws have major shortcomings, and may actually discourage comprehensive disclosures and apologies and weaken the laws' impact on malpractice suits. There are a number of reasons for these shortcomings. Since disclosure laws require only a bare-bones statement that an unanticipated outcome occurred, the authors believe that these laws do not require the key information that patients want communicated to them following an unanticipated outcome. Most apology statutes protect only an expression of sympathy, failing to appreciate the importance of

providing additional information to patients.

For these and other reasons, narrowly crafted disclosure and apology laws might not achieve their objectives of fostering transparency and deterring lawsuits, note the study authors. For example, in States with sympathy-only statutes, the legal system will have to determine exactly what constitutes a protected expression of sympathy and what constitutes an unprotected explanation or admission of fault. The impact of mandatory disclosure laws may be limited by the difficulty of enforcing them. The authors have not found any States with disclosure laws that have plans to monitor the occurrence or quality of disclosures. To assist in correcting these flaws, the authors

recommend that disclosure requirements should acknowledge both patients' needs and providers' anxieties about legal risk; disclosure and apology should be considered as an integrated process; and legal protection should be broad, in order to encourage comprehensive disclosures and willingness to accept responsibility for error. This study was partly supported by the Agency for Healthcare Research and Quality (HS14012, HS16506).

See "The flaws in state 'apology' and 'disclosure' laws dilute their intended impact on malpractice suits," by Anna C. Mastroianni, J.D., M.P.H., Michelle M. Mello, J.D., Ph.D., Shannon Sommer, and others in the September 2010 *Health Affairs* 29(9), pp. 1611-1619. ■ MWS

## Simulation training improves insertion of central venous catheters

Critically ill patients in the emergency department and intensive care unit may have central venous catheters (CVCs) inserted into a neck, chest, or groin vein. These catheters are used to deliver medications and fluids, as well as monitor central venous pressure to regulate fluid balance. Resident physicians normally learn how to do the procedure by observing someone else. However, there are now simulation training programs that allow residents to practice a procedure over and over again before actually performing it on a live patient. A new study finds that such simulation training improves CVC insertion performance, including first-time insertion. It also appears to be more effective than traditional training.

For this study, 90 first- and second-year residents received a slide presentation and then watched 3 videos demonstrating the insertion technique. This was followed by hands-on simulation training using a simulator designed for this purpose. Another group of 95 residents were trained in CVC insertion by observing at the bedside. Senior physicians served as independent raters and did not know what type of training each resident received.

A total of 115 residents performed 494 CVC insertions, which were observed by the raters. The first measure was how successful a resident was at accessing the vein and inserting a needle under ultrasound guidance. The success rate for this was 51 percent in the simulation group and 37 percent in the bedside group. The second measure of success was the actual insertion of the CVC. Success rates were 78 percent for the simulation group and 67 percent for the bedside group. According to the researchers, simulation training was independently and significantly associated with first needle and CVC insertion. This was true regardless of the resident's specialty or the patient's medical problems. The study was supported in part by the Agency for Healthcare Research and Quality (HS16725).

See "Simulation training in central venous catheter insertion: Improved performance in clinical practice," by Leigh V. Evans, M.D., Kelly L. Dodge, M.D., Tanya D. Shah, M.D., and others in the September 2010 *Academic Medicine* 85(9), pp. 1462-1469. ■ KB

## Nurses with higher education levels rate themselves as having more clinical expertise and are sought out for their guidance

Debate continues about the impact of education and experience on a nurse's clinical expertise. A survey of registered nurses (RNs) working in hospitals in Pennsylvania reveals that more highly educated nurses rate themselves as having greater nursing expertise than less educated nurses. What's more, how nurses rate their expertise correlates with how often they are selected as mentors or instructors or are consulted by other nurses for their clinical judgment. Nurses practicing in hospitals with a higher proportion of nurses with a bachelor's of science in nursing (B.S.N.) were more likely to report higher levels of expertise than nurses in hospitals with few such nurses.

The researchers examined survey responses of 8,611 RNs from a 1999 survey of acute care staff working in 182 acute care

hospitals. Nurses were asked to rate their level of expertise as beginner, competent, proficient, advanced, or expert. They were also asked how often they were selected as a preceptor or consulted by other nurses for clinical judgment. Nurses were also asked to rate their hospital environment on a variety of measures. Among the survey respondents, the average nursing experience was 13.2 years. More than a third (38 percent) held a B.S.N. degree.

Most nurses (58 percent) gave themselves a rating of proficient, 20 percent rated themselves as competent, and 16 percent as expert. These levels of expertise were found to correlate with how frequently they were selected as a preceptor or asked for their clinical judgment. Nurses with a master's degree in nursing reported having

the highest level of expertise, followed by nurses with a B.S.N. degree and those with associated nursing degrees. Nurses practicing in hospitals with a higher proportion of B.S.N. nurses were more likely to report higher levels of expertise. If this proportion of B.S.N.-prepared nurses increased from 25 to 65 percent, the probability of an average nurse in an average hospital reporting being an expert increased from .10 to .16. The study was supported in part by the Agency for Healthcare Research and Quality (HS17551).

See "Understanding clinical expertise: Nurse education, experience, and the hospital context," by Matthew D. McHugh, Ph.D., and Eileen T. Lake, Ph.D., in *Research in Nursing & Health* 33, pp. 276-287, 2010. ■ KB

## Health Care Costs and Financing

### Trauma care costs less at hospitals with lower mortality rates

Trauma care is expensive. In the case of uninsured patients, trauma centers must absorb the costs of care. Ultimately, such costs are eventually passed along to insured patients in the form of higher insurance premiums. A new study recently found that it is less expensive to care for injured patients at trauma centers with high-quality care, that is, those with lower mortality rates than would be expected given the patient's injuries and health, than at lower-quality trauma centers.

Researchers used data from the 2006 Healthcare Cost and Utilization Project database of inpatients receiving

care from non-Federal hospitals in 38 States. They examined data on patient characteristics, hospital charges, and mortality rates for 67,124 trauma patients admitted to 73 trauma centers. Between 50 and 60 percent of the facilities were teaching hospitals, with the majority being nonprofit. The three most common reasons for trauma admission were blunt trauma, car accidents, and falls.

The care of patients was less expensive at Level I and Level II trauma centers with lower mortality rates

*continued on page 8*



## Trauma care costs

*continued from page 7*

(adjusted for patient severity of illness). Low-mortality-rate hospitals had lower unadjusted costs across most injury classifications compared with average- and higher-mortality-rate hospitals. However, the difference in costs between high-mortality-rate hospitals and average-mortality-rate hospitals was not significant. According to the researchers, hospitals considered high quality had mortality rates that were 34 percent lower than average-quality hospitals. These high-quality hospitals spent nearly 22 percent less on care. Future

efforts focusing on improving the quality of care may also lower health care spending for trauma care, suggest the researchers. Their study was supported in part by the Agency for Healthcare Research and Quality (HS16737).

See “The association between cost and quality in trauma: Is greater spending associated with higher-quality care?” by Laurent G. Glance, M.D., Andrew W. Dick, Ph.D., Turner M. Osler, M.D., and others in the August 2010 *Annals of Surgery* 252(2), pp. 217-222. ■  
KB

## Routing ambulances to cardiac surgery-equipped hospitals more cost-effective than building more such hospitals

For heart attack patients with a coronary artery totally blocked by a blood clot (ST-segment elevation myocardial infarction or STEMI), cardiac surgery, if administered in a timely manner, is better at reducing mortality than clot-busting (fibrinolytic) therapy. Far fewer than 80 percent of eligible patients actually receive percutaneous coronary intervention (PCI) surgery, although 80 percent of the U.S. population lives within a 1-hour drive of a PCI-capable hospital. To improve access to these hospitals, an enhanced emergency medical services (EMS) strategy of transporting all STEMI patients to existing facilities would be less costly and more effective than a hospital expansion strategy, according to a new study examining the comparative effectiveness of the two strategies.

Only if the average cost per diverted patient rose to more than \$19,769 (a 20-fold increase) would an EMS-based strategy no longer be the most cost-effective one. Detection of patients with STEMI in the EMS system and diversion to PCI-capable hospitals have been shown to be both safe and effective.

Using their own triage and allocation model, the researchers estimated incremental treatment costs and quality-adjusted life expectancies of 2,000 patients with STEMI who received PCI or fibrinolytic therapy in simulations of emergency care in a regional hospital system. They compared a base case strategy with 12 hospital-based strategies of building new PCI laboratories or extending the hours of existing laboratories with one EMS-based strategy of

transporting all STEMI patients to existing PCI-capable hospitals. The EMS-based strategy was less costly and more effective than all hospital expansion options. The study was partly supported by the Agency for Healthcare Research and Quality (T32 HS00060, HS10282).

See “Comparative effectiveness of ST-segment elevation myocardial infarction regionalization strategies,” by Thomas W. Concannon, Ph.D., David M. Kent, M.D., M.S., Sharon-Lise Normand, Ph.D., and others in the September 1, 2010 *Circulation: Cardiovascular Quality and Outcomes* 3(5), pp. 506-513. ■  
MWS

**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.



## Many factors are likely to slow the adoption of pay for performance in dentistry

Linking the quality of medical care to reimbursement by payers, an incentive system termed “pay for performance,” is likely to be adopted more slowly in dentistry than in medicine, a new paper concludes. The authors note that insurance for dental care and the use of evidence-based prevention and treatment lag in the dental profession. The United States does not have public dental insurance equivalent to Medicare or Medicaid, and an estimated 44 percent of adults have no dental coverage at all. This lack of widespread insurance reduces the possible leverage of payers on dentists, note the authors. At the same time, few dental organizations, including the American Dental Association, issue evidence-based practice guidelines or define care-outcome indicators.

The lack of guidelines results in much variation in dental treatment that cannot be attributed to the types of patients cared for. Further, little of the published dental research uses randomized, controlled trials,

considered the basis for developing good evidence in medicine. Finally, the authors note that most dental practices still keep paper records and collect data electronically only for billing purposes. This makes it difficult to collect diagnostic information to explain why a particular procedure was done by the dentist.

The authors suggest that broad adoption of pay for performance requires the dental profession to expand its evidence base, create evidence-based clinical guidelines, and create evidence-based performance measures tied to existing practice guidelines. The authors were funded in part by the Agency for Healthcare Research and Quality (HS16956).

More details are in “Pay for performance: Will dentistry follow?” by Andrea Voinea-Griffin, D.D.S., M.B.A., M.S.H.A., Jeffrey L. Fellows, Ph.D., Donald B. Rindal, D.D.S., and others in *BMC [BioMed Central] Oral Health*, which was published online April 28, 2010. ■ *DIL*

## Emergency Medicine

### Nearly one-third of emergency department visits involve nonideal care events

The fast-paced, urgent, and crowded activities of emergency departments (EDs) make them particularly vulnerable to medication errors and other types of unfavorable patient care situations (nonideal care events). In fact, a new study found that nearly one-third of ED visits involved nonideal care events such as missed diagnoses. Most of these situations involved delays in and failures in care processes, notes Agency for Healthcare Research and Quality (AHRQ) researcher Kendall K. Hall, M.D.

She and colleagues focused on the adult section of an ED located in a large, urban, academic medical center. After patients were discharged from the ED, trained assistants interviewed caregivers about the patient treatment experience. They were specifically asked to describe any nonideal aspects of care. The study sample's 482 patient visits were randomly selected from all three shifts and all days of the week, covering 656 hours of time in the ED.

The researchers conducted a total of 1,180 interviews with physicians, residents, nurses, and technicians. Overall, 263 nonideal care events were reported. Nearly one-third (32 percent) of the 482 patient visits involved nonideal care events. More than half of these events (53 percent) were reported by nurses. Segments of care with the highest percentage of events were diagnostic testing (29 percent), patient disposition (21 percent), evaluation (18 percent), and treatment (14 percent). Process-related delays were the most frequently reported nonideal events within the categories of medication delivery (53 percent), laboratory testing (88 percent), and radiology testing (79 percent). Only 14 nonideal patient care events resulted in harm to patients.

More details are in “Incidence and types of non-ideal care events in an emergency department,” by Dr. Hall, Stephen M. Schenkel, M.D., Jon Mark Hirshon, M.D., and others in the *Quality & Safety in Health Care* published online August 19, 2010. Reprints (AHRQ Publication No. 11-R015) are available from AHRQ.\* ■ *KB*

## Emergency departments have increasingly become the health care safety net for adults insured by Medicaid

Emergency departments (EDs) must provide care to all regardless of the ability to pay or insurance coverage. Part of the national medical safety net, EDs are often the last resort for the underinsured and uninsured. A new study of ED visits found that visits to EDs have increased significantly since the 1990s, yet the number of EDs has actually declined. In addition, EDs have increasingly become the health care safety net for adults insured by Medicaid. ED visit rates did not increase for the privately insured, uninsured, and adults covered by Medicare.

Researchers from the University of California, San Francisco, analyzed data from a nationally representative sample survey of 340 to 408 EDs to determine the

trends in ED visits over a 10-year period (1997-2007).

During the study period, annual ED visits increased 23 percent from 94.9 million to an estimated 116.8 million. This increase was nearly double the population-growth increase of 12.5 percent during the same period. At the same time, the number of EDs decreased from 4,114 in 1997 to 3,295 in 2007.

Visit rates among patients with Medicaid increased significantly from 693.9 visits/1,000 enrollees in 1999 to 947.2 visits/1,000 enrollees in 2007. However, there were no significant changes in ED visit rates for the privately insured, the uninsured, and those covered by Medicare. The number of facilities classified as safety-net

EDs increased from 1,770 in 2000 to 2,489 in 2007. EDs were considered safety-net facilities if more than 30 percent of visits were Medicaid or self-pay, or if 40 percent of visits were from a combination of Medicaid and uninsured patients. Wait times to receive care also increased from 22 minutes in 1997 to 33 minutes in 2007. The study was supported in part by the Agency for Healthcare Research and Quality (HS15569).

See “Trends and characteristics of US emergency department visits, 1997-2007,” by Ning Tang, M.D., John Stein, M.D., Renee Y. Hsia, M.D., M.Sc., and others in the August 11, 2010 *Journal of the American Medical Association* 304(6), pp. 664-670. ■ KB

## Routine opt-out HIV emergency department screening only slightly improves identification of patients with HIV infection

Infection with the human immunodeficiency virus (HIV) remains an important public health problem. Approximately 230,000 infections remain undiagnosed, with about 56,000 people newly infected each year. In 2006, the Centers for Disease Control and Prevention (CDC) revised their testing guidelines to expand the scope of HIV testing by recommending routine (nontargeted) opt-out HIV screening in health care settings, including emergency departments (EDs) where the prevalence of undiagnosed infection is 0.1 percent or greater. This nontargeted approach only marginally improved HIV diagnoses over physician-directed rapid HIV screening of at-risk ED patients, according to a new study.

The researchers compared newly diagnosed HIV infection using the two approaches on patients at a high-volume urban ED. Under the new

recommendation, patients arriving at the ED were informed that rapid HIV testing would be conducted unless the person declined it. The researchers compared this approach with physician-directed diagnostic testing of patients considered to be at increased risk for HIV infection based on clinical characteristics or actual or perceived behavioral characteristics ascertained during the patient's evaluation.

The researchers enrolled more than 60,000 ED patients over a 2-year period. Of the 28,043 patients included in the opt-out phase, 6,702 were screened, of whom 16 were confirmed with HIV infection, and 10 patients had new diagnoses (most of whom were identified late in the course of the disease). Of the 29,925 patients included in the physician-directed phase, 243

*continued on page 11*

## HIV screening

*continued from page 10*

underwent testing, of whom 5 were confirmed with HIV infection, and 4 patients had new diagnoses. The nontargeted screening was associated with around 30 times more rapid HIV tests than the diagnostic testing, yet only a few more patients with newly identified HIV infection were found. This study was supported in part by the Agency for Healthcare Research and Quality (HS17526).

See “Routine opt-out rapid HIV screening and detection of HIV infection in emergency department patients,” by Jason S. Haukoos, M.D., M.Sc., Emily Hopkins, M.S.P.H., Amy A. Conroy, M.P.H., and others in the July 21, 2010 *Journal of the American Medical Association* 304(3), pp. 284-292. ■ MWS

## Child/Adolescent Health

### Pilot study finds a low level of medication errors for look-alike, sound-alike drugs prescribed for children

Dosing errors in children’s outpatient medications may be as high as 15 percent. However, look-alike, sound-alike (LASA) errors are less likely than other types of pediatric medication errors, concludes a new study. LASA errors are the erroneous prescription or delivery of a drug because the name of the drug (generic or brand) is similar in spelling to or sounds like another drug. The researchers conducted a pilot study to discover the extent of the actual problem of LASA errors in outpatient prescriptions for children. They selected 11 pairs of LASA drugs (22 individual drugs) which together made up 16 percent of the volume of Medicaid prescriptions for children in the State database used for the study. Among the pairs selected, one drug was commonly prescribed to children and the paired LASA drug was not commonly prescribed for children.

Using claims data from the South Carolina Medicaid program for the years 2000-2006, the researchers considered a screening alert (a potential LASA error) to be triggered if a child received a commonly prescribed pediatric drug and then presented a prescription for the paired drug within 6 months of the commonly prescribed drug. There were 395 screening alerts among 1,402,091 prescriptions to 173,005 patients younger than 20 years.

Clinicians independently determined whether the patient had a supporting diagnosis for the uncommonly prescribed drug that triggered the alert. After further review and analysis, the researchers identified 43 true errors (0.03 errors per 1,000 prescriptions). They concluded that the rates of pediatric LASA errors appear to be much lower than other types of pediatric medication errors and may

be best addressed by automated processes.

Through automated screening, health information technology has the potential to reduce LASA errors by improving the readability of prescriptions and the ability to cross-check any new prescriptions with those a patient has received before. This study was supported by the Agency for Healthcare Research and Quality (HS15679).

See “Using pharmacy data to screen for look-alike, sound-alike substitution errors in pediatric prescriptions,” by William T. Basco, J.D., M.S., Myla Ebeling, Thomas C. Hulsey, M.S.P.H., Sc.D., and Kit Simpson, Dr.P.H. in the July/August 2010 *Academic Pediatrics* 10(4), pp. 233-237. ■ MWS

## Telephone coaching improves quality of life for parents of children with asthma

For parents of children who have asthma, life can be stressful and unpredictable. Regular use of inhaled corticosteroids and careful monitoring can help reduce acute asthma episodes and improve quality of life. Unfortunately, clinicians do not always sit down with parents and children to discuss asthma control, potential problems, and educational interventions. Yet a new study finds that implementing a telephone coaching program can help parents and children manage the disease better and reduce the number of acute asthma care events.

Researchers compared usual asthma care practices with usual care plus a 12-month telephone coaching program for children with asthma cared for by community pediatricians in St. Louis. Parents of children randomized to the coaching intervention received monthly (or more frequent) telephone calls from trained pediatric nurses. The goal was to help children and parents with the day-to-day management of asthma care. This focused on using controller and rescue medications as prescribed, having an up-to-date asthma action plan, and forging a relationship with the child's primary care provider. A total of 190 children were randomized to the telephone-coaching

group and 172 to the usual-care control group. The researchers interviewed parents and children to determine their quality-of-life scores. In addition, they tracked urgent care events over the course of a year.

Quality-of-life scores improved significantly in the telephone coaching group. These improvements were greater for parents who received 9 or more calls. There were no decreases in the number of urgent care events in either group or in the reported use of controller medications. Telephone coaching resulted in a significant reduction in the proportion of children with poorly controlled asthma. In addition, it boosted the number of parents who had an asthma action plan and whose children had asthma checkups in the past 6 months. Children who underwent telephone coaching also had a higher rate of being immunized for influenza. The study was supported in part by the Agency for Healthcare Research and Quality (HS15378).

See "Telephone coaching for parents of children with asthma," by Jane M. Garbutt, M.B., Ch.B., Christina Banister, B.A., Gabrielle Highstein, Ph.D., and others in the July 2010 *Archives of Pediatric and Adolescent Medicine* 164(7), pp. 625-630. ■ KB

## Ketorolac, a pain medication, is underused in children operated on for bladder reflux

Ketorolac, a pain medication given to children who have been operated on for vesicoureteral reflux (VUR), is underutilized, concludes a new study. Only 52 percent of a group of 12,239 children operated on for VUR received ketorolac during their hospital stay. VUR is the abnormal flow of urine from the bladder back into the ureters. It is most commonly diagnosed in infancy and childhood after the patient has a urinary tract infection.

Children with VUR may undergo surgical ureteral reimplantation (UR) for which there are a number of technical approaches. Regardless

of surgical technique, however, many patients undergoing UR will experience postoperative pain and bladder spasm. Ketorolac, a nonsteroidal anti-inflammatory medication, has been shown in earlier studies to reduce postoperative pain and bladder spasm after UR, but it has been unclear whether pediatric urologists have widely adopted its use after UR.

Researchers examined patterns in ketorolac use and patient outcomes after UR in U.S. children's hospitals. Using a database of 40 children's hospitals, they identified

12,239 children who underwent UR between 2003 and 2008. Of these, 6,362 (52 percent) received ketorolac during their hospital stay.

In comparison with patients who did not receive ketorolac, those receiving the drug had a shorter mean length of stay (2 vs. 3 days), decreased median hospital costs (\$14,223 vs. \$16,382), and similar complication rates (4 percent vs. 3 percent). Ketorolac use was independently associated with patient factors such as older age, female gender, and lower disease

*continued on page 13*



## Bladder reflux

*continued from page 12*

severity. The study was supported by the Agency for Healthcare Research and Quality (T32 HS00063).

See “Ketorolac is underutilized after ureteral reimplantation

despite reduced hospital cost and reduced length of stay,” by Jonathan C. Routh, M.D., M.P.H., Dionne A. Graham, Ph.D., and Caleb P. Nelson, M.D., M.P.H., in *Urology* 76(1), pp. 9-13, 2010. ■  
MWS

## Women's Health

### More than half of women do not get regular mammograms

Public health campaigns frequently stress that regular screening mammograms can reduce a woman's chance of dying from breast cancer. However, researchers in North Carolina found that more than half of the 1,493 insured women they studied did not stick to a regular screening schedule over a 3-year period.

Using data from the Personally Relevant Information about Screening Mammography (PRISM) study, researchers found that women in their 40s were more likely than women in their 50s to forgo regular mammograms. Further, women who rated their health as fair or poor were also likely to skip screening mammograms compared with women who rated their health as good or excellent. Women were more likely to not get regular mammograms if they were less satisfied with their last mammography experience, reported one or more barriers to getting mammograms, had weaker intentions to get a mammogram, or were not confident about their ability to get a mammogram when due.

This low rate of adherence to screening mammography schedules was particularly troubling because of the unique characteristics of women in the PRISM study. All women entered PRISM with health insurance and

recent mammograms 8 to 9 months before enrolling in the study. Most women maintained positive attitudes toward mammography, and were similar on many sociodemographic characteristics associated with mammography use (e.g., college educated, higher income, insured). Moreover, all received regular reminders about scheduling their mammograms.

These findings provide insights into how to craft future health promotion efforts to enhance regular use of breast cancer screening via mammography. However, more work is needed to continue to search for factors that can be the basis of future mammography maintenance interventions or study specific groups of women most in need of extra attention. This study was funded in part by the Agency for Healthcare Research and Quality (T32 HS00032). PRISM was funded by the National Cancer Institute.

See “Longitudinal predictors of nonadherence to maintenance of mammography,” by Jennifer M. Gierisch, Ph.D., M.P.H., Jo Anne Earp, Sc.D., Noel T. Brewer, Ph.D., and Barbara K. Rimer, Dr.Ph., in *Cancer Epidemiology, Biomarkers, and Prevention* 19(4), pp. 1103-1111, 2010. ■ KFM

### Vaginal births after cesarean are safe for most women

Nearly one-third of all babies are delivered by cesarean each year in the United States. This number continues to climb despite the *Healthy People 2010* goal of reducing the cesarean delivery rate to 15 percent. One reason for the continued increase is because once a woman delivers by cesarean, she

may be wary of attempting a vaginal birth for subsequent deliveries. In advance of the 2010 National Institutes of Health Consensus Development Conference titled *Vaginal Birth After Cesarean: New Insights*, the Oregon Evidence-based Practice Center conducted a literature

review to determine the risks and benefits of vaginal birth after cesarean (VBAC) and cesarean.

The researchers found that VBAC was a safe, reasonable choice for most women who had delivered by

*continued on page 14*

## Cesareans

*continued from page 13*

cesarean previously. Using estimates gathered during the literature review, the authors predict that in a group of 100,000 women attempting VBAC, 4 would die; 468 would suffer uterine rupture, a potentially life-threatening complication often associated with VBAC; and 133 babies would die. Conversely, in a group of 100,000 women undergoing cesarean, 13 would die, 26 would suffer uterine

ruptures, and 50 babies would die.

The NIH Consensus Development Statement suggests that given the data offered in this report and other sources, VBAC is a reasonable option for women who have had one prior low transverse uterine incision. The statement's authors also recognize that though VBAC may be safe for the mother, it poses risks for the baby. They recommend clinicians inform the mother of her options so she can share in the decisionmaking about her child's

birth. This study was funded in part by the Agency for Healthcare Research and Quality (Contract No. 290-07-10057).

See "Vaginal birth after cesarean: New insights on maternal and neonatal outcomes," by Jeanne-Marie Guise, M.D, M.P.H., Mary Anna Denman, M.D., Cathy Emeis, Ph.D., C.N.M., and others in the June 6, 2010 *Obstetrics and Gynecology* 115(6), pp. 1267-1278.

■ *KFM*

## Prenatal screening for Group B streptococci often fails to live up to current screening and treatment guidelines

Nearly one in four pregnant women carry Group B streptococci (GBS). This is a usually harmless bacteria in adults, but can cause life-threatening blood infection, meningitis, or pneumonia in newborns when passed during childbirth. In 2002 the Centers for Disease Control and Prevention (CDC) issued guidelines recommending that pregnant women be screened for GBS between weeks 35 and 37 of their pregnancies. If results are positive, mothers should receive intravenous antibiotics 4 or more hours before delivering to prevent passing GBS to the baby. A new study shows that while 85 percent of women in Tennessee were screened for GBS, the test was often performed too early and not every woman who tested positive for GBS received antibiotics before delivery.

Using a random sample of 877 live births in 11 Tennessee counties during 2003 and 2004, the researchers found that 26 percent of women were tested for GBS before week 35. Early screening may indicate that providers are unfamiliar with the CDC guidelines, the authors suggest. Further, of the 27 percent of women who screened positive for GBS, 39 percent did not receive the recommended antibiotics

before giving birth.

Unfortunately, of the 40 cases of GBS identified during 2003 and 2004 in Tennessee, 21 cases (53 percent) occurred in babies whose mothers had not tested positive for GBS. These cases may be a result of screening too early, improper specimen collection, or false-negative tests, the authors suggest. Additionally, 10 of the babies infected with GBS were born to mothers who were screened on time and received antibiotics before giving birth. The authors suggest that additional prevention strategies, such as vaccines, be considered if this trend becomes evident through other studies. This study was funded in part by the Agency for Healthcare Research and Quality (HS13833).

See "Adherence to perinatal group B streptococcal prevention guidelines," by William P. Goins, M.D., M.P.H., Thomas R. Talbot, M.D., M.P.H., William Schaffner, M.D., and others in the June 2010 *Obstetrics and Gynecology* 115(6), pp. 1217-1224. ■ *KFM*

## Nurse-facilitated guided care for elders and their caregivers leads to improved perceptions of quality of care

Strong evidence of caregiving burdens borne by family members and friends caring for older adults with multiple chronic illnesses has motivated the development of intervention strategies. Guided Care (GC) is a model of health care that is primary care-based and provided through a nurse-physician partnership to older adults with multiple illnesses, which includes training and support for patients' family and caregivers. Researchers from Johns Hopkins University found that among the 196 primary caregivers participating in the GC study, there was a statistically significant positive change in their perceptions of the quality of care received by their family members compared with caregivers of patients who received usual care.

However, there were no differences among the two groups of caregivers for reported depressive symptoms, strain, and productivity, each of which was measured by a separate scale. A trend toward increased work productivity was found among caregivers of GC patients who were employed.

The higher quality of chronic illness care for patient participants was reported by their caregivers at an 18-month followup interview. The quality of chronic illness care was assessed using a modified version of the Patient Assessment of Chronic Illness Care, which includes five subscale scores (patient activation, decision support, goal setting, problem solving, and coordination of care).

For the GC trial, 7 nurses were recruited, trained, and integrated into 7 randomly selected primary care provider teams (from a pool of 14). Patient participants were, on average, 78 years old and afflicted with 4.6 chronic conditions. Caregiver participants were, on average, 61 years old, mostly female and married, and helped patients an average of 20.6 hours per week at baseline. This study was supported by the Agency for Healthcare Research and Quality (HS14580).

See "Effects of guided care on family caregivers," by Jennifer L. Wolff, Ph.D., Erin R. Giovannetti, Ph.D., Cynthia M. Boyd, M.D., M.P.H., and others in *The Gerontologist* 50(4), pp. 459-470, 2010. ■ MWS

## Use of physician extenders associated with increase in antidepressant prescribing in nursing homes

Depression is a common condition among elderly residents of nursing homes. Those who are depressed have an increased risk for dementia, stroke, heart disease, and even death. The prescribing of antidepressants among older nursing home residents has risen dramatically in the past decade, reveals a new study. This increase was associated with certain staffing patterns and coprescribing of other psychotropic medications.

The longitudinal study looked at residents admitted to 12,556 nursing homes between 1996 and 2006. Staffing patterns were also analyzed, including the number of hours spent on site by medical directors. The use of antidepressants more than doubled from 21.9 percent in 1996 to 47.5 percent in 2006. After controlling for a variety of factors, the researchers found that the increase in antidepressant prescribing was associated with physician extenders, nurses, and nurses' aides spending more time in the nursing homes and with residents who also received a sedative/hypnotic.

However, when medical directors and physicians spent more time in the facilities, there was less likelihood of increasing antidepressant use. The prescribing of either antianxiety or antipsychotic agents also decreased the risk of increasing antidepressant use. It's not clear whether this increase in antidepressant prescribing is appropriate, note the researchers. They call for more interventions to improve the appropriate use of antidepressants in nursing homes. The study was supported in part by the Agency for Healthcare Research and Quality (HS17695 and HS18721).

See "Antidepressant prescribing in US nursing homes between 1996 and 2006 and its relationship to staffing patterns and use of other psychotropic medications," by Joseph T. Hanlon, Pharm.D., M.S., Steven M. Handler, M.D., Ph.D., and Nicholas G. Castle, Ph.D., in the June 2010 *Journal of the American Medical Directors Association* 11(5), pp. 320-324. ■ KB

## Cardiac procedures can lead to substantial radiation exposure for patients

High amounts of ionizing radiation can increase a person's lifetime cancer risk. Because many cardiac imaging procedures expose patients to radiation, doctors and patients must balance the benefit of those procedures with the risks that come with radiation exposure. A new study led by Jersey Chen, M.D., M.P.H., of Yale, finds that nearly 1 in 10 adult patients between the ages of 18 and 64 underwent at least one cardiac imaging procedure during a 3-year period.

Because of naturally occurring radiation, each year the average person in the United States receives a dose of about 3 millisievert (mSv), the unit of measurement for an effective radiation dose. In contrast, the 90,121 patients in this study who underwent cardiac

imaging procedures received an average cumulative effective dose of 23.1 mSv. In fact, 3,173 patients received more than 20 mSv annually, and 75 patients received greater than 50 mSv each year. The authors calculated the annual population-based rates of getting an effective dose of more than 3 to 20 mSv at 89 per 1,000 and 3.3 per 1,000 for doses greater than 20 mSv.

Because 49,478 of the patients who underwent a cardiac imaging procedure were aged 35 to 54, the authors suggest that they and their providers consider alternative procedures, when viable, because these patients are likely to live long enough to develop long-term complications from radiation exposure. They recommend

cardiologists become more adept at explaining the possible risks of radiation exposure and be open to alternative procedures, such as stress echocardiography in lieu of myocardial perfusion imaging to examine the blood flow to the heart and heart function. This study was funded in part by the Agency for Healthcare Research and Quality (HS18781).

See "Cumulative exposure to ionizing radiation from diagnostic and therapeutic cardiac imaging procedures: A population-based analysis," by Dr. Chen, Andrew J. Einstein, M.D., Ph.D., Reza Fazel, M.D., M.Sc., and others in the August 24, 2010 *Journal of the American College of Cardiology* 56(9), pp. 702-711. ■ KFM

## Contrast-enhanced CT scans do not increase the risk of kidney failure in patients with acute stroke

Computed tomography (CT) used with an intravenous contrast agent to diagnose brain blood flow problems in patients with acute stroke does not increase the patient's risk of kidney failure (acute nephropathy, AN), a new study finds. Hospitals typically use contrast-enhanced CT to diagnose blocked or restricted areas of brain blood flow in patients brought to the emergency department (ED) with acute stroke. However, clinicians have been concerned that the use of iodine-containing contrast agents might increase the risk of kidney failure.

They compared 575 acute stroke patients at one medical center, who underwent contrast-enhanced CT, with 343 patients who underwent CT scans without contrast. Overall, 5 percent of patients in the contrast-exposed group developed kidney failure compared with 10 percent of the nonexposed group. Significantly higher incidences of AN were observed in the nonexposed group at 24 and 48 hours after their CT scans, but the incidence of AN in the two groups was not significantly different by 72 hours.

After adjusting for age, sex, kidney filtration rate at ED admission, and conditions that increase the risk of using contrast material, the researchers found that contrast-exposed patients were only 42 percent as likely to develop AN as nonexposed patients. Patients receiving contrast agents, who were at high risk of contrast-induced nephropathy (e.g., those with diabetes, cardiovascular disease, or low kidney filtration rates), were pretreated with hydration and N-acetylcysteine. The researchers concluded that the use of intravenous contrast agents is safe for use in CT scans of patients with acute stroke, independent of their initial kidney filtration rate, as long as standard preventive measures are taken. The study was funded in part by the Agency for Healthcare Research and Quality (HS11392).

More details are in "Functional contrast-enhanced CT for evaluation of acute ischemic stroke does not increase the risk of contrast-induced nephropathy," by Fabricio O. Lima, M.D., Michael H. Lev, M.D., R.A. Levy, M.D., and others in the May 2010 *American Journal of Neuroradiology* 31(5), pp. 817-821. ■ DIL



## Arterial and perfusion imaging help guide treatment for stroke patients when symptom onset is unknown

The key to stroke recovery is knowing when symptoms first started so that therapy to restore brain blood flow can be given during the first 3 hours of symptom onset. However, a quarter of patients with ischemic stroke awoken with neurological deficits. In patients with “wake-up strokes,” symptom onset is unknown. However, imaging studies that determine whether blood flow is blocked or if there is bleeding in the brain can help determine whether these patients can receive clot-busting therapy even when time of symptom onset is unknown, according to a new study.

Researchers studied 676 patients who had acute ischemic stroke. The majority (420) had strokes

where the onset time was known. Another 125 patients had an indefinite time of symptom onset. The remaining 131 patients experienced wake-up strokes. All patients received computerized tomography (CT) angiography to image brain blood flow and CT perfusion (where blood flow is restored to the affected area) with intravenous or arterial tissue plasminogen activator within 24 hours of symptom onset.

The researchers found that both patients with wake-up and known-onset strokes were clinically similar. However, patients with indefinite onset strokes were found to have more severe deficits at hospital admission, more damage to the brain (larger ischemic lesions), and a worse prognosis

after discharge. Patients who experienced a known-onset stroke were more frequently treated with stroke therapy (tissue plasminogen activator). The researchers suggest revised indications for this clot-busting therapy by using image-based protocols might offer patients without a clear time of symptom onset the prospect of receiving acute stroke treatment. Their study was supported in part by the Agency for Healthcare Research and Quality (HS11392).

See “Wake-up stroke: Clinical and neuroimaging characteristics,” by Gisele S. Silva, M.D., Fabricio O. Lima, M.D., Erica C.S. Camargo, M.D., and others in *Cerebrovascular Diseases* 29, pp. 336-342, 2010. ■ KB

## Higher in-hospital complication rate for primary posterior versus primary anterior cervical fusion

Surgical procedures have long been used in the treatment of various types of neck and back pain. Over the past 30 years, cervical spine fusion operations to treat trauma, cervical spondylosis (abnormal weakening of the cartilage and bones of the neck), and other problems have increased dramatically. Both anterior (ACDF) and posterior cervical fusion (PCDF) procedures have seen sharp increases. A team of researchers from the Hospital of Special Surgery and Weill Cornell Medical College found that PCDF was associated with a twofold increased mortality risk compared with ACDF, even after controlling for patients’ overall burden of illness and demographic characteristics.

The incidence of complications and mortality was 4.14 percent and 0.26 percent among patients undergoing ACDF and 15.35 percent and 1.44 percent for patients undergoing PCDF, respectively. Patients undergoing

ACDF had shorter hospital stays and their procedures were more frequently performed at nonteaching institutions. The PCDF group was older and consequently had more medical conditions. Those in the group were more likely to be male, to be treated for trauma, and to be operated on in large, urban, teaching centers.

One obvious explanation for the older age of the PCDF group is the increased reliance on posterior fusion procedures for multilevel cervical spondylosis, a condition more commonly seen in the elderly. Although traditional teaching has cautioned against multilevel ACDF exceeding three segments in elderly patients, implant improvements have given reason to rethink this. The choice of ACDF versus PCDF is affected by location and type of stenosis (narrowing of the spinal

*continued on page 18*

## Cervical spine fusion

*continued from page 17*

canal that compresses the spinal cord and nerves), number of affected levels, and vertical alignment.

These findings, despite their limitations, should aid in surgical decisionmaking in the subset of cases in which performing either of the two procedures appears reasonable, note the researchers. Their study sample included 228,113 hospital admissions in which a primary cervical spine procedure was performed between 1998 and 2006. Of these, 91.7 percent were ACDF procedures and 8.3 percent were PCDF procedures. Data came from the National Inpatient

Sample (NIS) supported by the Agency for Healthcare Research and Quality (AHRQ). This study was partly supported by an AHRQ grant (HS16075) to the Cornell Center for Education and Research on Therapeutics (CERT). For more information on the CERTs program, go to [www.certs.hhs.gov](http://www.certs.hhs.gov).

More details are in “Increased in-hospital complications after primary posterior versus primary anterior cervical fusion,” by Stavros G. Memtsoudis, M.D., Alexander Hughes, M.D., Yan Ma, Ph.D. and others in the September 9, 2010 *Clinical Orthopedic and Related Research* available online. ■

## Pre-existing cardiovascular conditions linked to lower stimulant prescribing rates for adults with ADHD

Attention-deficit hyperactivity disorder (ADHD) affects 4-5 percent of the adult U.S. population and contributes to significant impairment in academic, occupational, and social function. Stimulants and the selective norepinephrin reuptake inhibitor atomoxetine are generally considered effective and well-tolerated treatments for adult ADHD. However, the FDA advises that these ADHD medications, which raise blood pressure and heart rate, should be used with caution or avoided altogether in patients who have cardiovascular conditions.

The study identified 8,752 adult patients with new treatment

episodes for ADHD, of whom 10 percent had pre-existing cardiovascular conditions, most commonly hypertension. Compared with patients without pre-existing cardiovascular conditions, patients with such conditions were less likely to fill a prescription for a stimulant (40.8 vs. 53 percent) within 3 months of the beginning of the treatment episode. Prescription rates for atomoxetine were similar for both groups (10.8 vs. 9.3 percent).

The reduction in stimulant prescribing for patients with pre-existing cardiovascular conditions was more pronounced in younger (21-45 years) than older (46-64 years) patients, but was not

influenced by patient sex or physician specialty. The researchers believe that more research regarding the comparative cardiovascular safety of ADHD medications in adults is needed to inform appropriate clinical risk-benefit decisions. This study was supported by the Agency for Healthcare Research and Quality (HS16097).

See “Pre-existing cardiovascular conditions and pharmacological treatment of adult ADHD,” by Tobias Gerhard, Ph.D., Almut G. Winterstein, Ph.D., Mark Olfson, M.D., M.P.H., and others in *Pharmacoepidemiology and Drug Safety* 19, pp. 457-464, 2010. ■  
MWS

## Poorer patients less likely to receive specific treatment for head and neck cancer

Radiation therapy remains an important treatment modality for patients with head and neck cancers. Earlier radiotherapy techniques caused a variety of toxicities and damaging effects to surrounding tissues. Today, intensity-modulated radiotherapy (IMRT) reduces many of these risks while providing good treatment results. While IMRT has become more widely available, not all patients are receiving its benefits. A new study finds that patients in the lowest socioeconomic quartile are less likely to receive this treatment compared with more affluent patients.

Researchers used information from a Medicare-linked database on 5,487 patients diagnosed with head and neck cancers from 2000 to 2005. Twelve diverse geographic areas were represented, including urban and rural areas. Using diagnostic and procedure codes, the researchers determined who received IMRT, another type of radiotherapy, surgery, or other treatment. Patients were also categorized according to age, gender, race, marital status, and tumor characteristics.

Between 2000 and 2005, 21.3 percent of patients with head and neck cancers received IMRT. Each year, the number of patients treated with IMRT increased significantly. For example, patients diagnosed in 2003 were 20 times more likely to receive IMRT compared

with those diagnosed in 2000. This likelihood more than tripled by 2005. Patients in the poorest socioeconomic category were less likely to receive IMRT (18.6 percent) than patients in the highest socioeconomic category (22.1 percent). Patients aged 80 and older were less likely to receive IMRT (16.8 percent) compared with patients aged 65 to 69 years (25.1 percent).

Among geographic regions, Hawaii (40.4 percent), Utah (33.3 percent), and Atlanta/rural Georgia (30.0 percent) had the highest percentage of patients receiving IMRT. Areas with the lowest rates of IMRT use were Kentucky (11.3 percent), Detroit (16.5 percent), and Connecticut (17.6 percent). The highest rates of IMRT were found for patients with tumors of the nasopharynx (29.6 percent) and oropharynx (25.1 percent). The study was supported in part by the Agency for Healthcare Research and Quality (HS16743).

See “Evaluation of trends in the use of intensity-modulated radiotherapy for head and neck cancer from 2000 through 2005,” by B. Ashleigh Guadagnolo, M.D., M.P.H., Chih-Chin Liu, M.S., Janice N. Cormier, M.D., M.P.H., and Xianglin L. Du, M.D., Ph.D., in the July 15, 2010 *Cancer* 116, pp. 3505-3512. ■ *KB*

## Regular home blood pressure measurement raises the likelihood of blood pressure control among Korean Americans

Middle-aged Korean-Americans who comply with regular weekly home blood pressure measurement (HBPM) are more likely to have controlled blood pressure (BP) than those who do not comply, according to a new study. Highly compliant participants were four times more likely to achieve controlled BP by the end of the study than those with low compliance. The odds of compliance with weekly HBPM increased fivefold for participants over 60 years old compared with participants 40 to 49 years old.

Depressed participants were only one-fifth as likely to be compliant as participants who were not depressed.

The 377 study participants were middle-aged (40 to 64 years old) Korean Americans with high BP (systolic BP at least 140 mmHg or diastolic BP at least 90 mm Hg, or who were taking antihypertensive medication), who had participated in a year-long, community-based trial comparing the influence of different methods of high BP

education on high BP and HBPM compliance.

All trial participants received a home BP unit with built-in capability to save BP data and transmit it via telephone. The participants were instructed to measure their BP three times upon waking and another three times at bedtime at least twice a week. Participants whose transmitted data showed full compliance at least 24

*continued on page 20*

## Home blood pressure measurement

*continued from page 19*

of 48 weeks were considered highly compliant. Participants with low compliance were fully compliant for less than 8 weeks of the study.

Control of high BP was based on HBPM during the last 2 months of the study. The study was funded in part by the Agency for Healthcare Research and Quality (HS13160).

More details are in “Compliance with home blood pressure

monitoring among middle-aged Korean Americans with hypertension,” by Jiyun Kim, Ph.D., Hae-Ra Han, Ph.D., Heejung Song, Ph.D., and others in the April 2010 *Journal of Clinical Hypertension* 12(4); pp. 253-260. ■ *DIL*

## Gender trumps religiosity in older Mexican Americans' views on physician-assisted suicide

Older Mexican-American men are more sympathetic to physician-assisted suicide (PAS) than are Mexican-American women or non-Hispanic white men the same age, according to a new study. The study was undertaken because of growing attention to PAS in discussions of end-of-life care, although the subject remains controversial. Other studies have been of younger people or of hospitalized/frail older people, or have included few Hispanics or Mexican-Americans.

In this study, Mexican Americans between 60 and 89 years old reported stronger agreement with legalizing PAS (52.7 percent) than non-Hispanic whites (33.7 percent). Mexican-American men were 2.6 times more likely to agree with PAS legalization than Mexican-American women. High religiosity was not a predictor of opposition to legalizing PAS among Mexican Americans. Among non-Hispanic whites, high religiosity was associated with a 16 percent lower likelihood of supporting PAS.

The researchers interviewed 100 adults between 60 and 89 years old who identified themselves as Mexican/Mexican American/Chicano and 108 who self-identified as Anglo/non-Hispanic white adults at four community-based outpatient health centers in San

Antonio, Texas. Individuals were asked their degree of agreement (on a four-point scale from strongly disagree to strongly agree) with the statement, “The laws should allow physicians to assist senior citizens in committing suicide in cases where a person has been diagnosed with an incurable disease and is suffering from constant, persistent pain.”

The researchers used short exams to assess each person's cognitive performance, ability to function in daily life without help, and their religiosity and spirituality. They suggest that larger, more generalizable studies should be conducted to check whether the reported Mexican-American attitudes towards PAS were unique to San Antonio or reflected a general change in recent years. The study was funded in part by the Agency for Healthcare Research and Quality (HS14064).

More details are in “Physician-assisted suicide attitudes of older Mexican-American and non-Hispanics white adults: Does ethnicity make a difference?” by David V. Espino, M.D., Lillianne Macias, B.A., Robert C. Wood, Dr.P.H., and others in the July 2010 *Journal of the American Geriatric Society* 58(7), pp. 1370-1375. ■ *DIL*

### Primary Care Research

## Primary care physicians' performance ratings depend on the makeup of their patient population

Primary care physicians (PCPs) with a large proportion of underinsured, minority, and non-English-speaking patients have lower care quality rankings than their colleagues with more advantaged patients, concludes a

new study. This could lead to inaccurate physician rankings with implications for physician compensation and allocation of resources, note the Harvard and Massachusetts General Hospital researchers who conducted the

study. To evaluate PCP clinical performance, they used a composite quality measure based on 9 Healthcare Effectiveness Data and Information Set measures (for example, regular mammography,

*continued on page 21*



## Primary care physicians

*continued from page 20*

Pap screening, colonoscopy, and cholesterol testing).

Physicians were ranked by percentile (1-100) and then grouped into thirds. Patient panels of physicians who were ranked in the top third were older, had more illnesses, and made more frequent primary care visits (more than three per year). These patients were also less likely to be minority, non-English-speaking, have Medicaid coverage, or lack insurance. After accounting for practice site and visit frequency differences, adjusting for patient panel factors resulted in a relative mean change in physician rankings of 7.6 percent

per physician, with 36 percent of primary care physicians reclassified into different thirds.

The researchers conclude that since patient panel characteristics affect the relative measured quality of physicians, efforts to improve quality of care must address fairness of the assessment of physician clinical performance. It must also address the design of incentive schemes to provide equitable distribution of resources and reduce disparities in care to vulnerable patients. The study took place in the Massachusetts General practice-based research network that includes 181 primary care physicians working in 9 hospitals and 4 community health centers.

These physicians saw over 125,000 patients during a 3-year period. The ongoing and future phase of the study is supported by the Agency for Healthcare Research and Quality (HS18161). For more information on this project and other AHRQ health information technology projects, go to <http://healthit.ahrq.gov>.

See “Relationship between patient panel characteristics and primary care physician clinical performance rankings,” by Clemens S. Hong, M.D., M.P.H., Steven J. Atlas, M.D., M.P.H., Yuchiao Chang, Ph.D., and others in the September 8, 2010 *Journal of the American Medical Association* 304(10), pp. 1107-1113. ■ MWS

## Primary care practices that take part in research networks report benefits beyond the study itself

Participating in a study conducted by a practice-based research network (PBRN) does more than help evaluate a treatment or intervention, a new study concludes. Based on telephone interviews with doctors, nurses, and other staff at practices participating in a study of postpartum depression (PPD), the researchers found six areas of change in the practices. They included (1) a more systematic approach to diagnosis and treatment in general; (2) increased effectiveness of teamwork and communication; (3) adapting and extending the structured tools used in the PPD study to the care of other patients with chronic disease; (4) greater feelings of professional self-worth, combined with increased community recognition of the practice; (5) added opportunity and support for practice staff to move into new roles or learn new skills; and (6) increased understanding of research and its benefits.

After study participations, practices made increased use of nurses to make follow-up calls to patients,

adapted the PPD study’s tools to the management of all patients with depression, and appreciated how new knowledge can be created by independent primary care practices working together.

Half way through a 3-year trial comparing usual care for PPD with standardized, two-step screening and a recommended therapy and follow-up program, the researchers interviewed 27 family physicians and 21 other clinical staff at 28 practices about their participation in the trial. The study was funded in part by the Agency for Healthcare Research and Quality (HS14744).

More details are in “Practice benefit from participating in a practice-based research network study of post-partum depression: A National Research Network report,” by Barbara P. Yawn, M.D., M.Sc., Wilson Pace, M.D., Allen Dietrich, M.D., and others in the July/August 2010 *Journal of the American Board of Family Medicine* 23(4); pp. 455-464. ■ DIL

## Clinicians' adoption and use of electronic prescribing is likely linked to their views on technology

Proponents argue that greater adoption of health information technology such as electronic medical records, computerized physician order entry, and electronic prescribing (eRx) will improve care efficiency and safety. Although recent mandates are accelerating adoption of eRx, fewer than 10 percent of outpatient providers have adopted it. A new study offers insight into the influence of clinicians' views on technology on their eRx adoption decisions.

The researchers examined providers' technological viewpoints ("frames"). Technological frames are the cognitive structures or beliefs through which technology users make sense of the nature and role of technology, its use, and the consequences of use. The researchers conducted focus groups, interviews, and day-long observations of physicians, nurses, office managers, and medical assistants and assessed attitudes toward eRx and patterns of use.

A total of seven basic beliefs about eRx emerged: (1) eRx as an efficiency and effectiveness enhancing tool, (2) eRx as the harbinger of new practices, (3) eRx as core to the clinical workflow, (4) eRx as an administrative tool, (5) eRx: the artifact, (6) eRx as a

necessary evil, and (7) eRx as an unwelcome disruption. Some frames facilitated effective use of eRx while others imposed barriers. It was not uncommon to find positive, negative, and/or neutral beliefs within a single practice.

The researchers conclude that creating an organizational culture with positive beliefs about eRx may be a precursor to meaningful use. This could be accomplished through strong and frequent messaging about the value of eRx. Understanding the impact of technological frames on the effectiveness of eRx use may provide lessons for the implementation of future health information technology innovations. Finally, eRx can be viewed as a transitional technology on the path to greater digitization at the physician practice level. This study was supported by the Agency for Healthcare Research and Quality (HS17151).

See "Technological viewpoints (frames) about electronic prescribing in physician practices," by Ritu Agarwal, Ph.D., Corey M. Angst, Ph.D., Catherine M. DesRoches, Ph.D., and Michael A. Fischer, M.D., M.S., in the *Journal of the American Medical Informatics Association* 17, pp. 425-431, 2010. ■ MWS

### Agency News and Notes

## The number of U.S. adults treated for diabetes more than doubled between 1996 and 2007

Approximately 19 million U.S. adults reported receiving treatment for diabetes in 2007, more than double the 9 million who said they received care in 1996, according to the latest *News and Numbers* from the Agency for Healthcare Research and Quality (AHRQ). The Agency also found that between 1996 and 2007:

- The number of people aged 65 and older treated for diabetes increased from 4.3 million to 8 million; for people aged 45 to 64, the increase was 3.6 million to 8.9 million; and for 18 to 44 year-olds, the increase went from 1.2 million to 2.4 million.
- Treatment costs for diabetes, paid by all sources, more than doubled, rising from \$18.5 billion in 1996 (in 2007 dollars) to \$41 billion in 2007.
- Outpatient care costs also doubled from about \$5 billion to roughly \$10 billion.
- Total prescription drug costs increased fourfold from \$4

*continued on page 23*

## Diabetes treatment continued from page 22

billion to \$19 billion over the 11-year period. Per patient, the cost of prescription medicines more than doubled, rising from \$495 in 1996 to \$1,048 a year in 2007.

The data in this AHRQ *News and Numbers* summary 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. To view the summary, go to [www.meps.ahrq.gov/mepsweb/data\\_files/publications/st304/stat304.pdf](http://www.meps.ahrq.gov/mepsweb/data_files/publications/st304/stat304.pdf). For more information, contact Bob Isquith at [bob.isquith@ahrq.hhs.gov](mailto:bob.isquith@ahrq.hhs.gov) (301-427-1539). ■

## One in 16 women hospitalized for childbirth has diabetes

More than a quarter million women who gave birth in U.S. hospitals in 2008 had pre-existing diabetes or developed it during their pregnancy—a condition called gestational diabetes, according to the latest *News and Numbers* from the Agency for Healthcare Research and Quality. This equals 6.4 percent of the 4.2 million women who gave birth in that year.

Both pre-existing diabetes and gestational diabetes can produce risks for the mother and her infant. Women face increased risks such as miscarriage and preterm birth, and infants experience higher risk of hypoglycemia (low blood sugar), jaundice, and overly large body size, which can complicate delivery. Gestational diabetes usually goes away after delivery.

The Federal agency also found that in 2008:

- The 35,500 women with pre-existing diabetes and the 232,300 with gestational diabetes who delivered during their stay were much more likely to undergo cesarean section surgery (64 percent and 46 percent, respectively) than women giving birth who did not have diabetes (32 percent).
- Hospital costs associated with deliveries by women with pre-existing diabetes were 55 percent higher (\$6,000) and for women with gestational diabetes they were 18 percent more expensive (\$4,500) than for women who didn't have diabetes (\$3,800).

- In total, the cost for all pregnant women with diabetes, whether hospitalized for childbirth or for pregnancy-related problems, was more than \$1.4 billion or 8.5 percent of all maternal hospitalization costs.
- Among women who delivered during their hospital stay, 43 percent of stays for those with pre-existing diabetes and 36 percent for women with gestational diabetes were billed to Medicaid, compared with 49 percent and 57 percent, respectively, to private insurance. Approximately 3 to 4 percent of the delivery stays were uninsured.

This AHRQ *News and Numbers* is based on data in Hospitalizations Related to Diabetes in Pregnancy, 2008, available at [www.hcup-us.ahrq.gov/reports/statbriefs/sb102.pdf](http://www.hcup-us.ahrq.gov/reports/statbriefs/sb102.pdf). The report uses data from the 2008 Nationwide Inpatient Sample, a database of hospital inpatient stays in all short-term, non-Federal hospitals. The data are drawn from hospitals that comprise 90 percent of all discharges in the United States and include patients, regardless of insurance type, as well as the uninsured. For more information, contact Bob Isquith at [bob.isquith@ahrq.hhs.gov](mailto:bob.isquith@ahrq.hhs.gov) (301-427-1539). ■

## U.S. employers lost nearly 3 weeks of work per employee due to sick days

U.S. workers took an average of 14 sick days in 2007 due to their own illness or injury, or to care for a sick child or other family member, according to the latest *News and Numbers* from the Agency for Healthcare Research and Quality.

On average, employees took 10 days off because they were sick or

injured and an additional 4 days to care for family members.

The Federal agency's analysis also found that:

- Workers aged 55 to 64 took an average of 18 days off of work, compared with 10 days for workers aged 16 to 24.

- About 38 percent of female workers missed work in 2007 for their own health problems vs. about 30 percent of male employees.
- Married women (24 percent) and married men (17 percent) aged 16-64 were more likely to miss

continued on page 24

## Sick days

continued from page 23

work to care for a sick child or other family member compared with unmarried women (14 percent) or unmarried men (7 percent).

- Only 26 percent of uninsured employees took sick leave compared with 36.5 percent of privately insured workers and 32

percent of people with Medicaid or other public insurance.

The data in this AHRQ *News and Numbers* summary 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, see *Restricted-Activity Days, 2007: Estimates for the U.S. Noninstitutionalized Population, Ages 16-64*, available at [www.meps.ahrq.gov/mepsweb](http://www.meps.ahrq.gov/mepsweb). For other information, or to speak with an AHRQ data expert, please contact Bob Isquith at [Bob.Isquith@ahrq.hhs.gov](mailto:Bob.Isquith@ahrq.hhs.gov) or call (301) 427-1539. ■

## More than one in five hospital patients in 2008 were born in 1933 or earlier

Twenty-two percent of all admissions to U.S. hospitals in 2008 were for patients born the year that Franklin D. Roosevelt was first inaugurated president of the United States or earlier, according to the latest *News and Numbers* from the Agency for Healthcare Research and Quality.

Those who ranged in age from 75 to 84 years accounted for almost 14 percent of the 40 million admissions to U.S. hospitals that year, while patients aged 85 and over made up another 8 percent.

Together these most senior of America's seniors accounted for 8.7 million hospital admissions in 2008 compared with the 5.3 million admissions of relatively younger seniors—those between 65 and 74 years of age.

The Federal agency also found that in U.S. hospitals in 2008:

- Treating patients aged 75 and older cost hospitals more than \$92 billion, compared with \$65 billion for patients aged 65 to 74.
- People aged 85 and older were more than twice as likely to be hospitalized as 65- to 74-year olds (577 vs. 264 stays per 1,000 people). They were also nearly three times more likely to require a nursing

home or other type of long-term care after leaving the hospital.

- Congestive heart failure was the number one reason for hospitalizing people aged 85 and older—44 stays per 1,000 people. Other leading reasons were pneumonia, blood poisoning, urinary tract infections, and heart rhythm disorders—36, 27, 24, and 23 stays per 1,000 people, respectively.
- For 75- to 84-year olds, the top five reasons for hospitalization per 1,000 people were: congestive heart failure (23 stays); pneumonia (20 stays); heart rhythm disorders (17 stays); blood poisoning (16 stays); and osteoarthritis (15 stays).

This AHRQ *News and Numbers* is based on data in *Hospital Utilization among Oldest Adults, 2008* (available at [www.hcup-us.ahrq.gov/reports/statbriefs/sb103.pdf](http://www.hcup-us.ahrq.gov/reports/statbriefs/sb103.pdf)). The report uses data from the 2008 Nationwide Inpatient Sample, a database of hospital inpatient stays in all short-term, non-Federal hospitals. The data are drawn from hospitals that comprise 90 percent of all discharges in the United States and include patients, regardless of insurance type, as well as the uninsured. For more information, contact Bob Isquith at [bob.isquith@ahrq.hhs.gov](mailto:bob.isquith@ahrq.hhs.gov) (301-427-1539). ■



## Report available on clinical decision support tool to assess patients' risk for deleterious BRCA mutations

The Effective Health Care Program of the Agency for Healthcare Research and Quality recently released a new technical report, *A Primary Care-Focused, Computer-based Clinical Decision Support Tool to Assess Patients' Risk for Deleterious BRCA Mutations*. These mutations are linked to hereditary breast and ovarian cancer. The report, conducted by the RTI International DECIDE (Developing Evidence to Inform

Decisions about Effectiveness) Center, describes development of a clinical decision support tool that could be used to screen for risk of BRCA mutations in primary care settings. The tool could also assist in the implementation of the U.S. Preventive Services Task Force recommendations regarding referrals for genetic counseling and evaluation for BRCA1 and BRCA2 genes. The first version of the BRCA clinical decision support

tool is not considered ready for clinical use, but is available to researchers, upon request, for further evaluation and modification. You can find the report at <http://effectivehealthcare.ahrq.gov>. You can obtain a CD of the tool for research and evaluation by sending an e-mail to [ProjectManagerCE@ahrq.hhs.gov](mailto:ProjectManagerCE@ahrq.hhs.gov). ■

## AHRQ publishes evidence report on the relationship of alcohol consumption to breast and colorectal cancer

Alcoholic beverages, drunk by more than half of all American adults at least once a month, are suspected of increasing the risk of breast or colorectal cancer because of findings from human, animal, and cell studies. A new AHRQ evidence report, *Alcohol Consumption and Cancer Risk: Understanding Possible Causal Mechanisms for Breast and Colorectal Cancers*, points to several potential mechanisms by which alcohol may influence the development of these cancers. However, the importance of any one mechanism is not apparent at this time. Most studies examining the mechanisms connecting alcohol

to cancer risk use animal models, which may not be directly applicable to humans. The researchers, Olu Oyesanmi, M.D., M.P.H., and David Snyder, Ph.D., of AHRQ's ECRI Institute Evidence-based Practice Center, noted that although the majority of the epidemiology studies reported that alcohol was associated with an increased risk of both breast and colorectal cancers, they could not discount the influence of other factors, such as diet and lifestyle. The evidence review was requested by the Centers for Disease Control and Prevention. View the report at [www.ahrq.gov/clinic/tp/alccantp.htm](http://www.ahrq.gov/clinic/tp/alccantp.htm). ■

## AHRQ updates 2001 evidence report on treating acute otitis media

Treating children immediately for uncomplicated otitis media (ear infection) with amoxicillin produces a modest benefit compared with placebo or a delay in using antibiotics. However, this approach may increase the likelihood of diarrhea and rash, according to a new evidence report from the Agency for Healthcare Research and Quality (AHRQ). Led

by Paul G. Shekelle, M.D., Ph.D., of the AHRQ-supported Southern California Evidence-based Practice Center in Santa Monica, the review authors found no evidence that any other antibiotic is superior to amoxicillin for success in treating uncomplicated acute otitis media; that symptoms such as a red, immobile, or bulging eardrum are critical to diagnosis, but the lack of

a gold standard for diagnosing acute otitis media currently makes drawing firm conclusions about the precision of diagnostic methods difficult; and that the heptavalent Pneumococcal Conjugate Vaccine has had an impact on microbial epidemiology. The evidence review also found

*continued on page 26*

## Acute otitis media *continued from page 25*

that long-term use of antibiotics in children prone to the disease decreases episodes by about half. However, drawbacks, such as

diarrhea, allergic reactions, and the emergence of bacterial resistance, should be weighed against the risk of the ear infection's recurrence. AHRQ's report was requested by the American Academy of

Pediatrics. For more details, see *Management of Acute Otitis Media: Update*, available at [www.ahrq.gov/clinic/tp/otitisuptp.htm](http://www.ahrq.gov/clinic/tp/otitisuptp.htm). ■

## New Federal resources help hospitals plan, carry out, and evaluate emergency preparedness exercises

The Agency for Healthcare Research and Quality (AHRQ) has released a set of new resources to help hospital emergency planners plan, conduct, and evaluate exercises to prepare for emergencies. *The Hospital Preparedness Exercises Guidebook* is a resource guide designed to assist in the process of planning, conducting, and evaluating hospital preparedness exercises. *The Hospital Preparedness Exercises: Atlas of Resources and Tools* is a compendium of resources and tools, categorized by key features and with detailed descriptions; and the *Hospital Preparedness Exercises Pocket Guide* is a quick reference for hospital preparedness planners.

These resources are designed to meet the needs of both accredited and unaccredited hospitals, ranging from acute care to critical access. They were developed by AHRQ in conjunction with researchers at Cornell University's Weill College of Medicine as part of the National Hospital Preparedness Program. The U.S. Department of Health and Human Services Office of the Assistant Secretary for Preparedness and Response provided funding.

For more details on these and other emergency preparedness materials, please visit [www.ahrq.gov/prep](http://www.ahrq.gov/prep). ■

## AHRQ 2010 Annual Conference plenary session videos available

The videos from the Agency for Healthcare Research and Quality's 2010 Annual Conference plenary sessions are available. The session's topics were "21st Century Health Care: What Does it Mean to Achieve Success in Quality, Value, and Access to Care?" and "Transformation and Change: Making a Complex System Safe and Right." You can view the videos at [www.ahrq.gov/about/annualconf10](http://www.ahrq.gov/about/annualconf10). ■

## Archive of Webcast on integrating comparative effectiveness research into everyday practice available

Presentations from the October 12 Web conference, "Integrating Comparative Effectiveness Research into Everyday Practice," are available on the AHRQ Effective Health Care Web site ([www.effectivehealthcare.ahrq.gov](http://www.effectivehealthcare.ahrq.gov)). Presenters highlighted AHRQ's existing patient-centered outcomes research and ways that it can be used by clinicians to make decisions in their practices. ■

**Akincigil, A., Munch, S., and Niemczyk, K. S. (2010).** “Predictors of maternal depression in the first year postpartum: Marital status and mediating role of relationship quality.” (AHRQ grant HS16097). *Social Work in Health Care* 49(3), pp. 227-244.

This Rutgers University study may help dispel the belief that unmarried women are more likely than married women to suffer from depression in the year after giving birth. In fact, the research team found that the quality of the woman’s relationship with the child’s father, not her marital status, was a better predictor of whether she would battle depression. The researchers used data collected from 4,348 women just after they gave birth and 1 year later. Just over 12 percent of women became depressed in the year following the birth. Regardless of their marital status, women who reported supportive relationships with the father of their child were less likely to become depressed during the following year than mothers who did not receive emotional support from the child’s father. Further, women who were abused by their child’s father (26 percent) or had disagreements with the father about the pregnancy (4 percent) were likely to become depressed.

**Burris, H. B., and Collins, J. W. (2010, Summer).** “Commentary: Race and preterm birth—the case for epigenetic inquiry.” (AHRQ grant T32 HS00063).

***Ethnicity & Disease* 20, pp. 296-299.**

In the United States, preterm birth and infant mortality disproportionately affect black families. The authors argue that epigenetic (i.e., gene-environment interactions) mechanisms will improve our understanding of such disparities. They propose that now is the time to translate what has been learned from the laboratory and the study of the agouti mouse into the realm of human studies. Studies have shown how impact of dietary differences among agouti mice may affect the health status of their offspring. This effect seems to be mediated by DNA methylation. The “epigenome,” or pattern of DNA methylation, is laid down during early fetal life and may determine later health status. Whether intrauterine exposures to both toxins and beneficial dietary supplements can alter phenotypes has not yet been explored in humans.

**Clancy, C. (2010).** “CER: Tools—not rules, and its effects can be transformational.”

**Medscape.com. Reprints (AHRQ Publication No. 11-R010) are available from AHRQ.\***

In this online commentary piece, the director of the Agency for Healthcare Research and Quality (AHRQ) discusses comparative effectiveness research (CER) and its usefulness to the practicing physician. CER is a type of patient-centered research that delivers evidence-based information to those who need to make a decision

about care. CER is being funded by the American Recovery and Reinvestment Act of 2009 and is a central element in the new health care reform law known as the Patient Protection and Affordable Care Act. However, AHRQ has already funded and completed dozens of CER projects under its Effective Health Care Program on such subjects as diabetes, breast cancer, and depression. CER is descriptive, not prescriptive, and provides tools that both doctor and patient can use to make the best possible decisions. For more information, visit [www.effectivehealthcare.ahrq.gov](http://www.effectivehealthcare.ahrq.gov).

**Clark, D. E., Hannan, E. L., and Wu, C. (2010).** “Predicting risk-adjusted mortality for trauma patients: Logistic versus multilevel logistic models.” (AHRQ grant HS15656). *Journal of the American College of Surgery* 211, pp. 224-231.

Statistical models for predicting hospital performance are increasingly of interest to health planners, regulators, and patients. Multilevel logistic regression models (MLLR), while more complex than standard logistic regression (LR) models, have some theoretical advantages, and have become popular among those in health services research. The major drawback to the use of MLLR modeling has been computational complexity, which is now being overcome. The assumption is that, by employing MLLR models,

*continued on page 28*

## Research briefs

*continued from page 27*

properly adjusted institutional performance in the recent past can be used to predict institutional performance in the immediate future. Using data from the 2002-2006 National Inpatient Surveys on patients with trauma from 989 hospitals, the researchers compared predictions from LR and MLLR models for 2004, 2005, and 2006. They found that the differences between actual and predicted mortality were smaller with the MLLR models.

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**Curns, A. T., Steiner, C., Barrett, M., and others. (2010, June). “Reduction in acute gastroenteritis hospitalizations among US children after introduction of rotavirus vaccine: Analysis of hospital discharge data from 18 US states.” *Journal of Infectious Diseases* 201(11), pp. 1617-1624. Reprints (AHRQ Publication No. 10-R071) are available from AHRQ.\***

Rotavirus is the most common cause of diarrhea and gastrointestinal upset in infants and young children. Symptoms can be severe enough to require hospitalization. Researchers compared acute gastroenteritis hospitalizations before (2000-2006) and after (2007-2008) the introduction of a new rotavirus vaccine (RotaTeq®), which was recommended in 2006 for the routine vaccination of all infants in the United States. By 2008, hospitalization rates for acute gastroenteritis from rotavirus infection had declined significantly as the result of widespread use of the vaccine. In 2007, there was a 16 percent decrease in hospitalizations and in 2008 a 45 percent decrease compared with the prevaccine

period. The data source was the Agency for Healthcare Research and Quality’s Healthcare Cost and Utilization Project which contains hospital discharge data representing nearly half of the U.S. population.

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**Ford, D., Zaa, J., and Gebregziabher, M. (2010, July). “Factors associated with illness perception among critically ill patients and surrogates.” (AHRQ grant HS10871). *Chest* 138(1), pp. 59-67.**

The intensive care unit (ICU) is a setting where patients are seriously ill and often die. Communication between patients, families, and clinicians is particularly important in an ICU, and decisionmaking is clearly affected by perceptions of patient prognosis and treatment options. The researchers interviewed 100 patients (or their surrogate decisionmakers) who were in a university hospital medical ICU for at least 3 days. Questions focused on their beliefs about the timeline and consequences of illness, emotional reaction to the illness, beliefs about personal control over the illness, beliefs about the efficacy of treatments, and comprehension of their illness. They found that blacks were more optimistic than whites on five of six domains of illness perception even after adjusting for faith/religion. Blacks also tended to perceive the illness as less enduring and reported more confidence in treatment efficacy. In addition, they tended to report the illness as less serious, having less emotional impact, and themselves as having greater personal control. However, they also reported lower illness comprehension.

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**Friedman, B., and Jiang, H. J. (2010). “Do Medicare Advantage**

**enrollees tend to be admitted to hospitals with better or worse outcomes compared with fee-for-service enrollees?” *International Journal of Health Care Finance and Economics* 10, pp. 171-185. Reprints (AHRQ Publication No. 10-R042) are available from AHRQ.\***

Persons eligible for Medicare can enroll in the traditional fee-for-service (FFS) plan or the newer Medicare Advantage (MA) plans. These plans are managed by outside insurance companies who receive a monthly capitation fee per enrollee from Medicare. Since there is no need to submit claims to Medicare for reimbursement, the Medicare program does not receive hospital discharge summaries. Researchers from the Agency for Healthcare Research and Quality (AHRQ) sought to discover whether MA patients tend to go to hospitals with better outcomes than FFS patients. Using 2006 hospital data from 13 statewide databases that are part of AHRQ’s Healthcare Cost and Utilization Project, they found that Medicare Advantage patients tend to be admitted to hospitals that have lower resource costs and higher mortality rates (adjusted for patient risk factors). However, no significant differences were observed for surgical patients in terms of hospital cost or mortality rates.

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**Glurich, I., Burmester, J. K., and Caldwell, M. D. (2010). “Understanding the pharmacogenetic approach to warfarin dosing.” (AHRQ grant HS16335). *Heart Failure Review* 15, pp. 239-248.**

Despite its association with serious drug-related adverse events,

*continued on page 29*



## Research briefs

*continued from page 28*

warfarin remains the drug of choice for long-term anticoagulation management in a variety of conditions. Its current underutilization is attributable to its being ranked among the top 10 drugs associated with the greatest number of serious adverse drug events. This review summarizes the continued importance of warfarin to the reduction of the morbidity and mortality associated with thromboembolic disease. It also provides a brief historical overview of the emergence of the pharmacogenetics era of warfarin dosing and explores the existing controversies that prevent the full implementation of personalized medicine approaches to warfarin dosing. Variations in individual responses to warfarin have been traced to differences in age, body size, presence of other illnesses, and use of other medications.

However, more recent research has highlighted a more important group of factors—the combined effects of polymorphisms in three genes. Ongoing studies and international collaborative efforts that have been generated by these recent breakthroughs hold the potential of making warfarin a safer drug for patients.

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**Holman, R. C., Christensen, K. Y., Belay, E. D., and others. (2010, August). “Racial/ethnic differences in the incidence of Kawasaki syndrome among children in Hawaii.” *Hawaii Medical Journal* 69, pp. 194-197. Reprints (AHRQ Publication No. 11-R004) are available from AHRQ.\***

Kawasaki syndrome (KS) is a rare childhood disease affecting the

blood vessels, which can lead to heart problems. It usually occurs in children under the age of 5 and is most likely to manifest itself in children of Japanese and other Asian ancestry in Hawaii and the continental United States. To better understand the racial/ethnic-specific incidence of KS among children living in Hawaii, researchers analyzed hospital discharge data for patients with KS younger than 18 years from 1996 to 2006. For this period, they found that 528 children accounted for 582 hospitalizations with KS. Children less than 5 years old accounted for 441 (83.5 percent) of cases. Among all racial/ethnic groups less than 5 years of age in Hawaii, Japanese children had the highest incidence per 100,000 people (210.5), followed by Native Hawaiian children (86.9), other Asian children (84.9), and Chinese children (83.2).

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**Holman, R. C., Belay, E. D., Christensen, K. Y., and others. (2010, June). “Hospitalizations for Kawasaki syndrome among children in the United States, 1997-2007.” *The Pediatric Infectious Disease Journal* 29(6), pp. 483-488. Reprints (AHRQ Publication No. 10-R074) are available from AHRQ.\***

To examine trends in hospitalization of children 18 years of age or younger with Kawasaki syndrome (KS), researchers mined two national databases for hospital discharge records between 1997 and 2007: the Kids’ Inpatient Database and the Nationwide Inpatient Sample of the Agency for Healthcare Research and Quality. In 2006, the hospitalization rate for children aged 5 and younger with KS was 20.8 per 100,000 children.

Annual rates remained constant during the study period, except for a peak in 2005. Most hospitalizations were for children 3 years old and under, but there were very few hospitalizations during the first 2 months of life. Higher hospitalization rates were observed for boys, children from higher income families, and children with private insurance.

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**Karsh, B.-T., and Brown, R. (2010). “Macroergonomics and patient safety: The impact of levels on theory, measurement, analysis, and intervention in patient safety research.” (AHRQ grant HS13610). *Applied Ergonomics* 41, pp. 674-681.**

Little, if any, patient safety research has purposefully sought to understand how level issues might impact patient outcomes, such as quality, errors, adverse drug events, or patient harm. Levels are typically discussed in two ways: (1) individuals, groups, or organizations and (2) levels of hierarchy (e.g., the vice president of nursing, nurse supervisors, nurse managers, charge nurses, and staff nurses). The authors explore the implications of their ideas for medical errors theory and research. They believe that medication errors may be the result of nurse behavior, leadership decisions, group dynamics, poor workflow, safety culture, the lack of use of health information technology or some combination of all of these factors. Definite knowledge is not yet available because of a lack of research to disentangle such causes. The authors advise that mixed-level theories should be used to help find answers to this and related questions.

*continued on page 30*

## Research briefs

*continued from page 29*

**Kirby, J. B., Hudson, J., and Miller, G. E. (2010). "Explaining racial and ethnic differences in antidepressant use among adolescents." *Medical Care Research and Review* 67(3), pp. 342-363. Reprints (AHRQ Publication No. 10-R072) are available from AHRQ.\***

This study examined the extent to which antidepressant use among adolescents varies across racial and ethnic groups. The researchers found that white adolescents were more than twice as likely as Hispanic adolescents and almost five times as likely as black adolescents to use these medications. These ethnic/racial differences in medication use follow a similar pattern of use of all medications by children. Much of the Hispanic/white gap may be explained by two-parent families, higher education levels, family income, health insurance, and having a usual source of care. However, the black/white gap may be the result of the way minorities perceive mental health difficulties and use of antidepressants in adolescents. The researchers used national data on sociodemographics, insurance coverage, and health care use from the 2000-2004 Medical Expenditure Panel Survey sponsored by the Agency for Healthcare Research and Quality.

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**Levtzion-Korach, O., Frankel, A., Alcalai, H., and others. (2010, September). "Integrating incident data from five reporting systems to assess patient safety: Making sense of the elephant." (AHRQ grant HS10002). *The Joint Commission Journal on***

***Quality and Patient Safety* 36(9), pp. 402-409.**

Hospitals gather safety-related information through an array of approaches, including incident reporting, patient complaints, risk management, medical malpractice claims, and executive walk rounds. The researchers examined these five systems to assess safety at one large academic hospital with a history of patient safety awareness. Their objectives were to evaluate what type of information is received by each system; develop a common framework for representing the identified safety issues; assess the correlation between types of information collected by the different systems; and evaluate the overall safety picture. They found that communication problems were common among patient complaints and malpractice claims and that clinical judgment was the leading category for malpractice claims. Walk rounds identified safety issues with equipment and supplies. Adverse event reporting systems highlighted event identification issues. Hospitals need to synthesize the messages from all these individual approaches into a collated and cohesive whole, suggest the researchers.

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**Meltzer, D., Chung, J., Khalili, P., and others. (2010). "Exploring the use of social network methods in designing healthcare quality improvement teams." (AHRQ grant HS16967). *Social Science and Medicine* 71, pp. 1119-1130.**

Teams, defined as groups of individuals working interdependently to achieve a shared goal, are an important part of quality improvement efforts in

healthcare organizations. To improve the design and construction of such teams, the authors draw upon a large body of research on social networks, which has demonstrated how a person's location within a social network can affect the volume, quality, and timeliness of information to which she has access. The authors next review the essential concepts needed to convey the value of social network analysis (SNA) for guiding team composition. These concepts include clusters, degree, betweenness, and density. Using sociometric, sociodemographic, and professional data from social network surveys, they then describe the structure of interaction among the 71 physicians attending on the general medical services at the University of Chicago Medical Center in 2006-2007. Finally, they conclude that their use of SNA provides actionable insight into design of quality improvement teams.

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**Rivard, P. E., Elixhauser, A., Christiansen, C. L., and others. (2010, June). "Testing the association between patient safety indicators and hospital structural characteristics in VA and nonfederal hospitals." *Medical Care Research and Review* 67(3), pp. 321-341. Reprints (AHRQ Publication No. 10-R027) are available from AHRQ.\***

Researchers sought to discover associations between hospital structural characteristics (number of staffed patient beds, teaching status, location, and nurse staffing) and the likelihood of potentially preventable patient safety events, such as

*continued on page 31*

## Research briefs

*continued from page 30*

accidental puncture or postoperative respiratory failure. They looked for associations between the characteristics of Veterans Affairs hospitals and non-Federal hospitals and scores on 12 of the Agency for Healthcare Research and Quality's

(AHRQ's) Patient Safety Indicators (PSIs). The study found that, for non-Federal hospitals, being a major teaching hospital was associated with worse safety problems (higher values for 7 of 12 PSIs)—a stronger association than any other structural characteristic tested by the researchers. However,

the lack of any consistent relationship between hospital structural characteristics and PSIs may indicate that key structural characteristics were not measured in the study, or it may reflect that PSIs have a stronger relationship to patient characteristics than hospital structural characteristics. ■

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