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Advancing Excellence in Health Care

RESEARCH ACTIVITIES

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AHRQ toolkit helps hospitals improve antibiotic selection to reduce deadly *C. difficile* infections

Your very sick hospital patient has just finished 7 days of the antibiotic ciprofloxacin (cipro) for a urinary tract infection (UTI). The lab has found more bacteria in his urine. But he no longer has a fever or back pain indicating a UTI. The followup urine sample may simply have been contaminated. On the other hand, maybe he needs another course of antibiotics. But that may put him at risk of a potentially deadly *Clostridium difficile* infection. That was a recent dilemma faced by George McKinley, M.D., Infection Disease Specialist at St. Luke's Roosevelt hospital in New York City, and a typical one faced by today's doctors as they battle sometimes deadly healthcare-associated infections like *C. difficile*.

Belinda Ostrowsky, M.D., (rt) and Priya Nori, M.D., of the Montefiore Medical Center/Albert Einstein College of Medicine, review an antibiogram (chart summary of percentage of bacteria susceptible or resistant to a range of antibiotics used in the hospital), which is used to help select optimal antibiotic therapy.

"The patient is debilitated, with multiple problems," recounts McKinley. "I am very concerned that if he gets another course of antibiotics he will get a *C. difficile* infection. By trying to avoid that problem, could I be delaying the antibiotic treatment in a way that will put him at risk for another type of infection? These are the types of decisions we have to make all the time, calculating the risk and benefit of antibiotics."

C. difficile infection is a potentially deadly infection that has been linked to certain antibiotics that are typically the broad-spectrum antibiotics most often used at a hospital, which target a broad range of bacterial infections. People most at risk of getting *C. difficile* infections are those in health care facilities where *C. difficile* bacteria can be transmitted to them from health care workers' hands, other patients, or surfaces such as toilet seats, bed rails, and food trays. Also at risk are patients taking antibiotics that destroy good intestinal bacteria that can defeat dangerous bacteria like *C. difficile*

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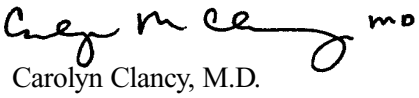
Highlights

From the Director

Sick hospitalized patients can be further sickened by healthcare-associated infections (HAIs) they acquire during their hospital stay. At any given time, about one in every 20 inpatients has an infection related to their hospital care. Hospital-acquired HAIs alone are responsible for billions of dollars in preventable health care expenditures annually, according to the Department of Health and Human Services (HHS). In fact, HAIs like *Clostridium difficile* are among the leading causes of preventable death in the United States. Our Agency found that nearly 1 percent of all hospital stays in 2009 alone involved *C. difficile* infections.

The Agency for Healthcare Research and Quality plays an important role in the Federal effort to prevent and reduce all types of HAIs as called for by the HHS National Action Plan to Prevent Healthcare-Associated Infections: Roadmap to Elimination (www.hhs.gov/ash/initiatives/hai/actionplan). Our Agency is developing a wealth of practical, evidence-based tools and resources to help health care facilities reduce HAIs like the "Toolkit for Reduction of *Clostridium difficile* Infections Through Antimcrobial Stewardship" described in the cover story.

This toolkit helps hospitals identify and target certain antibiotics that are linked to *C. difficile* infections and improve antibiotic prescribing. All of the hospitals that put in place elements of an antibiotic stewardship program aimed at *C. difficile* decreased the use of at least one targeted antibiotic within their facility. These successes and the strategies and resources provided by the toolkit make me optimistic that hospitals will be able to reduce *C. difficile* infections.



Carolyn Clancy, M.D.

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and sicker and older patients. Generally, the longer patients are on antibiotics, the greater their risk of getting *C. difficile*.

Infection with *C. difficile*, which produces toxins in the colon, can range from mild diarrhea to damage to the bowel severe enough to lead to colon removal, sepsis, or even death. The number of patients hospitalized with *C. difficile* doubled between 2000 and 2007, with rates highest in the northeastern United States, according to data from the Agency for Healthcare Research and Quality (AHRQ) Healthcare Cost and Utilization Project (HCUP). Rates seem to have leveled off from 2008 to 2010, but remain disturbingly high (see box).

AHRQ's new online "Toolkit for Reduction of *Clostridium difficile* Infections Through Antimicrobial Stewardships" helps hospitals improve the use of antibiotics by implementing an Antimicrobial Stewardship Program (ASP) directly targeting *C. difficile* infections. It builds on a general antimicrobial stewardship toolkit developed by the Greater New York Hospital Association/United Hospital Fund.

The toolkit helps individual hospitals identify antibiotics most linked to *C. difficile* infections at their hospital so they know which ones to target. The toolkit also guides hospitals in development of strategies to improve appropriate use of antibiotics. Sometimes this may involve consultation with the hospital infectious disease specialist before prescribing a targeted antibiotic, review of patients on broad-spectrum antibiotics like cipro that combat several types of bacteria to see if they can be put on more narrow-spectrum antibiotics (audit and feedback), and computerized alerts asking clinicians about the need to continue antibiotics for a patient. Finally, the toolkit helps hospitals consider organizational changes and resources needed to create and sustain an effective ASP; provides instructions on how to plan, implement, and adjust an ASP; and describes lessons learned from the 10 hospitals that participated in the *C. difficile* antibiotic stewardship project.

All the project hospitals that put in place elements of the antibiotic stewardship program directed at *C. difficile* decreased use of at least one targeted antibiotic associated with *C. difficile*, notes Belinda Ostrowsky, M.D., M.P.H., Director of the Antimicrobial Stewardship Program at the Montefiore Medical Center/Albert Einstein College of Medicine and clinical principal investigator for the AHRQ toolkit project. "Each of the hospitals has already tried techniques to clean the environment and improve infection control, such as hand washing and signage," says Ostrowsky. "The toolkit adds a layer of being more sensible in antibiotic prescribing."

"There are antibiotics that are workhorses at many hospitals," explains Ostrowsky. "For example, the quinolones, like cipro and moxifloxacin, are often used as antibiotic workhorses because they can be given orally. And in the past, they have been associated with the hyperendemic strain of *C. diff.*, and we did see within the project hospitals that they were associated with many cases of *C. diff*."

But restricting hospital antibiotic use is not easy, notes McKinley. Some doctors find it difficult to restrain themselves from prescribing antibiotics. "Antibiotics are life-saving interventions and many patients need antibiotics, and yet those patients get *C. diff.*," says

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HCUP Data on *C. difficile* Hospitalizations

- In 2009, there were 336,600 hospitalizations that involved *C. difficile* infection (CDI)—nearly 1 percent of all hospital stays.
- In 2009, patients 85 years and older had the highest rate of CDI hospitalizations—1,089 versus only 11 per 100,000 population for patients younger than 18.
- CDI hospitalizations doubled between 2001 and 2005, then leveled off during 2008 to 2010.
- Among patients diagnosed in 2009 with CDI during hospitalization, 4.8 percent were readmitted to the hospital within 30 days and 6.9 percent within 90 days principally for CDI. Another 12.8 percent were readmitted within 30 days and 17.2 percent within 90 days for any listing of CDI.
- Nearly half (49 percent) of long-term care patients hospitalized with CDI were readmitted to the hospital within 90 days for any cause.

For more information, on the HCUP report on CDIs in hospital stays in 2009 go to www.hcup-us.ahrq.gov/reports/statbriefs/sb124.pdf. You can view the HCUP report on rehospitalizations for *Clostridium difficile* at www.hcup-us.ahrq.gov/reports/statbriefs/sb145.pdf.

McKinley. "But to have a patient get *C. diff.* from an antibiotic that they didn't need or could have received an alternative antibiotic that might have been less prone to give them *C diff.*, that is something we continually educate doctors about."

Power of toolkit strategies and infection control

McKinley's hospital has been targeting the use of certain antibiotics for years in an effort to reduce healthcare associated infections. However, AHRQ's toolkit enabled the hospital to target specific antibiotics linked to *C. difficile* infections at the hospital (cipro, a quinolone, and cefepime, a cephalosporin). Using the *C. difficile* toolkit, immediate patient isolation with onset of diarrhea without waiting for laboratory confirmation of *C. difficile*, contact precautions (use of gowns and gloves and strict hand washing), and stringent surface disinfection policies, his hospital was able to reduce hospital-onset *C. difficile* infections by 50 percent in August 2012 compared with 2009.

The Bronx-Lebanon Hospital Center, another project hospital, did a case-control study that found that cipro (and the quinolone antibiotics in general) and Zosyn® (a broad-spectrum antibiotic from the pencillin family) were the two most often used antibiotics at the hospital and most linked to *C. difficile* infections. Frank Palmieri, Ph.D., R.Ph., Antibiotic Clinical Pharmacist at the hospital, Frances Petersen, R.Ph., M.P.H., Director of Infection Control, and their team started an intravenous (IV) to oral program. The key question to clinicians was, "Do you really need to continue the antibiotic?"

With the hospital programmer, they built a program to work with the hospital system's computerized physician order entry program. For example, after physicians ordered an initial 3-day supply of IV cipro and went on the system to reorder the antibiotic, a popup message would ask them to consider if they really needed to continue with IV cipro or might be able to switch to oral cipro according to the guidelines. Many times the physician did switch to the oral medication or stop the antibiotic altogether after the 3 days.

C. difficile cases drop by half

"In addition to asking if the continuation of ciprofloxacin was necessary, we also looked at our treatment guidelines that included this antibiotic," adds Palmieri. "This led to a major change in recommending quinolones [including cipro] upfront for urinary tract infections and even the pneumonias. The result has been that we are now using half the amount of ciprofloxacin and have seen our number of *C. diff* cases drop by the same amount."

The hospital received a letter from the New York State Department of Health recently asking them how they were able to significantly lower their *C. difficile* rates from 2007 to 2011. Petersen attributed this success to a bundle of strategies. They included special protocols for cleaning patient isolation rooms, in-service training of staff on proper room cleaning, placing patients with positive *C. difficile* labs on immediate contact precautions with a special sign outside the patient's door, and their ASP.

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The hospital had a general ASP that developed and matured, but working on the toolkit project helped them focus. Says Petersen, "When you start a program, you want to tackle 8 million issues at one time. Focusing on one thing and seeing that it works, leads you to the next step. You have to take one step at a time."

Petersen recently had a relative at the hospital who had *C. difficile* infection. "He was being treated [with antibiotics] for pneumonia," she recalls. "Honestly I thought he was going to die. I've never seen anything like that in my life. The fact that they discontinued

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

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antibiotics, changed them, and medically managed him made a difference. He was delirious. I didn't think he was going to make it, and he's not that old. They saved him." Palmieri's father was at another hospital with *C. difficile* infection in the past year. It was close and took his father 6 weeks to be clear of the infection. A small group of patients with *C. difficile* infections are repeatedly readmitted to the hospital— even over a period of years—for relapse of the infection.

Toolkit helps hospitals modify antibiotic selection

AHRQ's toolkit helps hospitals modify antibiotic selection to prevent such devastating infections. Palmieri sees great promise in the toolkit, especially for hospitals that are starting ASPs. "They don't know what direction to go or how to start, and the toolkit gives great guides to get them going," he says.

While team membership will vary among hospitals, the traditional core ASP team includes an infectious disease physician and a pharmacist (Pharm.D.), and perhaps a clinical microbiologist, infection preventionist, and hospital epidemiologist. An information technology representative and senior administrator often act as liaisons to support and supplement the core ASP team members. Ostrowsky and her team have a close relationship with the infection control people and nurses on the floor taking care of the patients to make sure they are collecting the *C. difficile* samples and asking prescribers if they still need to have the patient on an antibiotic or whether the course can be shortened.

> *Part of teamwork is having the prescribers believe there's a problem.*

"Part of teamwork is having the prescribers believe there's a problem," says Ostrowsky. "We work with the chief residents, head of the hospital service, and people who coordinate the emergency doctors so we can get the educational information out there. It's changing the culture."

Ostrowsky points out that some bacteria are already developing resistance to broad-spectrum antibiotics like cipro due to their overuse. The contribution of commonly used antibiotics to *C. difficile* infections is also a problem. "If there were a lot of new antibiotics, we wouldn't be having this conversation," she asserts. "But the problem is that we don't have that many new antibiotics coming down the road, so we need to be smart about how we use the ones that we have."

> *But the problem is that we don't have that many new antibiotics coming down the road, so we need to be smart about how we use the ones that we have.*

Ostrowsky believes the toolkit project has raised awareness of the problem of certain antibiotics and *C. difficile* infections and the importance of ASPs. "Our antimicrobial stewardship programs look at antibiotic use in the whole facility, and a lot of times physicians will look at one patient at a time and don't see the whole picture. What's nice about the antimicrobial stewardship programs is that people who develop them are often the people who have a more global view."

The toolkit's description of lessons learned and strategies developed by the project hospitals can help hospitals think about what may work for their circumstances. Says Ostrowsky, "The toolkit gives examples of ways you might start to tackle these problems so you don't have to reinvent the wheel." The toolkit is available at www.ahrq.gov/qual/cdifftoolkit. ■

GSM

Prescription of antidepressants for children and adolescents by office-based physicians is typically done off-label

Pediatricians and other health care providers often prescribe antidepressant drugs off-label to children and adolescents, concludes a new study. Drugs prescribed off-label are those not approved for that particular indication or population by the U.S. Food and Drug Administration (FDA). The use of antidepressants in children and adolescents aged 6–18 years old has grown dramatically in the past decade, in small part due to FDA approvals for a handful of conditions. However, only 12 of 32 FDA-approved antidepressants have FDA approval for treating pediatric depression or are approved for use with patients at least 6 years old with obsessive–compulsive disorder or enuresis (bedwetting).

Physicians can prescribe medicines for indications (or populations) for which the drug lacks FDA approval, and this study observed a high prevalence of off-label antidepressant prescribing for children and adolescents by office-based physicians. The researchers analyzed data from the National Ambulatory Medical Care Survey from 2000 to 2006 to examine off-label prescribing patterns of antidepressants for children and adolescents.

They found that among physicians' visits made by the pediatric study population, 3.7 percent involved prescribing, providing, or continuing any of the 12 drugs approved for an indication in pediatric patients ("antidepressant visits"). When the researchers looked only at the antidepressant visits, only 9.2 percent (or 0.34 percent of all visits) involved FDA-approved pediatric indications with age specification. Attention deficit-hyperactivity disorder was the most frequently associated off-label indication (35.5 percent), followed by depression (35.2 percent), and other diagnoses (including bipolar disorder, anxiety, oppositional defiant disorder, and affective psychosis).

Visits to pediatricians were 2.4 times more likely to be associated with off-label antidepressant orders than were visits to pediatric psychiatrists. Visits to general and family practitioners and to all other specialists resulted in off-label antidepressant prescriptions 1.9 times more frequently than did visits to pediatric psychiatrists. The researchers suggest that the lack of available approved drugs for the pediatric population may account for much of this off-label prescribing. The study was supported in part through a grant from the Agency for Healthcare Research and Quality (HS11673).

More details are in "Off-label prescribing patterns of antidepressants in children and adolescents," by Euni Lee, Pharm.D., Ph.D., Anna R. Teschemaker, Ph.D., Rosemary Johann-Liang, M.D., and others in the February 2012 *Pharmacoepidemiology and Drug Safety* 21(2), pp. 137-144. ■ *DIL*

Medical home for children and youth improves delivery of preventive services without raising expenditures

Today's pediatric medical home is a cultivated partnership between the patient, family, and primary care provider in cooperation with specialists and support from the community. Care for children delivered in a medical home is associated with 11 percent more preventive visits, 9 percent more dental visits, and 13 percent less emergency department visits, according to a new study. The Seattle-based researchers also found no appreciable difference in mean expenditures between children with and without a medical home.

The researchers could not assess the quality of care received with the data source used in their study. However, they believe that if having a medical home can influence the receipt of high-value services such as preventive and dental care while preventing low-value semi-discretionary services such as emergency department use without significantly raising mean total expenditures, then the medical home model may provide good value.

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Pediatric medical home
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They examined data for 26,000 children on their access to a medical home from the Medical Expenditure Panel Survey (MEPS) during 2005–2007. Whether children received care in a medical home was determined by the researchers' analyses of medical home-related survey items in the MEPS. This study was supported by the Agency for Healthcare Research and Quality (T32 HS13853).

See "Health care use and expenditures associated with access to the medical home for children and youth" by Melissa A. Romaire, Ph.D., Janice F. Bell, Ph.D., and David C. Grossman, M.D., in *Medical Care* 50, pp. 262-269, 2012. ■ *MWS*

Primary Care

Patients who find it easy to access primary care are more likely to receive selected preventive services

Patients who find it easy to access primary care are more likely to receive cholesterol checks, flu shots, and prostate screenings, but not mammography screenings, according to a new study. Accessibility was considered present if the following first-contact access components were rated 4 or 5 (very good or excellent) on a 5-point scale: availability of medical advice by phone; length of time between making an appointment and the day of visit; length of time spent waiting in the office for the doctor; amount of visit time spent with doctors and staff; hours when the doctor's office is open; convenience of location of the office; ease of seeing the doctor of one's choice; making appointments for care by phone.

Also, the more first-contact access components that were highly rated, the more likely patients were to receive preventive services. For example, patients with at least two accessible components had a 6 percent increase in cholesterol checks, those with at least 6 accessible components had a 9–17 percent increase in flu shots, and those with at least 7 accessible components had a 12–14 percent increase in prostate screening. No significant increase in mammography screening was seen for any number of accessible first-contact access components. This was possibly because the need for mammography screening is well publicized by government agencies and nonprofit organizations, the researchers suggest.

The researchers used members of the 2003-2006 rounds of the Wisconsin Longitudinal Study as their subjects for an initial telephone interview, which was followed by a mailed survey. The study was funded in part by the Agency for Healthcare Research and Quality (HS16181).

More details are in "Number of first-contact access components required to improve preventive service receipt in primary care homes," by Nancy Pandhi, M.D., M.P.H., Jennifer E. DeVoe, M.D., D.Phil., Jessica R. Schumacher, Ph.D., and others in the June 2012 *Journal of General Internal Medicine* 27(6), pp. 677–684. ■ *DIL*

Higher scores as a patient-centered medical home linked to higher operating costs

The model of care known as a patient-centered medical home (PCMH) provides primary care and care management in a patient-centered environment that incorporates principles of quality improvement and enhanced care access. However, federally funded health centers that score higher on PCMH qualities have higher operating costs, reveals a new study. Patient tracking and quality improvement scores were most associated with these increased costs.

The researchers used a survey of all 1,009 federally funded community health centers to determine total PCMH scores ranging from 0 to 100. Six subscales were also measured: access/communication, care management, external coordination, patient tracking, test/referral tracking, and quality improvement. Costs were determined from data submitted to the Health Resources and Services

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Administration. The final study sample included 669 centers.

The average PCMH score was 60. Each 10-point higher total PCMH score resulted in a 4.6 percent higher operating cost per patient per month. Patient tracking and quality improvement were two of the six subscales associated with higher costs. A 10-point higher score for patient tracking cost the facility $27,300 more per physician full-time equivalent and $1.06 per patient per month. In the case of quality improvement, these costs were $32,731 and $1.86, respectively. Only one subscale, access/communication, was associated with lower operating cost. Here, a 10-point PCMH score resulted in a $39,809 lower cost per physician full-time equivalent. According to the researchers, payment models for PCMHs should be grounded in evidence-based observations of actual costs incurred by practices. The study was supported in part by the Agency for Healthcare Research and Quality (T32 HS00084).

See "Association between patient-centered medical home rating and operating cost at Federally-funded health centers," by Robert S. Nocon, M.H.S., Ravi Sharma, Ph.D., Jonathan M. Birnberg, M.D., M.S., and others in the July 4, 2012 *Journal of the American Medical Association* 308(1), pp. 60-66. ■ *KB*

Researchers develop a task list to evaluate primary care workflow

To maximize the usefulness of health information technology (IT) and quality improvement efforts, primary care clinics need tools to assist workflow analysis, so that they can plan for changes like electronic health records and the patient-centered medical home. One such tool is a generic clinician tasklist of activities performed in clinics so that those interested in studying their workflow have a template of tasks from which to work.

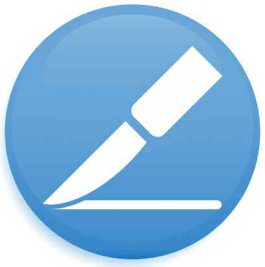
To meet this need, a team of researchers led by Tosha B. Wetterneck, M.D., M.S., of the University of Wisconsin developed a comprehensive but generic list of primary care physician (PCP) tasks that occur during a face-to-face patient visit. The list can be used as a workflow evaluation tool by health care professionals and organizations. The researchers developed the list based on two observational studies of 30 PCPs in 17 internal medicine and family medicine clinics in Wisconsin and Iowa.

The final task list has 12 major tasks defined by action verbs and 189 subtasks providing the object of the action for a grand total of 191 possible tasks. This list provides information about the types of tasks being performed, the sequence in which the tasks might be performed, the data sources used by the physician for a given task, and the contributions of other persons (e.g., medical students or caregivers) to the physician-patient visit.

The list is intended to be a flexible tool to assist individuals or groups in analyzing physician workflow before and after changes to the structure and processes of health care delivery, for example, implementation of electronic health records. It can also be used alone or in conjunction with other workflow analysis tools to gain a deeper understanding of a PCP's workflow, to see where problems lie, and where improvements can be made. This study was supported in part by the Agency for Healthcare Research and Quality (HS17014, HS17115, HS17899).

See "Development of a primary care physician task list to evaluate clinic visit workflow," by Dr. Wetterneck, Jamie A. Lapin, M.S., Daniel J. Krueger, Ph.D., and others in *BMJ Quality and Satisfaction* 21, pp. 47-53, 2012. ■ *MWS*

Surgeons are more reluctant to withdraw postoperative life support for patients with complications from surgeon error



Surgeons embrace the notion of personal responsibility for the surgical patient. This tradition has contributed to success in prolonging and improving patients' quality and length of life through surgical interventions. In some settings however, the surgeon's personal responsibility may conflict with patient autonomy when the surgeon is reluctant to withdraw life support after a poor outcome, despite a preference expressed by the patient for withdrawal of aggressive care. In fact, a new study reveals that surgeons are more reluctant to withdraw postoperative life-supporting therapy for patients with complications from surgeon error in elective rather than emergency surgeries.

The researchers surveyed 912 surgeons to find their reactions to a hypothetical vignette of a specialty-specific operation complicated by a hemiplegic stroke and respiratory failure. A premise of the vignette was that on postoperative day 7, the patient and family requested withdrawal of life-supporting therapy.

In response, 63 percent of the surgeons reported that they would not honor the request for withdrawal of life-supporting treatment. Surgeons who were told that the patient's complication was the result of surgeon error were significantly less likely to withdraw support than their colleagues who encountered a complication based on other factors (33 percent vs. 41 percent).

Similarly, surgeons queried about an elective operation were less likely to withdraw life-supporting therapy than those queries about surgery in an emergency setting (33 percent vs. 41 percent). Differences by specialty emerged, with cardiothoracic and neurosurgeons being less likely to withdraw life-support than vascular surgeons (30 and 37 vs. 45 percent).

The data suggest that commission of an error in surgical technique and prognostic optimism may present a challenge to patient autonomy. Particularly in settings in which there is a disagreement between patients and their families and the treating physician, the findings highlight the importance of frank discourse and, when needed, consultation with other disinterested parties in order to navigate what may be difficult postoperative decisionmaking.

The findings were based on a survey of members of regional vascular surgery societies, the Society of Thoracic Surgeons, and the Cerebrovascular Section of the American Association of Neurological Surgeons. The study was supported in part by the Agency for Healthcare Research and Quality (HS18960).

See "The role of surgeon error in withdrawal of postoperative life support," by Margaret L. Schwarze, M.D., Andrew J. Redmann, B.A., Karen J. Brasel, M.D., and G. Caleb Alexander, M.D., in the *Annals of Surgery* 256, pp. 10-15, 2012. ■ *MWS*

Pay-for-performance did not spur more rapid quality improvement among low-performing hospitals

Hospital pay-for-performance enjoys considerable support from policymakers and payers. Medicare's principal test of pay-for-performance, the Premier Hospital Quality Incentive Demonstration, changed its incentive design in its fourth year to encourage greater quality improvement, particularly among lower-performing hospitals.

However, the new incentive did not achieve its goal, concludes a study by researchers at Weill-Cornell Medical College and New York University. In practice, the new incentive design resulted in the strongest incentive for hospitals that had already achieved quality performance ratings just above the median for the entire group of participating hospitals. Yet, during the course of the program, these hospitals improved no more than others.

In phase 1 of the test, the demonstration paid a 2 percent bonus on Medicare reimbursement rates to hospitals performing in the top tenth of demonstration hospitals on a composite quality measure for each clinical diagnosis and procedure incentivized in the demonstration (heart attack, heart failure, pneumonia, bypass surgery,

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and hip and knee replacement) and a 1 percent bonus for hospitals performing in the second tenth.

During phase 2, in addition to an attainment award, hospitals were eligible for a top performer award and an improvement award. The improvement award was given to hospitals with scores above the median of demonstration hospitals in the current year and ranked in the top 20 percent of demonstration hospitals for quality improvement.

The quality of care for heart attack, heart failure, and pneumonia among demonstration hospitals improved more than that of matched comparison hospitals in phase 1. However, the demonstration hospitals experienced a weakening of quality improvement relative to matched comparison hospitals in phase 2.

The study evaluated the performance of 250 demonstration hospitals matched with 250 comparison hospitals. In phase 1, the amount of incentive payments averaged $8.2 million per year; by phase 2, the average payment averaged $12 million. This study was supported by the Agency for Healthcare Research and Quality (HS18546).

See "Medicare's flagship test of pay-for-performance did not spur more rapid quality improvement among low-performing hospitals" by Andrew M. Ryan, Ph.D., Jan Blustein, M.D., and Lawrence P. Casalino, M.D. in the April 2012 *Health Affairs* 31(40) pp. 797-805. ■ *MWS*

Process improvements in family practice lead to some improvements in intermediate outcomes

Process-of-care measures often form the core of pay-for-performance programs. Improvements in processes of care are significantly associated with improved patient outcomes for high blood pressure, stroke, diabetes, coronary heart disease, and epilepsy, according to a new study.

The total outcome improvement attributable to improved processes of care ranged from 17.7 percent for high blood pressure to 34.7 percent for stroke. Outcomes improvement for the other conditions measured was 29.6 percent for diabetes, 25.6 percent for coronary heart disease, and 29.1 percent for epilepsy.

The researchers studied specific processes of care for these five diseases and patient outcomes in the setting of a major pay-for-performance program. For processes of care, the researchers used all of the available indicators relating to measurement of disease parameters, including blood pressure, cholesterol, blood glucose level (HbA1c), beta blocker or other medicine prescribed. For outcomes, they used all available intermediate outcome indicators, including control of HbA1c, control of cholesterol, and control of blood pressure. Data came from 7,228 family practices in the United Kingdom's Quality and Outcomes Framework pay-for-performance program.

The researchers conclude that the process improvement reported in their study accounted for a small-to-moderate percentage of total outcome improvement. Their findings may accelerate a shift in policy focus away from processes and toward outcomes as measures of clinical effectiveness in the United Kingdom. The study was supported by the Agency for Healthcare Research and Quality (HS18546).

See "The effect of improving processes of care on patient outcomes" by Andrew M. Ryan, Ph.D., and Tim Doran, M.D., in the March 2012 *Medical Care* 50(3), pp. 191-199. ■ *MWS*

Patients with coronary artery disease who get ongoing support from their community pharmacy may adhere better to medications

Patients with coronary artery disease (CAD), who are discharged from the hospital on aspirin, a beta-blocker, and a statin, are more likely to keep taking their medications if the community pharmacist and physicians are more actively engaged and linked as part of a patient-focused intervention. That's the conclusion of a new study. The researchers developed an intervention to address some of the main reasons for lack of long-term adherence to prescribed medications such as incomplete knowledge of medications (including their benefits or harms), poor medication management skills, and insufficient social support.

The researchers compared patients discharged from the hospital who received the intervention with those who received usual care (discharge counseling and a letter to the community physician). The intervention consisted of educational materials beyond routine discharge counseling and a hospital pharmacist counseling patients and providing tools to overcome adherence barriers, such as a pocket medication card, list of tips, and a pillbox.

The hospital pharmacist in turn communicated the discharge medications and contact information to community pharmacists and physicians at the time of discharge, after which there was ongoing assessment of patient medication adherence by community pharmacists with physician contact as needed.

The researchers found no difference between self-reported adherence to the three medication types in the intervention and control groups (91 percent vs. 94 percent). For beta blocker and statin use through 6 months following discharge assessed with prescription refill records, adherence to these two drugs (defined as having the drugs for at least 75 percent of the follow-up days) was better for the intervention than the control group (53 percent vs. 38 percent), but this difference was not statistically significant. Adherence to beta blockers, however, was significantly better in the intervention than the control group (71 percent vs. 41 percent).

The researchers enrolled a total of 143 patients treated for CAD at Duke University Hospital or Southeastern Regional Medical Center in the trial, randomly assigning 71 patients to the intervention and 72 to the control arm. Out of the total, 108 (76 percent) completed the 6-month followup and 115 (80 percent) had 6-month refill records. This study was funded in part by the Agency for Healthcare Research and Quality (HS10548) to the Duke Center for Education and Research on Therapeutics (CERT). For more information on the CERTs program, visit www.certs.hhs.gov.

More details are in "Patient-focused intervention to improve adherence to evidence-based medications: A randomized trial," by Sara Bristol Calvert, Pharm.D., Judith M. Kramer, M.D., M.S., Kevin J. Anstrom, Ph.D., and others in the April 2012 *American Heart Journal* 163(4), pp. 657-665.e1. ■ *DIL*

An empowerment-based educational approach improves understanding and knowledge for patients with diabetes

Patient education is an integral component of high quality diabetes care. Guidelines for diabetes education stress the importance of teaching patients to know the clinical significance of the diabetes ABCs and to be aware of their own personal ABC values. ABC values are three key metabolic markers: hemoglobin A1c (a measure of blood-glucose control), systolic blood pressure, and low density lipoprotein cholesterol.

Study participants who received an empowerment educational intervention were much more likely to accurately recall the clinical meaning of the diabetes ABCs as well as their personal ABC values than participants in the traditional educational arm of a new study.

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Diabetes

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Researchers studied 84 patients with diabetes receiving care at a Veterans Administration Medical Center who self-selected into two groups. The first group received an empowerment approach incorporating a conceptual metaphor to foster understanding, and team-based learning methods to foster active learning. The second group received traditional diabetes education, including a didactic group session focused on self-management and educational materials about the diabetes ABCs.

The researchers believe that their findings should encourage changes in the methods used by diabetes educators to facilitate comprehension and application of the diabetes ABCs, especially in diabetes education programs that are linked to health systems and clinician teams. This study was supported in part by the Agency for Healthcare Research and Quality (HS16093).

See "Knowing the ABCs: A comparative effectiveness study of two methods of diabetes education" by Aanand D. Naik, M.D., Cayla R. Teal, Ph.D., Elisa Rodriguez, B.S., and Paul Haidet, M.D., in *Patient Education and Counseling* 85, pp. 383-389, 2012. ■ *MWS*

Abnormal electrocardiogram results nearly double the risk of cardiovascular-related death for patients without heart disease

Patients with an abnormal spatial QRS|T angle on an electrocardiogram (ECG) are at nearly double the risk of cardiovascular death (risk ratio of 1.82 for women and 2.21 for men), according to a new study. It also found that an abnormal QRS|T angle increased all-cause mortality risk by 30 percent for women and 87 percent for men. The QRS|T angle, which indicates whether the movement of electrical potential in the ventricle is normal or likely to result in arrhythmia, is measured on a 12-lead ECG that can give other prognostic measures of heart disease (e.g., the QT interval and ST-segment depression).

The researchers used baseline demographic, clinical, and ECG data on 7,052 individuals aged 40 and older without a history of heart disease, who were enrolled in the National Health and Nutrition Examination Survey between 1988 and 1994 and followed until death or the end of 2006. The researchers calculated the spatial QRS|T angle for each individuals. They categorized the QRS|T angle as normal (<75th percentile), borderline (≥75th but <90th percentile), or abnormal (≥95th percentile) separately for men and women. Men and women with gender-specific borderline QRS|T angles did not show significant increases in either cardiovascular or all-cause mortality. The QRS|T study was funded in part by the Agency for Healthcare Research and Quality (HS19465).

More details are in "Relations between QRS|T angle, cardiac risk factors, and mortality in the Third National Health and Nutrition Examination Survey (NHANES III)," by William Whang, M.D., M.S., Daichi Shimbo, M.D., Emily B. Levitan, Sc.D., and others in the April 2012 *American Journal of Cardiology* 109(7), pp.981-987. ■ *DIL*

Bevacizumab, when added to chemotherapy regimen for elderly patients with lung cancer, does not increase survival rates

Patients with non-small cell lung cancer (NSCLC) are usually diagnosed at an advanced stage when cure is rarely obtainable. Treatment outcomes from chemotherapy remain disappointing, with 1-year survival less than 50 percent. Bevacizumab is a new drug that inhibits tumor growth and metastases.

Following a clinical trial demonstrating a significant survival advantage for bevacizumab combined with carboplatin and paclitaxel over carboplatin-paclitaxel alone, the U.S. Food and Drug Administration approved bevacizumab-carboplatin-paclitaxel as treatment for advanced non-squamous cell NSCLC. However, a new study suggests that adding bevacizumab to the other two drugs does not confer a survival advantage for patients 65 years and older.

The researchers analyzed data on 5,670 patients 65 years and older from the SEER-Medicare database, with stage IIIB or stage IV non-squamous cell NSCLC,

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Lung cancer
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controlling for demographic and clinical patient attributes. Given the findings of their study and that of other research, the authors conclude that bevacizumab should not be considered standard of care in this context.

They recommend that clinicians exercise caution in making treatment recommendations and should use bevacizumab judiciously for their older patients. This study was supported by the Agency for Healthcare Research and Quality (Contract No. 290-10-00006).

See "Carboplatin and paclitaxel with vs without bevacizumab in older patients with advanced non-small cell lung cancer," by Junya Zhu, M.S., Dhruv B. Sharma, Ph.D., Stacy W. Gray, M.D., and others in the April 18, 2012 *Journal of the American Medical Association* 307(15), pp. 1593-1601. ■ *MWS*

Comparative Effectiveness

Benefits of case management for chronic illness limited

Case management (CM) has some limited impact on patient-centered outcomes, quality of care, and resource use among patients with chronic medical illness, according to a new research review by the Agency for Healthcare Research and Quality (AHRQ). Chronic diseases are the leading cause of illness, disability, and death in the United States. CM is one strategy for improving patient care through designating a member of the health care team to manage multiple aspects of a patient's care, including planning and assessment, coordination of services, patient education, and clinical monitoring.

The review found that CM improves the quality of care, particularly for patients with serious illnesses that require complex treatments such as cancer and tuberculosis. For a variety of medical conditions, CM improves medical adherence and self-management skills. The impact of CM may be greatest when it is targeted towards patients with the highest previous levels of health care use, such as those with low levels of social support or patients at highest risk for poor outcomes.

Evidence shows no significant difference in overall costs of care due to CM. No conclusions could be drawn about whether specific case management characteristics or patient characteristics affected outcomes. Future clinical research should address gaps in the current evidence base, including looking at effective risk-assessment tools for choosing candidates for CM, understanding the length of time necessary to continue CM, and examining with greater precision the intensity of CM interventions and the variable characteristics of case managers.

These findings and others can be found in the research review *Outpatient Case Management for Adults With Medical Illness and Complex Care Needs*, which can be accessed on the AHRQ Effective Health Care Program Web site at www.effectivehealthcare.ahrq.gov. ■

More research needed to compare therapies for colorectal cancer metastases is to the liver

A new research review concludes that in patients with liver metastases from colorectal cancer, there is not enough evidence available to compare the effectiveness of local liver therapies when surgery is not an option.

Not only is colorectal cancer the fourth most frequently diagnosed cancer and the second leading cause of cancer death in the United States, it is also the most common cancer that spreads to the liver. Therapies that target the liver are used with the goal of reducing the symptoms of the disease and/or extending the survival of these patients.

The review by the Agency for Healthcare Research and Quality (AHRQ) describes several types of therapies

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Colorectal cancer
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that target colorectal cancer that has spread to the liver in two different types of patients who are not candidates for surgery—those with most of the disease in their liver who are also receiving chemotherapy, and those who are not eligible for continued chemotherapy because the disease has progressed during treatment. The therapies addressed in the review that target the liver include ablation (destruction of tissue by heating or cooling), embolization (blocking blood vessels that feed the cancer), and radiotherapy (directed radiation to destroy cancer cells).

There are also extensive gaps in the research, even when looking at critical benefits or harms, and the quality of the available studies is generally low. A patient registry is one tool for future research that may generate ideas for clinical trials that can further test the effectiveness of these therapies.

These findings are available in the research review *Local Hepatic Therapies for Metastases to the Liver From Unresectable Colorectal Cancer* that can be found on AHRQ's Effective Health Care Program Web site at www.effectivehealthcare.ahrq.gov. ■

Some assessment tools and medications are effective for chronic cough

A new research review from the Agency for Healthcare Research and Quality (AHRQ) finds that several tools are valid and reliable for evaluating chronic cough severity, frequency, and impact on quality of life. Evidence suggests the Leicester Cough Questionnaire and Cough-specific Quality of Life Questionnaire for adults and the Parent Cough-specific Quality of Life questionnaire for children may be valid instruments. Electronic recording devices, in general, also appear to be valid assessments of cough frequency compared with human cough counts.

Cough is the most common complaint for which patients seek medical attention, accounting for over 26 million office visits annually. Cough that lasts more than 4 weeks in children younger than 14 years of age or more than 8 weeks in adolescents and adults 14 years of age and older is considered to be chronic by the American College of Chest Physicians.

While a wide variety of medicines have been used to treat the symptom of chronic cough, opioid and certain nonopioid/nonanesthetic antitussives demonstrated the most promise for managing chronic cough in adults. In particular, codeine and dextromethorphan were effective in reducing cough frequency and severity compared with a placebo.

However, given limited evidence it is too early to draw strong conclusions about the comparative effectiveness of these medicines. There is a need for further studies in patient populations with unexplained or refractory chronic cough that use more systematic design and reporting and include assessment of the patient-centered outcomes. This is in contrast to the more extensive literature on the management of acute cough.

These findings can be found in the research review *Assessment and Management of Chronic Cough* that can be found on AHRQ's Effective Health Care Program Web site at www.effectivehealthcare.ahrq.gov. ■

Both laparoscopic and open surgical techniques found effective for moving undescended testicles to normal position

A new review of the existing research on evaluation and treatment of undescended testicles (cryptorchidism) finds that both laparoscopic and open surgical techniques are effective for moving undescended testicles to a normal position in the scrotum. However, the review by the Agency for Healthcare Research and Quallity (AHRQ) also finds that no specific imaging technique can consistently determine the presence or absence of testicles or the location of undescended testicles. There also is not enough evidence to evaluate if hormonal stimulation testing can determine the absence of testicles.

Additional studies comparing various imaging techniques are needed to determine which

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Cryptorchidism

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techniques produce the best results and eliminate the need for surgical evaluation. Future studies should also seek to identify the appropriate age for treatment and which types of patients would benefit from hormonal treatment for undescended testicles, a treatment that has been shown to work in some people.

Cryptorchidism is a congenital condition in which one or both testicles are not appropriately positioned in the scrotum at birth and cannot be moved into the proper position manually. It affects an estimated 3 percent of full-term male neonates and up to 30 percent of premature infants, making it the most common male genital anomaly identified at birth.

These findings are available in the research review *Evaluation and Treatment of Cryptorchidism*, which can viewed at AHRQ's Effective Health Care Program Web site at www.effectivehealthcare.ahrq.gov. ■

Women's Health

Older women with breast cancer experience more complications with brachytherapy than whole breast irradiation

Women with early breast cancer typically receive a lumpectomy followed by either whole breast irradiation (WBI) or brachytherapy. Brachytherapy is a means of delivering radiation using an implanted radioactive source. Compared with WBI, it irradiates less breast tissue and requires a much shorter course of treatment. As many as 10 percent of older women with breast cancer are now treated with brachytherapy, and at least 50,000 have been treated to date in the United States. Older women receiving brachytherapy are more likely to have had a subsequent mastectomy, post-operative complications, and a higher incidence of breast pain, according to a new study. However, there was no difference in survival between the two groups of women.

The researchers retrospectively studied women aged 67 years or older with invasive breast cancer who underwent a lumpectomy and subsequently received either WBI (85,783) or brachytherapy (6,962). They were initially diagnosed between 2003 and 2007 and followed for up to 5 years.

The researchers caution that although their results await validation in a prospective study, they should also prompt caution over widespread application of breast brachytherapy outside of a research setting. Their study was supported by the Agency for Healthcare Research and Quality (HS18535).

See "Association between treatment with brachytherapy vs whole-breast irradiation and subsequent mastectomy, complications, and survival among older women with invasive breast cancer," by Grace L. Smith, Ph.D., Ying Xu, M.D., Thomas A. Bucholz, M.D., and others in the May 2, 2012 *Journal of the American Medical Association* 307(17), pp. 1827-1837. ■ *MWS*

Giving birth to a small gestational age infant increases likelihood of later maternal ischemic heart disease

The likelihood of developing ischemic heart disease (IHD) is nearly twice as high (9.6 percent vs. 5.7 percent) in women who deliver an infant small for gestational age (SGA), according to a new study. The strong association of delivery of a SGA infant with an increased maternal risk of IHD was independent of the family history of IHD, diabetes, stroke, or hypertension as well as other risk factors for IHD.

The researchers studied 6,608 women, of whom 453 women had IHD. There were 309 women who had delivered a SGA infant, corresponding to the national SGA rate of 4.1 percent among women with a prior term live birth. Delivery of a SGA infant preceded the presentation of IHD by a median of 30 years.

The results suggest that a pregnancy that produces a SGA infant induces long-term cardiovascular changes that augment risk for clinical IHD. But the mechanism linking delivery of

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Ischemic heart disease
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an SGA infant and the greater risk of IHD is uncertain.

See "Delivery of a small for gestational age infant and greater maternal risk of ischemic heart disease" by Radek Bukowski, M.D., Karen E. Davis, M.A., and Peter W. F. Wilson, M.D., in the March 2012 PLoS ONE 7(3), p. e33047. Reprints (AHRQ Publication No. 12-R081) are available from the Agency for Healthcare Research and Quality.* ■ *MWS*

Using a terbutaline pump to prevent preterm birth may be beneficial, but evidence suggests caution

Although it is considered an off-label use, terbutaline sulfate can be given to pregnant women to prevent uterine contractions for extended periods to prevent preterm birth. The infusion is given by a pump after the patient receives primary therapy with first-line agents. The efficacy and safety of this approach, however, remains uncertain. Researchers recently conducted a literature review and meta-analysis to evaluate these issues. While evidence suggested that pump therapy may be beneficial, the strength of the evidence was deemed low.

The final analysis consisted of 2 randomized trials (low and high risk of bias), 1 non-randomized trial (medium to high risk of bias, depending on outcome), and 11 observational studies (medium to high risk of bias). More than 70 percent of the included studies had at least 200 patients. The two small randomized control trials were considered underpowered to detect any differences in outcomes of effectiveness and harm.

Evidence was only of low strength to suggest that the pump may decrease the risk of neonatal death compared with oral medications in those patients with recurrent preterm labor and twin gestation. Observational studies tended to favor the pump at reducing the odds of delivering at less than 32 weeks in these women. The pump was also favored at preventing any preterm delivery at less than 37 weeks compared with oral agents or no treatment in women with recurrent preterm labor. Benefits were also observed for the pump for birth weight and neonatal intensive care unit admission. No evidence was available for bronchopulmonary dysplasia, death within initial hospitalization, incidence of delivery less than 28 or less than 34 weeks, and withdrawal due to adverse effects.

Based on postmarketing surveillance reports of maternal deaths and cardiovascular events, the FDA issued a warning in February 2011 against the use of terbutaline in general, and as an injection in particular, as maintenance tocolysis in pregnant women. The original review and analysis on which the journal article was based was supported by the Agency for Healthcare Research and Quality (Contract No. 290-07-10059).

See "Effectiveness of terbutaline pump for the prevention of preterm birth. A systematic review and meta-analysis," by Laura M. Gaudet, M.D., Kavita Singh, R.Ph., M.P.H., Laura Weeks, Ph.D., and others in the February 2012 *PLoS ONE* 7(2), pp. e31679 [open access]. ■ *KB*

Disparities/Minority Health

Factors linked to racial or ethnic disparities in U.S. fetal death rates differ among groups

The fetal death rates for all hospital deliveries occurring over more than a decade in three large States (3.3 per 1,000 deliveries overall) are higher for black women, Asian women, and Hispanic women (5.9, 3.2, and 3.6 per 1,000 deliveries, respectively) than for white women (2.6 per 1,000 deliveries), according to a new study. It also found that black women had the highest rate of low and very-low-birth-weight deliveries (often associated with fetal death) compared to the other racial/ethnic groups. Black and Asian women had high rates of certain complications that increase fetal death risk, such as small-for-gestational age fetuses and inflammation of the fetal membranes, compared with women

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Fetal death rates

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from other racial or ethnic groups. In addition, black women had a higher prevalence of placental disorders and pregnancy-induced hypertension, both of which were associated with a higher risk of fetal death.

When the possible mediating factors for fetal death were classified as socioeconomic factors, antepartum/intrapartum complications of pregnancy, or fetal factors, the researchers found different patterns of impact by each racial/ethnic group. Socioeconomic factors accounted for 15.7 percent of the difference in fetal death rate for black women, while ante- and intrapartum complications accounted for 29.7 percent, and fetal factors (birth weight, multiple gestation, and small-for-gestational age) accounted for 49.6 percent, leaving an unexplained disparity of 5.0 percent.

Socioeconomic factors accounted for 35.8 percent of the disparity for Hispanic women, while the other two categories had no significant impact, leaving 64.2 percent residual disparity. For Asian women, socioeconomic and ante/intrapartum complications accounted for 37.8 percent and 62.2 percent of the disparity, respectively, leaving 3.4 percent of factors related to fetal death unexplained.

The findings were based on data on 7.1 million hospital deliveries in California, Missouri, and Pennsylvania between January 1, 1995, and June 30, 2005 and analysis of 23,471 fetal deaths. The study was supported in part by the Agency for Healthcare Research and Quality (HS15696).

More details are in "Factors that mediate racial/ethnic disparities in US fetal death rates," by Scott A. Lorch, M.D., M.S.C.E., Charlan D. Kroelinger, Ph.D., Corinne Ahlberg, M.S., and others in the October 2012 *American Journal of Public Health* 102(10), pp. 1902-1910. ■ *DIL*

Rural patients with a serious form of gallstone disease are less likely than urban patients to receive treatment

When gallstones are caught in the common bile duct that carries bile (that helps digest fats) from the liver to the gallbladder, it can cause potentially life-threatening complications such as inflammation of the pancreas and infection of the common bile duct. Rural patients with this type of gallstone disease, choledocholithiasis (CDL), are less likely to receive treatment than their urban counterparts, and are more likely to undergo more invasive open surgery rather than endoscopic surgery, reveals a new study.

Treatment choices (endoscopic, surgical, percutaneous) may differ, based on disease severity and presentation and availability of resources and personnel. The researchers examined the records of 111,021 hospital discharges for patients with CDL. They found that 81 percent of patients lived in urban areas and 19 percent in rural areas. Of these patients, 61 percent had uncomplicated CDL and 39 percent complicated CDL. No difference was found in the proportion of urban-rural patients with complicated CDL. However, urban patients were more likely to undergo intervention, which tended to be endoscopic.

A possible explanation may be that physicians and patients in rural settings are less likely to have endoscopic procedures available to them. Rural patients also received a higher proportion of elective procedures than urban patients (35 percent vs. 17 percent). The researchers suggest that rural facilities may not have available staffing to provide emergency procedures. This study was supported by the Agency for Healthcare Research and Quality (T32 HS13853).

See "An urban-rural blight? Choledocholithiasis presentation and treatment," by Julia Shelton, M.D., Kristy Kummerow, M.D., Sharon Phillips, M.S.P.H., and others in the *Journal of Surgical Research* 173, pp. 193-197, 2012. ■ *MWS*

Criminal justice system may create and aggravate health disparities among minorities

Health disparities among racial and ethnic minorities may become exacerbated at several stages of the criminal justice system, resulting in poor health outcomes, reveals a new study. One model suggests that incarceration impacts health outcomes independent of race and ethnicity. However, given that blacks and Hispanics are more likely to be incarcerated compared to whites, this makes them disproportionately affected by any impact.

Those involved with the criminal justice system already are at risk for poor health outcomes. The health care provided in different situations can greatly affect these racial and ethnic disparities. This is particularly true for those on probation and parole, who have inadequate access to quality care. Another model suggests no causal relationship between incarceration and health. In this case, factors related to poor health, such as educational level and violence exposure, also have a disproportionate effect on predisposing someone to become involved in the criminal justice system.

A final model suggests that the criminal justice system does have a differential effect among racial and ethnic groups. It assumes that this system has the same disparities observed in the general health care system. Regardless of the model used to look at this problem, the researchers see the criminal justice system as an opportunity to decrease health disparities among its population.

More interventions are needed at entry into incarceration, during custody, when transitioning to the community, and during parole and probation. The researchers recommend conducting evidence-based screenings, not only for standard health conditions, but also for high-risk issues faced by this population, such as HIV infection, hepatitis C infection, and tuberculosis. Since those on parole and probation are particularly vulnerable to inadequate access to care, coordination between correctional and community health services is critical. Getting individuals back on health insurance coverage and providing community supervision environments can also help promote continued screenings, follow-up, and medication compliance. The study was supported in part by the Agency for Healthcare Research and Quality (HS19464).

See "Health disparities and the criminal justice system: an agenda for further research and action," by Ingrid A. Binswanger, M.D., M.P.H., Nicole Redmond, M.D., Ph.D., M.P.H., John F. Steiner, M.D., M.P.H., and Le Roi S. Hicks, M.D., M.P.H., in the *Journal of Urban Health* 89(1), pp. 98-107, 2012. ■ *KB*

Mental Health

Co-occurring mental disorders such as PTSD and panic disorder prompt the depressed to seek earlier treatment

The lag time between the onset of major depressive disorder (MDD) and beginning treatment is a median of 8 years. People with MDD seek treatment for their depression more quickly if they also suffer from panic disorder, generalized anxiety disorder, post-traumatic stress disorder (PTSD), or other mental disorders besides the depression, reveals a new study. These individuals were more likely to seek treatment and to seek it earlier than were people with MDD and no coexisting mental disorders.

Being male, black, or Asian was significantly associated with a longer time to begin treatment than being female or white. Other factors associated with shorter time to seeking initial treatment were onset of depression, being older than 55, having 13 or more years of formal education at depression onset, and being married at the time of depression onset. The findings suggest the importance of outreach to persons with MDD who have no other psychiatric conditions.

The investigators analyzed data from face-to-face interviews with 43,093 participants in the first wave of the National Epidemiologic Survey on Alcohol and

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Related Conditions, including 5,958 with MDD anytime during their lives. The study was funded in part by the Agency for Healthcare Research and Quality (HS16097).

More details are in "Influence of comorbid mental disorders on time to seeking treatment for major depressive disorder," by Mark Olfson, M.D., M.P.H., Shang-Min Liu, M.S., Bridget F. Grant, Ph.D., and Carlos Blanco, MD., Ph.D., in the March 2012 *Medical Care* 50(3), pp. 227-232. ■ *DIL*

Health Care Costs and Financing

People harmed by unintentional, non-fire-related carbon monoxide poisoning results in hospital costs of more than $26 million

Several situations can place people at risk for unintentional and non-fire-related carbon monoxide (CO) poisoning. These include poorly ventilated heating systems, defective cooking appliances, portable generators, space heaters, and motor vehicle exhaust. These carbon monoxide poisonings kill approximately 450 people each year and hospitalizations for them cost more than $26 million each year.

Anne Elixhauser, Ph.D., a researcher with the Agency for Healthcare Research and Quality (AHRQ) and colleagues at the Centers for Disease Control and Prevention analyzed information on CO poisonings from inpatient and emergency department (ED) data contained in the 2007 AHRQ Hospitalization Cost and Utilization Project database.

During 2007, there were 232,875 visits to the ED and 22,718 hospitalizations for this type of CO poisoning. The percentage deemed confirmed cases were 9 percent and 10 percent, respectively. Individuals aged 18 to 44 years had the highest rate of ED visits for confirmed cases, followed by those aged 0 to 17 years. However, the highest rate of hospitalization was for those aged 85 years or older. Female victims of poisoning visited EDs more often than men, but men were more likely to be hospitalized.

Rates of ED visits and hospitalizations were highest for residents of nonmetropolitan areas in the Northeast and Midwest. More than 60 percent of exposures to CO occurred at home. The mortality rate was 0.2 percent in the ED and 2.1 percent after hospitalization. When hospitalized, patients stayed an average of 4.9 days at a cost of $11,381. Higher rates of ED visits and hospitalizations were found for the winter months of November to March. The researchers recommend that prevention strategies continue to focus on educating the public about using CO alarms in the home.

More details are in "Hospital burden of unintentional carbon monoxide poisoning in the United States, 2007," by Shahed Iqbal, Ph.D., Huay-Zong Law, B.S., Dr. Elixhauser, and others in the *American Journal of Emergency Medicine* 30, pp. 657-664, 2012. Reprints (AHRQ Publication No. 12-R095) are available from AHRQ.* ■ *KB*

Teamwork key to long-term sustainability of health IT systems

A new report from the Agency for Healthcare Research and Quality highlights the cumulative experiences of over 100 grantees that implemented major health information technology (IT) projects between 2004 and 2007. The report, *Effective Teamwork and Sustainability in Health IT Implementation*, reviews grantee experiences related to planning, long-term use, partnerships, vendor relationships, and end-user perceptions a few years after the end of the project period.

This initiative was unique because it supported planning for health IT among rural health care organizations. The most important factors reported to affect sustainability of health IT were the ability to demonstrate benefits from health IT to grantees' organizations, clinician support, and cost-related issues. Grantees reported that most health IT products that were implemented and upgraded during the study continue to be used. However, they reported that in order for health IT projects to be successful, clinician buy-in and support had to be established early in the planning period and sustained during implementation and maintenance phases.

Effective planning, including completing a detailed workflow analysis, implementation plan, and process re-design assessment prior to implementation, were strong markers of long-term viability. Strategic partnerships were another indicator for success. Trusted partners with implementation experience provided practical advice that helped grantees anticipate and overcome common challenges in health IT implementation.

The majority of grantees reported that health IT upgrades were beneficial to the organization and that ongoing investments in health IT infrastructure were warranted. The report includes an organizational readiness checklist to help health professionals identify and mediate obstacles to successful health IT implementation. For more information, please visit http://healthit.ahrq.gov/THQIT. ■

Analyzing electronic health record data can help identify the overuse of cervical cancer screening

As health care costs continue to rise, policymakers look for ways to reduce spending. One way to do this is by identifying low-value preventive services, such as annual Pap tests for women at low-risk for cervical cancer. Electronic health record (EHR) data may help contribute to this identification process, according to a new study.

Researchers used an electronic query of EHR data to identify women aged 30 to 65 years old who were at low-risk of cervical cancer and therefore eligible for an extended Pap testing interval of 3 years instead of the usual once-a-year Pap test.

Patient data were obtained from a large general internal medicine clinic in Chicago consisting of 38 internists and 60,000 clinic visits annually. The EHR system included a clinical decision support feature with a point-of-care reminder to perform Pap testing yearly or less often if changed by the physician.

An electronic query identified women with a negative Pap test in 2007 and two prior negative tests in 2004–2006. These women, as well as those with negative Pap and human papillomavirus tests in 2007 were all deemed as low-risk women for cervical cancer and eligible for extended screening intervals.

The electronic query identified 4,002 women who received a negative Pap test in 2007. Of these, 1,705 were eligible for extended screening. A total of 66 percent of low-risk women received a Pap test sooner than the recommended interval for them. The query was

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accurate at identifying women at low risk of cervical cancer and low-value Pap testing. When the researchers calculated the costs of these unnecessary Pap tests and of colposcopies for false-positive results, the cost was estimated to be $100,000. The study was supported by the Agency for Healthcare Research and Quality (T32 HS00078).

See "Use of electronic health record data to evaluate overuse of cervical cancer screening," by Jason S. Mathias, M.D., Dana Gossett, M.D., and David W. Baker, M.D., M.P.H., in the June 1, 2012 *Journal of the American Medical Informatics Association* 19, (e1), pp. e96-e101. ■ *KB*

Announcements

HCUP 2010 NEDS database now available

The 2010 Nationwide Emergency Department Sample (NEDS) database (www.hcup-us.ahrq.gov/nedsoverview.jsp) was released in early December. Yielding national estimates of emergency department (ED) visits, the NEDS is the largest all-payer ED database in the United States and contains information about geographic, hospital, patient, and visit characteristics. The NEDS is one of the databases in the family of products generated by the Healthcare Cost and Utilization Project (HCUP) of the Agency for Healthcare Research and Quality (AHRQ).

Select aggregated statistics from the 2010 NEDS can be accessed via HCUPnet (http://hcupnet.ahrq.gov), the free, online query system that yields statistics using HCUP data. For example, on HCUPnet, one can find that there were 128,970,364 ED visits in 2010, with 15.3% of them resulting in hospital admission. A trends query for the NEDS was added to HCUPnet, providing national trends on stays and diagnoses from 2006 to 2010.

The 2010 NEDS is available for purchase through the HCUP Central Distributor at http://hcup-us.ahrq.gov/tech_assist/centdist.jsp. ■

Baskin, R.M., Sangl, J., and Zodet, M.W. (2012). "Effect of different imputation methods on factor analyses of CAHPS Nursing Home Survey." ***Proceedings of the Federal Commission on Statistical Methodology 2012 Research Conference*****, pp. 10-12. Reprints (AHRQ Publication No. 13-R007) are available from the Agency for Healthcare Research and Quality.***

The authors discuss validation of a five-factor analysis model using CAHPS (Consumer Assessment of Healthcare Providers and Systems) Nursing Home Survey data on recently discharged short-stay residents. The data used came from a survey of 1,828 recently discharged short-stay residents conducted by the State of Maryland. The results indicate the quality of the questions does not allow a determination if the five- or four-factor model is more appropriate.

Birken, S.A., Lee, S.-Y.D., and Weiner, B.J. (2012). "Uncovering middle managers' role in healthcare innovation implementation." (AHRQ grant HS19107). ***Implementation Science*** **7, p. 28.**

The authors suggest that the role of middle managers in healthcare innovation implementation has been overlooked. They present a theory of middle managers' role in this process to fill the gap in the literature and to stimulate research that empirically examines middle managers' influence on innovation implementation in health care organizations.

Boyce, R.D., Hanlon, J.T., Karp, J.F., and others. (2012). "A review of the effectiveness of antidepressant medications for depressed nursing home residents." (AHRQ grant HS19461). ***Journal of the American Medical Directors Association*** **13, pp. 326-331.**

The limited amount of available evidence from randomized and non-randomized open-label trials suggests that depressed nursing home residents have a modest response to antidepressant medications. This conclusion is based on a review of 11 studies, only 4 of which were randomized.

Chang, S.M., Carey, T.S., Kato, E.U., and others. (2012). "Identifying research needs for improving health care." ***Annals of Internal Medicine*** **157, pp. 439-445. Reprints (AHRQ Publication No. 13-R004) are available from the Agency for Healthcare Research and Quality.***

To encourage patient-centered research, in 2010 the Agency for Healthcare Research and Quality initiated a new effort to better define patient-centered research needs from selected systematic reviews. These stand-alone reports on future research needs span multiple topic areas. This article describes the challenges and lessons learned from this initial effort in developing a systematic approach to identifying and prioritizing future research needs.

Clancy, C.M. (2012). "National Health IT Week: Celebrating HIT as an essential tool." ***Government HealthIT*** **at: http://www.ncbi.nlm.nih.gov/pubmed/22822170. Reprints (AHRQ Publication No. 13-R005) are available from the Agency for Healthcare Research and Quality.***

In this article, Carolyn M. Clancy, M.D., director of the Agency for Healthcare Research and Quality (AHRQ), briefly reviews the Agency's commitment to health information technology (IT). She discusses several AHRQ-funded projects, Project ECHO, Project RED, and the Active Aging Research Center as well as several recently released AHRQ products: the Workflow Assessment for Health IT Toolkit, the Toolset for E-Prescribing Implementation in Physician Offices, and an Interactive Preventive Care Record.

Clancy, C.M. (2012). "More hospitals begin to apply lessons from seven pillars process." ***Perspectives*****. Reprints (AHRQ Publication No. 13-R010) are available from the Agency for Healthcare Research and Quality.***

Carolyn M. Clancy, M.D., director of the Agency for Healthcare Research and Quality (AHRQ), describes the Seven Pillars process, a full-disclosure alternative to the medical liability system. Following a 2-year pilot test at the University of Illinois, AHRQ is supporting a 3-year demonstration project in 10 Chicago-area hospitals. The process seeks to prevent patient harm by

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reporting and correcting flaws in processes that can undercut the work of clinicians.

Clancy, C.M. (2012). "Reducing hospital readmissions: Aligning financial and quality incentives." ***American Journal of Medical Quality*** **27(5), pp. 441-443. Reprints (AHRQ Publication No. 13-R005) are available from the Agency for Healthcare Research and Quality.***

Preventing hospital readmissions is a high priority for health care organizations across the United States. Carolyn M. Clancy, director of the Agency for Healthcare Research and Quality (AHRQ), discusses efforts by various public and private health care organizations to address factors leading to frequent readmissions. Her discussion of AHRQ's contributions includes Project RED (Re-Engineered Discharge), Patient Safety Organizations, and Common Formats.

Concannon, T.W., Meissner, P., Grunbaum, J.A., and others. (2012). "A new taxonomy for stakeholder engagement in patient-centered outcomes research." (AHRQ grants HS17726, HS19464). ***Journal of General Internal Medicine*** **27(8), pp. 985-991.**

To date, no common taxonomy exists to guide researchers and stakeholders into a new era of stakeholder-engaged research. The authors set out to develop such a taxonomy by answering three key questions: (1) Who are the stakeholders in patient-centered outcomes research (PCOR) and comparative effectiveness research (CER)? (2) What roles and responsibilities can stakeholders have in PCOR and CER? (3) How can researchers start engaging stakeholders?

Crews, D.C., Greer, R.C., Fadrowski, J.J., and others. (2012). "Setting an agenda for comparative effectiveness systematic reviews in CKD care." (AHRQ Contract No. 290-07-10061). ***BMC Nephrology*** **13, p.74.**

There has been, thus far, little effort to identify priorities for comparative effectiveness research (CER) among stakeholders in the chronic kidney disease (CKD) community and to share this with the CKD community at large, note these authors. They engaged stakeholders within the CKD community to identify and prioritize topics for future CER systematic reviews and to help set an agenda for future primary CER studies of CKD care.

Croswell, J. and Costello, A. (2012). "Screening for cervical cancer." ***American Family Physician*** **86(6), pp. 561-564. Reprints (AHRQ Publication No. 13-R012) are available from the Agency for Healthcare Research and Quality.***

This article presents a case study of a 45-year-old woman who comes to the office for a routine well-woman examination. She asks the doctor to perform an annual Pap smear. Her medical records are available to consult. The study asks three questions (with multiple choice answers) about this case. Correct answers about proper screening for cervical cancer are given at the end.

Cummins, M.R., Crouch, B.I., Gesteland, P., and others. (2012). "Electronic information exchange between emergency departments and poison control centers." (AHRQ grant HS18773). ***Clinical Toxicology*** **50, pp. 503-513.**

As Federal initiatives push to increase clinical health information exchange, it is essential to assess the readiness of U.S. poison control centers. The authors conducted a nationwide Delphi study to determine consensus on legal, operational, and clinical considerations that are important for electronic information exchange between emergency departments and poison control centers.

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de Cordova, P.B., Phibbs, C.S., Bartel, A.P., and Stone, P.W. (2012). "Twenty-four/seven: A mixed-method systematic review of the off-shift literature." (AHRQ grant HS18216). ***Journal of Advanced Nursing*** **68(7), pp. 1454-1468.**

The authors conducted a systematic review aimed at synthesizing qualitative and quantitative evidence of 'off-shifts' (nights, weekends, holidays) on quality and employee outcomes in hospitals. One conclusion was that patients are more likely to not receive necessary procedures and to die on weekends. Also, employees who work at night are more likely to suffer from fatigue than daytime employees.

Dossett, L.A., Fox, E.E., del Junco, D.J., and others. (2012). "Don't forget the posters! Quality and content variables associated with accepted abstracts at a national trauma meeting." (AHRQ grant T32

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HS13833). *Journal of Trauma* 72(5), pp. 1429-1434.
Since the methodological quality of abstracts submitted to national surgical meetings has not been previously described, it is uncertain to what degree they achieve scientific merit and research quality. After reviewing all abstracts accepted for a 2009 meeting of trauma surgeons, the authors found that the methodological quality of accepted poster abstracts equals and sometimes exceeds that of oral abstracts.

Goeschl, C.A., Weiss, W.M., and Pronovost, P.J. (2012). "Using a logic model to design and evaluate quality and patient safety improvement programs." (AHRQ grant HS14246). *International Journal for Quality* 24(4), pp. 330-337.
The authors had previously developed a program to reduce central line-associated bloodstream infections. The program spread across the U.S. and to various foreign countries. This success led them to the development of a logical framework approach (LFA) to guide project management, to incorporate the cultural, clinical, and capacity variations among countries, and to ensure early alignment of the project's design and evaluation. The paper describes the use of the LFA to systematically design, implement, and evaluate large-scale, multi-faceted, quality improvement programs.

Gonzales, A.A., Garroutte, E., Ton, T.G.N., and others. (2012). "Effect of tribal language use on colorectal cancer screening among American Indians." (AHRQ grant HS10854). *Journal of Immigrant Minority Health* published online March 9, 2012.
The researchers examined whether tribal language use by American Indians was associated with knowledge and use of colorectal cancer screening (CRC). They found that participants who primarily spoke English were no more aware of CRC screening tests that those who primarily spoke a tribal language.

Goodwin, J.C., Johnson, T.R., Cohen, T., and others. (2012). "Predicting biomedical document access as a function of past use." (AHRQ grant T32 HS17586). *Journal of the American Medical Informatics Association* 19, pp. 473-478.
The researchers sought to determine whether past access to biomedical documents can predict future document access. They used two document access models, one based on frequency and the other based on frequency and recency. The model based on frequency only had a much higher correlation with empirical data than the other model.

Hacker, K., Penfold, R., Zhang, F., and Soumerai, S.B. (2012, March). "Impact of electronic health record transition on behavioral health screening in a large pediatric practice." *Psychiatric Services* 65(3), pp. 256-261.
As electronic health records (EHRs) continue to be implemented in health care settings, debate continues as to their actual impact on clinical outcomes. In pediatrics, EHRs have been shown to improve the rates and timeliness of immunizations. Now, a new study investigates how changing over to EHRs affects behavioral health screening. It finds the transition period to be especially difficult, with declines in screening rates. In addition, this disruption took a long time before rates returned back to normal.

Herrinton, L.J., Curtis, J.R., Chen, L. and others. (2011, November). "Study Design for a Comprehensive Assessment of Biologic Safety Using Multiple Healthcare Data Systems." (AHRQ grant HS17919). *Pharmacoepidemiology and Drug Safety* 20(10), pp. 1199-1209.
The Safety Assessment of Biologic Therapy collaborative conducted a cohort study examining risks of seven classes of adverse events in relation to biologic treatments prescribed for seven autoimmune diseases. The cohort included 159,000 individuals with rheumatic diseases, 33,000 with psoriasis, and 46,000 with inflammatory bowel disease. This report summarizes demographic characteristics and drug exposures. Further reports will provide outcome definitions and estimated hazard ratios for adverse events.

Hill, S.C., Zuvekas, S.H., and Zodet, M.W. (2012). "Validity of reported Medicare Part D enrollment in the Medical Expenditure Panel Survey." *Medical Care Research and Review* 69(6), pp. 737-750. Reprints (AHRQ Publication No. 13-R008) are available from the Agency for Healthcare Research and Quality.*
Previously, there have been no studies of the accuracy of reporting Part D coverage in surveys. The authors validate reported Part D coverage in the Medical Expenditure Panel Survey and assess the impact of misreporting on descriptive and behavioral

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analyses. They find that accuracy varies little by sociodemographic group and that behavioral analyses are largely unaffected by misreporting.

Jonas, D.E., Garbutt, J.C., Amick, H.R. and others. (2012, November). "Behavioral counseling after screening for alcohol misuse in primary care: A systematic review and meta-analysis for the U.S. Preventive Services Task Force. (AHRQ contract no. 290-07-10056). ***Annals of Internal Medicine*** **157, pp. 645-654.**

This review examined the benefits and harms of behavioral counseling interventions for adolescents and adults who misuse alcohol. Based on results from 23 studies, the reviewers concluded that behavioral interventions improve behavioral outcomes for adults with risky drinking. Among these adults, comsumption decreased by 3.6 drinks per week from baseline. Evidence was insufficient to draw conclusions about accidents, injuries, or alcohol-related liver problems.

Kaplan, C.P., Kim, S.E., Wong, S.T., and others. (2012). "Willingness to use tamoxifen to prevent breast cancer among diverse women." (AHRQ grant HS10856). ***Breast Cancer Research and Treatment*** **133, pp. 357-366.**

A goal of this study was to determine whether knowledge of the benefits and risks of tamoxifen affects a woman's willingness to take it to prevent breast cancer. The researchers found that over 40 percent of the women surveyed said they would likely take tamoxifen if determined to be at high risk. Factors affecting women's willingness to take breast cancer chemoprevention drugs are not determined solely by knowledge of risk/benefit or risk perception.

Kesselheim, A.S. (2012, August). "Ethical considerations in orphan drug approval and use." (AHRQ HS18465). ***Clinical Pharmacology & therapeutics*** **92(2), pp. 153-155.**

The author of this commentary points out that orphan drugs are often approved with more limited premarket testing than that carried out for nonorphan drugs and consequently expose patients to more risk and less certain efficacy. Therefore, he suggests that, based on ethical principles of justice and beneficence, more attention should be paid to informed consent among patients who receive orphan drugs. He also calls for greater investment in postmarket surveillance and confirmational testing.

Kim, H., Park, S.B., Monroe, J.L., and Soho, J.W. (2012). "A new quantification measure of the difference between two organ contours." (AHRQ grant HS17424). ***Medical Physics*** **39(8), p. 3678.**

Quantifying the geometric difference between two organ/target surfaces is essential for radiation therapy planning and delivery. The researchers succeeded in proving that a new Error-Proof Distance Measure is a robust and accurate way to compare two 2D or 3D surfaces.

Klabunde, C.N., Marcus, P.M., Han, P.J.K., and others. (2012). "Lung cancer screening practices of primary care physicians: Results from a national survey." ***Annals of Family Medicine*** **10(2), pp. 102-110.**

A majority of primary care physicians (72 percent) reported ordering lung cancer screening tests within the past year for patients without symptoms or an extensive history of smoking, a new study reports. The researchers note that the lack of evidence from large randomized, controlled studies has prevented major professional or other expert groups from making recommendations on screening asymptomatic individuals for lung cancer, even if they have histories of heavy or long-term smoking.

Kramer, D.B., Xu, S., and Kesselheim, A.S. (2012). "How does medical device regulation perform in the United States and the European Union? A systematic review." (AHRQ grant HS18465). ***PLoS Medicine*** **9(7), p. e1001276.**

To answer the question posed in their title, the authors performed a systematic review of 20 empirical studies. They found that these studies of United States and European Union device approval and post-market evaluation performance suggest that policy reforms are necessary for both systems, including improving classification of devices in the United States and promoting transparency and post-market oversight in the European Union.

Kundrapu, S., Sunkesula, V., Jury, L.A., and others. (2012, October). "Daily infection of high-touch surfaces in isolation rooms to reduce contamination

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of healthcare workers' hands." (AHRQ grant HS20004). *Infection Control and Hospital Epidemiology* 33(1), pp. 1039-1042.
This randomized trial demonstrated that daily disinfection of high-touch surfaces in rooms of patients with *Clostridium difficile* infection and methicillin-resistant *Staphylococcus aureus* (MRSA) colonization reduced the transmission of these pathogens onto hands of those contacting high-touch surfaces. This approach also reduced contamination of hands of health care workers caring for patients.

Leeman, J., Sommers, J., Vu, M., and others. (2012). "An evaluation framework for obesity prevention policy interventions." (AHRQ grant HS19468). *Preventing Chronic Disease* 9, 1103-1122.
Little is known about policy approaches that are most effective for obesity prevention. The authors present a framework for evaluating policy interventions that was developed by the Center of Excellence for Training and Research Translation to build public health practitioners' capacity to evaluate policy. The framework is designed for use by practitioners working as partners and evaluators in public policy initiatives at the State or local level.

Linder, J.A. (2012, October). "Vitamin D and the cure for the common cold." *Journal of the American Medical Association* 308(13), pp. 1375-1376.
This editorial discusses a rigorous clinical trial in the same journal issue that looked at whether vitamin D supplementation can reduce upper respiratory tract infections in healthy adults. The investigators used a once-monthly high dose of vitamin D, which has been linked to the lowest risk of respiratory infections in observational studies on healthy adults. The number of upper respiratory infections was not different between the intervention and control groups (both of whom had sufficient levels of vitamin D).

Melnyk, B.M., Grossman, D.C., Chou, R., and others. (2012). "USPSTF perspective on evidence-based preventive recommendations for children." *Pediatrics* 130(2), pp. e399-e3407. Reprints (AHRQ Publication No. 13-R003) are available from the Agency for Healthcare Research and Quality.*
In this article, the authors describe the following: (1) evidence-based primary care preventive services as a strategy for addressing important pediatric morbidities, (2) the process used by the United States Preventive Services Task Force (USPSTF) in making evidence-based screening recommendations, (3) the current library of USPSTF recommendations for children and adolescents, and (4) factors influencing the use of USPSTF recommendations and other guidelines by clinicians.

Morrato, E.H., and Allison, D.B. (2012, September). "FDA approval of obesity drugs: A difference in risk-benefit perceptions." (AHRQ grant HS19464). *Journal of the American Medical Association* 308(11), pp. 1097-1098.
These authors note that in the past decade, three obesity drugs were removed from the U.S. market, and until last month, only one new obesity drug had been approved since 1999. They suggest that the FDA encourage formal risk-benefit modeling to project the number of adverse health outcomes avoided through weight reduction against the number of serious adverse effects expected. They also encourage more discussion of assumptions about these drugs. Finally, they suggest assigning numerical values of risk-benefit perceptions from surveys of patients and physicians.

Mueller, S.K., Sponsler, K.C., Kripalani, S., and Schnipper, J.L. (2012). "Hospital-based medication reconciliation practices." (AHRQ grant HS19598). *Archives of Internal Medicine* 172(140), pp. 1057-1069.
This review aims at summarizing available evidence on medication reconciliation interventions in the hospital setting and identifying most effective practices. The authors conclude that rigorously designed studies comparing different medication reconciliation practices and their effects on clinical outcomes are scarce. The available evidence supports reconciliation interventions that heavily use pharmacy staff and focus on patients at high risk for adverse events.

Nichols, G.A., Desai, J., Lafata, J.E., and others. (2012). "Construction of a multisite DataLink using electronic health records for the identification, surveillance, prevention, and management of diabetes mellitus: The SUPREME-DM Project." (AHRQ grant HS19859). *Preventing Chronic Disease* 9, p. 110311.
The objective of this study was to identify the number of people with

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diabetes from a diabetes DataLink developed as part of the SUPREME-DM (SUrveillance, PREvention, and ManagEment of Diabetes Mellitus) project, a consortium of 11 integrated health systems that use comprehensive electronic health records for research. The 11 health systems had 1,085,947 enrollees who met 1 or more study criteria for diabetes.

Nishisaki, A., Donoghue, A.J., Colborn, S., and others. (2012, July). "Development of an instrument for a primary airway provider's performance with an ICU multidisciplinary team in pediatric respiratory failure using simulation." (AHRQ grant HS16678). *Respiratory Care* 57(7), pp. 1121-1128.

The researchers developed a task-based scoring instrument (the Just-in-Time Pediatric Airway Provider Performance Scale, version 3) for a primary airway provider's performance with a multidisciplinary pediatric intensive care unit team on simulated pediatric respiratory failure. Reliability and validity evaluation supports the developed scale.

Osborn, C.Y., Rosenbloom, S.T., Stenner, S.P., and others. (2012). "MyHealthAtVanderbilt: Policies and procedures governing patient portal functionality." (AHRQ grant HS19276, HS18168). *Journal of the American Medical Informatics Association* 18, pp. i18-i23.

This paper describes procedures and policies directing the functionality of MyHealthAtVanderbilt (MHAV), a patient portal for Vanderbilt University Medical Center. The authors elaborate on popular portal functions and discuss how guiding principles have addressed common user concerns and have facilitated adoption and usage of MHAV.

Overby, C.L., Devine, E.B., Tarczy-Hornoch, P., and Kalet, I.J. (2012). "Deriving rules and assertions from pharmacogenomics knowledge resources in support of patient drug metabolism efficacy predictions." (AHRQ grant HS14379). *Journal of the American Medical Informatics Association* 19, pp. 840-850.

Pharmacogenomics evaluations of variability in drug metabolic processes may be useful for making individual drug response predictions. The authors implement a knowledge-based model for calculating phenotype scores from patient-specific genotype data. Their model illustrates a knowledge-based approach to predict drug metabolism efficacy given patient genomics data. The utility of the model is demonstrated in a tamoxifen case study.

Park, S.B., Kim, H., Yao, M., and others. (2012). "Building deformation error histogram and quality assurance of deformable image registration." (AHRQ grant HS17424). *Medical Physics* 39(6), p. 3672.

The researchers sought to quantify error of a Deformable Image Registration (DER) system and to establish a quality assurance procedure. They succeeded in building a DER approach to quantify the Deformation Vector Map uncertainty. Their data sets are available for testing other systems on their Web page.

Peterson, K.A., Lipman, P.D., Lange, C.J., and others. (2012). "Supporting better science in primary care: A description of practice-based research networks (PBRNs) in 2011." (AHRQ grant HS10037). *Journal of the American Board of Family Medicine* 25, pp. 565-571.

The Agency for Healthcare Research and Quality (AHRQ) has a long history of supporting primary care research networks. In 2002, AHRQ created the National Practice-Based Research Network (PBRN) Resource Center. Using the Resource Center's 2011 registration data, the authors update the status of PBRNs, explore the relationship between key characteristics of PBRNs and general indicators of research capacity, and provide a perspective on changes over time.

Price, R.C., Huth, D., Smith, J., and others. (2012). "Federated queries for comparative effectiveness research: Performance analysis." (AHRQ grant HS19908). *HealthGrid Applications and Technologies Meet Science Gateways for Life Sciences*, pp. 9-18. Gesing, S., et al. (Eds.) IOS Press.

This paper presents a study of the performance of federated queries implemented in a system that simulates the architecture proposed for the Scalable Architecture for Federated Translational Inquiries Network (SAFTINet). The results show that the caGrid Federated Query Engine is capable and suitable for comparative effectiveness research federated queries given its nearly linear

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scalability as partner nodes increase in number.

Quinn, M.A., Kats, A.M., Kleinman, K., and others. (2012). "The relationship between electronic health records and malpractice claims." (AHRQ grant HS15397). *Archives of Internal Medicine* 172(13), pp. 1187-1189.
This study of 189 physicians surveyed in 2005 and 2007 found that the rate of malpractice claims when electronic health records (EHRs) were used were about one-sixth the rate when EHRs were not used. While this study includes only a small number of post-EHR claims, it suggests that implementation of EHRs may reduce malpractice claims and, at the least, appears not to increase claims as providers adapt to using EHRs.

Ryan, A., Burgess, J., Strawderman, R., and Dimick, J. (2012). "What is the best way to estimate hospital quality outcomes? A simulation approach." (AHRQ grant HS18546). *HSR: Health Services Research* 47(40), pp. 1699-1718.
Rigorous research on the relative accuracy of alternative estimators of outcome quality has been extremely limited. In this study, the researchers performed a simulation experiment to test the accuracy of five alternative outcome estimators. The study found significant and substantial variation in the accuracy of the tested outcome estimators. The Dimick and Staiger (DS) estimator was the most accurate for all hospitals.

Schiff, G.D., Galanter, W.L., Duhig, J., and others. (2012). "A prescription for improving drug formulary decisionmaking." (AHRQ grant HS16973). *PLoS Medicine* 9(5), p. e1001220.
The role of hospital drug formularies could be enhanced by a more standardized critical evaluation of drugs proposed for formulary placement. The authors developed a tool based on a project at two U.S. public academic hospitals consisting of a six-domain checklist of questions for evaluating drugs requested to be added to formularies. The tool poses 48 questions related to evidence of need, efficacy, medication safety, misuse potential, cost issues, and decisionmaking process.

Schnipper, J.L., Gandhi, T.K., Wald, J.S., and others. (2012). "Effects of an online personal health record on medication accuracy and safety: A cluster-randomized trial." (AHRQ grant HS13660). *Journal of the American Medical Informatics Association* 19, pp. 728-734.
To determine the effects of a personal health record linked medications module on medication accuracy and safety, researchers tested patients from 11 primary care practices who received access to the online medications module. They found that the proportion of medications per patient with unexplained discrepancies was 42 percent in the intervention group compared to 51 percent in the control group who did not receive access.

Sinaiko A.D., Eastman D., and Rosenthal M.B. (2012). "How report cards on physicians, physician groups, and hospitals can have greater impact on consumer choices." (AHRQ Contract No. 290-07-10022). *Health Affairs* 31(3), pp. 602-611.
Weaknesses in the content, design, and accessibility of provider report cards have served to disconnect this information from consumer decisions, according to a qualitative survey of leaders in the design and delivery of public reporting on practitioner performance. A set of interviews with 29 leaders in public reporting suggested that current report cards can be improved, but do not need to be thoroughly revamped.

Spindler, K.P., Parker, R.D., Andrish, J.T., and others. (2013, January). "Prognosis and predictors of ACL reconstructions using the MOON Cohort: A Model for comparative effectiveness studies." (AHRQ HS16075). *Journal of Orthopedic Research* 31(1), pp. 2-9.
Primary anterior cruciate ligament (ACL) reconstruction has in general been effective at restoring the functional stability of the knee. These authors looked at patients' modifiable predictors of both short- and long-term validated outcomes and osteoarthritis. They describe results reported by the Multicenter Orthopaedic Outcomes Network consortium, which was established in 2002 to enroll and longitudinally follow a population cohort of ACL reconstructed patients.

Sturm, R. and Hatton, A. (2012, September). "Morbid obesity rates continue to rise rapidly in the United States." (AHRQ grant T32 HS00046). *International Journal of Obesity*, pp. 1-3.
The paper details time trends for clinically severe or morbid obesity

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until 2010 using data from the Behavioral Risk Factor Surveillance System. Between 2000 and 2010 the prevalence of severe obesity increased by 70 percent, whereas the prevalence of morbid obesity increased even faster. Although the body mass index rates were higher among Hispanics and blacks at every point in time, there were no significant differences in trends between them and non-Hispanic whites. The growth rate appeared to have slowed down since 2005.

Taylor, J.L., McPheeters, M.L., Sathe, N.A., and others. (2012). "A systematic review of vocational interventions for young adults with autism spectrum disorders." (AHRQ Contract No. 290-2007-10065). *Pediatrics* 130(3), pp. 531-538.
The researchers undertook a systematic review to assess the impact of vocational interventions on teenagers and young adults with autism spectrum disorders. After an extensive search of relevant databases (Medline, PsychINFO, and ERIC) plus hand searches of other sources for articles published between 1980 and December 2011, the researchers identified only 6 papers, representing 5 studies. Because of the poor quality of these studies, no conclusions could be drawn.

Webbe-Janek, H., Lenzmeier, C.R., Ogden, P.E., and others. (2012). "Nurses' perceptions of simulation-based interprofessional training program for rapid response and code blue events." (AHRQ grant HS16634). *Journal of Nursing Care Quality* 27(1), pp. 43-50.
Nurses who underwent 3-week simulation training in rapid response team actions to deal with code blue (resuscitation) events reported a variety of positive experiences as a result. The majority of nurses (203 of 360 nurses participating in the training) responded to an associated qualitative and quantitative survey. The nurses reported finding the hands-on practice the most valuable aspect of the training.

Weng, C., Appelbaum, P., Hripcsak, G., and others. (2012). "Using EHRs to integrate research with patient care: Promises and challenges." (AHRQ grant HS19853). *Journal of the American Medical Informatics Association* 19, pp. 684-687.
Clinical research requires collaboration between clinicians and researchers, but such collaborations are poorly supported. Although the increasing adoption of electronic health records (EHRs) offers the opportunity to increase coordination between patient care and patient-oriented research activities, the authors find that the EHR alone cannot overcome barriers in conducting clinical trials and comparative effectiveness research.

Weng, C., Wu, X., Luo, Z., and others. (2012). "EliXR: An approach to eligibility criteria extraction and representation." (AHRQ grant HS19853). *Journal of the American Medical Informatics Association* 19, pp. i116-i124.
This paper presents an integrated semantic processing framework called eligibility criteria extraction and representation (EliXR) for inducing natural semantic role labels from text. This approach permits the development of a semantic network that aligns well with the top-level information structure in clinical research eligibility criteria text, and demonstrates the feasibility of using the resulting semantic role labels to generate semistructured eligibility criteria with nearly perfect interrater reliability.

Whipple, E.C., Dixon, B.E., and McGowan, J.J. (2012). "Linking health information technology to patient safety and quality outcomes: A bibliometric analysis and review." (AHRQ Contract No. 290-04-0016). *Informatics for Health and Social Care*, pp. 1-14.
The authors assess the scholarly output of grants funded by the Agency for Healthcare Research and Quality (AHRQ) related to health information technology (IT) on patient safety and quality of care outcomes. They analyze the connection between health IT and patient safety and quality outcomes using bibliometric methods, examining the grantees' contribution to the evidence based on health IT. They compare grant outputs with the original goals of the AHRQ portfolio on Transforming Healthcare Quality through Health IT.

Wong, S.T., Perez-Stable, E.J., Kim, S.E., and others. (2012). "Using visual displays to communicate risk of cancer to women from diverse race/ethnic backgrounds." (AHRQ grant HS10856). *Patient Education and Counseling* 87, pp. 327-335.
The goal of this study was to evaluate how well women from diverse race/ethnic groups were able to take a quantitative cancer

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risk statistic verbally provided to them and report it in a visual format using either an icon array or a graphic of a magnifying glass. Compared to whites, black and Latina women were significantly less likely to use the icon arrays correctly. Higher education and higher numeracy were associated with correct responses.

Wu, Y., Jiang, X., Kim, J., and Ohno-Machado, L. (2012). "Grid binary Logistic Regression (GLORE): Building shared models without sharing data." (AHRQ grant HS19913). *Journal of the American Medical Informatics Association* 19, pp. 758-764.

The authors propose a new algorithm (GLORE) to fit a logistic regression (LR) model in a distributed fashion using information from locally hosted databases containing different observations that share the same attributes (i.e., horizontal partitions of data—stackable sets of patient records) without sharing the sensitive original patient data from these databases. The resulting model is calculated in a privacy-preserving manner and performs as well as LR.

Zachariah, M., Phansalkar, S., Seidling, H.M., and others. (2012). "Development and preliminary evidence for the validity of an instrument assessing implementation of human-factors principles in medication-related decision-support systems—I-MeDeSA." (AHRQ grant HS16970). *Journal of the American Medical Informatics Association* 18, pp. i62-i72.

After reviewing human-factors principles for relevance to medication-related decision support alerts, the authors built the Instrument for Evaluating Human-Factors Principles in Medication-Related Decision Support Alerts (I-MeDeSA) in order to assess the extent to which a given interface design incorporates these human-factors principles. The final version of the instrument includes 26 items associated with nine human-factors principles.

Zapka, J., Klabunde, C.N., Taplin, S., and others. (2012). "Screening colonoscopy in the US: Attitudes and practices of primary care physicians." (AHRQ Inter-Agency Agreement Nos. Y3-PC-5019-01, Y3-PC-6017-01). *Journal of General Internal Medicine* 27(9), pp. 1150-1158.

This survey of 1,266 primary care physicians found that a majority (73 percent) reported that colonoscopy volume increased somewhat or substantially. Eighty-six percent strongly agreed that colonoscopy was the best of the available colorectal cancer screening tests. These attitudes were significantly related to substantial increases in colonoscopy ordering.

Zayas-Cabán, T. (2012). "Health information management in the home: A human factors assessment." *Work* 41, pp. 315-328. Reprints (AHRQ Publication No. 12-R067) are available from AHRQ.*

The researcher used a series of interviews with four families to collect information about how different families handled health information management. She identified 69 distinct health information management tasks among the four families that took place in nine different locations. The researcher suggests that the commonalities across the households could help designers of consumer health information technology applications tailor their applications to how families work. ■

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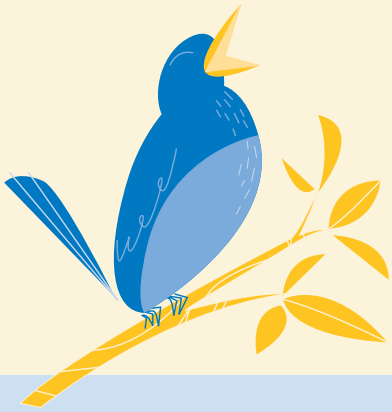

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