



RESEARCH ACTIVITIES

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Intensive care units for newborns in nine States see sharp drop in bloodstream infections

Central line-associated bloodstream infections (CLABSIs) in newborns were reduced by 58 percent in less than a year in hospital neonatal intensive care units (NICUs) participating in an Agency for Healthcare Research and Quality (AHRQ) patient safety program. Frontline caregivers in 100 NICUs in nine States relied on the program’s prevention practice checklists and better communication to prevent an estimated 131 infections and up to

41 deaths and to avoid more than \$2 million in health care costs.

CLABSIs are healthcare-associated infections (HAIs) that cause serious illness and death in infants as well as adults. A central line is a tube (catheter) that goes into a patient’s vein or artery and ends in the central bloodstream. In newborns, especially premature infants, central lines can remain in place for weeks or months to provide nutrients and medications as babies become able to function on their own.

Health care teams in the project States, caring for a total of 8,400 newborns, used AHRQ’s Comprehensive Unit-based Safety Program (CUSP) to improve safety culture and consistently implement catheter insertion and maintenance guidelines. CUSP is customizable and helps hospitals understand and apply the science of safety and take actions to improve teamwork and communications. This 11-month project used CUSP to help clinical teams focus on safe practices and appropriate steps when using central lines based on guidelines from the Centers for Disease Control and Prevention.

Each State-based team was led by a neonatologist who worked with the State’s hospital association to implement the project. When the

project began, participating NICUs had an overall infection rate of 2.043 per 1,000 central line days. At the end of the project, that rate was reduced to 0.855 per 1,000 central line days, a relative reduction of 58 percent. For more information on how NICUs achieved this reduction, visit www.ahrq.gov/qual/clabsi-neonatal.

“The CUSP framework brings together safety culture, teamwork, and best practices—a combination that is clearly working to keep these vulnerable babies safer.”

“The CUSP framework brings together safety culture, teamwork, and best practices—a combination that is clearly working to keep these vulnerable babies safer,” says AHRQ Director Carolyn M. Clancy, M.D. “These remarkable results show us that, with the right tools and dedicated clinicians, hospital units can rapidly make care safer.”

The nine-State project in NICUs is part of a larger AHRQ-funded effort to implement CUSP to prevent CLABSIs nationwide. Preliminary results of the larger project were announced in

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From the Director



As the patient safety field has matured in the past decade, we continue to witness evidence

for the effectiveness of checklists, teamwork strategies, and other approaches to improve patient safety. One area that is advancing quickly is prevention of healthcare-associated infections (HAIs) like central line-associated bloodstream infections (CLABSIs).

As part of the U.S. Department of Health and Human Services' National Action Plan to Prevent Healthcare-Associated Infections, the Agency for Healthcare Research and Quality (AHRQ) funded a 4-year nationwide effort to prevent central line-associated bloodstream

infections (CLABSIs) in U.S. hospitals beginning in 2008.

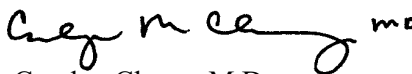
The over 1,000 adult intensive care units (ICUs) that participated in this project achieved a remarkable 41 percent reduction in the rate of CLABSIs over 18 months. A part of the nationwide project involved efforts to prevent CLABSI in ICUs for newborns.

The dramatic 58 percent reduction in CLABSIs in 100 neonatal ICUs in nine States found in the project described in this month's cover demonstrates the power of clinical teams that take appropriate steps to implement safe practices like those outlined in the Comprehensive Unit-based Safety Program (CUSP).

CUSP developed out of observations that clinicians did not always follow, or missed, basic infection-prevention steps amid the highly complex and sometimes chaotic routines of critical care. That led to the introduction of a

checklist of five specific interventions to prevent CLABSI in the hospital's ICU. The CUSP checklist targets clinicians' use of five evidence-based practices recommended by the CDC to prevent CLABSI: hand washing and hygiene; using full-barrier precautions during the insertion of central venous catheters; cleaning the skin with chlorhexidine; avoiding the femoral site when possible; and removing unnecessary catheters.

CUSP combines the use of such a checklist with improvements in safety culture, teamwork, and communications. It is this combination that makes CUSP such a powerful tool for reducing CLABSIs and other HAIs that can cause serious illness among adults and infants.


Carolyn Clancy, M.D.

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AHRQ director stepping down later this year

AHRQ Director Carolyn Clancy, M.D., is planning to step down later this year after a decade of leading the Agency. Department of Health and Human Services (HHS) Secretary Kathleen Sebelius, in a January 31 e-mail to HHS leaders and AHRQ staff, said she was “deeply grateful” for Dr. Clancy’s service. “Under Carolyn’s leadership, AHRQ has undertaken innovative new work that has improved the quality, safety, efficiency, and effectiveness of the nation’s health care delivery system,” Secretary Sebelius noted. “Carolyn has been passionate about the importance of linking quality improvement with the

urgency of reducing disparities in health care. During her tenure, the agency produced the nation’s first annual reports on quality, safety, and disparities in care. AHRQ has supported groundbreaking research on patient safety and related interventions, such as TeamSTEPPS, the Comprehensive Unit-based Safety Program, and other efforts to reduce health care associated infections, now implemented both nationwide and internationally.” Dr. Clancy will continue to serve while HHS leaders continue their national search for a new AHRQ director. ■

Bloodstream infections

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September 2012; final results from the national implementation project are now available and show that CLABSIs were reduced by 41 percent in adult ICUs. The final report is available at www.ahrq.gov/qual/clabsi-final.

AHRQ provided funding to the Health Research & Educational Trust (HRET), the educational arm of the American Hospital Association (AHA), to conduct both projects. For the NICU project, HRET partnered with the Perinatal Quality Collaborative of North Carolina and the Missouri Center for Patient Safety to support Colorado, Florida, Hawaii, Massachusetts, Michigan, New Jersey, North Carolina, South Carolina, and Wisconsin.

“The successes of the project are proof that a great deal of

improvement can happen in a relatively short timeframe,” says Maulik S. Joshi, Dr.P.H., president of HRET and senior vice president of the AHA. “We are excited by the outcomes of the collaborative, and we look forward to applying what we’ve learned about leveraging existing infrastructures to spread improvement in ongoing and future projects.”

AHRQ’s HAI Program contributes to the U.S. Department of Health and Human Services’ National Action Plan To Prevent Healthcare-Associated Infections (www.hhs.gov/ash/initiatives/hai/index.html) and the Partnership for Patients (<http://partnershipforpatients.cms.gov>), which offer a coordinated approach to making care safer by drawing on the strengths and expertise of the HHS agencies.

Details about AHRQ’s CUSP projects, including a report on the NICU project and the final report from the national implementation project, are available at www.ahrq.gov/qual/hais.htm. AHRQ’s CUSP toolkit, which was developed from the national implementation project and used in the NICU project, is available at www.ahrq.gov/cusptoolkit. ■

Editor’s note: The concept of CUSP was first developed by Peter J. Pronovost, M.D., Ph.D., director of the Armstrong Institute and senior vice president for patient safety and quality at Johns Hopkins University, with funding from AHRQ. It was first tested in over 100 adult ICUs in Michigan hospitals (the Michigan Keystone ICU Project) and then expanded to other States. Now, hospitals nationwide are using CUSP as a result of the national implementation project.

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.

Standard written checklists can improve patient safety during surgical crises

When doctors, nurses, and other hospital operating room staff follow a written safety checklist to respond when a patient experiences cardiac arrest, severe allergic reaction, bleeding followed by an irregular heart beat or other crisis during surgery, they are nearly 75 percent less likely to miss a critical clinical step, according to a new study funded by the Agency for Healthcare Research and Quality (AHRQ). While the use of checklists is rapidly becoming a standard of surgical care, the impact of using them during a surgical crisis has been largely untested, according to the study published in the January 17 issue of the *New England Journal of Medicine*.

“We know that checklists work to improve safety during routine surgery,” said AHRQ Director Carolyn M. Clancy, M.D. “Now, we have compelling evidence that checklists also can help surgical teams perform better during surgical emergencies.”

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Surgical crises are high-risk events that can be life threatening if clinical teams do not respond

appropriately. Failure to rescue surgical patients who experience life-threatening complications has been recognized as the biggest source of variability in surgical death rates among hospitals, the study authors noted.

For this randomized controlled trial, investigators simulated multiple operating room crises and assessed the ability of 17 operating room teams from three Boston area hospitals—one teaching hospital and two community hospitals—to adhere to life-saving steps for each simulated crisis.

In half of the crisis scenarios, operating room teams were provided with evidence-based, written checklists. In the other half of crisis scenarios, the teams worked from memory alone. When a checklist was used during a surgical crisis, teams were able to reduce the chances of missing a life-saving step, such as calling for help within 1 minute of a patient experiencing abnormal heart rhythm, by nearly 75 percent, the researchers said.

Examples of simulated surgical emergencies used in the study were air embolism (gas bubbles in the bloodstream), severe allergic reaction, irregular heart rhythms associated with bleeding, or an unexplained drop in blood pressure. Each surgical team consisted of anesthesia staff, operating room nurses, surgical technologists, and a mock surgeon or practicing

surgeon.

“For decades, we in surgery have believed that surgical crisis situations are too complex for simple checklists to be helpful. This work shows that assumption is wrong,” said Atul Gawande, M.D., senior author of the paper, a surgeon at Brigham and Women’s Hospital and professor at the Harvard School of Public Health. “Four years ago, we showed that completing a routine checklist before surgery can substantially reduce the likelihood of a major complication. This new work shows that use of a set of carefully crafted checklists during an operating room crisis also has the potential to markedly improve care and safety.”

Hospital staff who participated in the study said the checklists were easy to use, helped them feel more prepared, and that they would use the checklists during actual surgical emergencies. In addition, 97 percent of participants said they would want checklists to be used for them if a crisis occurred during their own surgery.

The practice of using checklists is borrowed from high-risk industries such as aviation and nuclear power, where checklists have been tested in simulated settings and shown to improve performance during unpredictable crisis events. ■



Physicians face diagnostic difficulties in primary care for a variety of reasons

Missed, delayed and incorrect diagnoses lead to significant patient harm and wasted medical resources. Although physicians may be unaware of the diagnostic errors they make, they identified some of the difficulties they experience in the diagnostic process during primary care in a recent survey. The researchers surveyed primary care physicians in an integrated health system across 10 States in 2005. The survey asked about the extent and predictors of diagnostic difficulty among primary care physicians.

Half of the 1,054 physicians who responded to the survey reported that more than 5 percent of their patients were difficult to diagnose. Physicians with more experience reported less diagnostic difficulty. Both inadequate time to process diagnostic information and insufficient guidance from subspecialists were correlated with diagnostic difficulty. Inadequate knowledge (19.9 percent) was the most commonly reported cognitive factor associated with diagnostic difficulty. The second most common factor was faulty

detection or perception of diagnostic information (such as from history/exam/record review).

The respondents suggested several strategies for improvement that centered on physician workload. First, they recommended longer visit time with patients to allow for more thorough history and physical examination. They cited the need to reduce workload in order to have protected time to review patient results. Another suggestion was for more time for physicians to think carefully about difficult cases, and to perform “cognitive work.” The study was supported in part by the Agency for Healthcare Research and Quality (HS17594).

See “Challenges of making a diagnosis in the outpatient setting: A multi-site survey of primary care physicians,” by Urmimala Sarkar, M.D., M.P.H., Doug Bonacum, M.B.A., William Strull, M.D., and others in the *BMJ Quality and Safety* 21, pp. 641-648, 2012. ■ MWS

Complications after kidney cancer surgery are linked with decreased long-term survival

In patients with kidney cancer, the partial or total removal of the diseased kidney is the gold standard of care. Despite continued advances in technique, nearly a third of all patients have a complication after surgery. The development of such complications may adversely affect long-term survival, according to a new study.

Researchers used National Cancer Institute and Medicare data to identify 12,618 kidney cancer patients who underwent surgery from 1995 to 2005. They identified complications that developed during the hospital stay or within 30 days of surgery. Overall survival was compared for

those patients with and without complications to determine any association between the two.

More than one-third (37 percent) of patients studied experienced a complication after surgery. Those with complications tended to be older, male, have coexisting medical conditions, and underwent an open (versus laparoscopic) procedure. During a median followup of 32 months, 37.1 percent of patients died. Patients with at least one complication had a significantly lower unadjusted 5-year survival rate of 59.9 percent compared to non-complication patients (69.5 percent). The relationship continued even after the researchers adjusted for patient

characteristics, cancer severity, and surgical approach. Complications independently associated with worse long-term survival included acute renal failure, cardiac and neurological complications, and infection after surgery. The study was supported in part by the Agency for Healthcare Research and Quality (HS18346).

See “Postoperative complications and long-term survival among patients treated surgically for renal cell carcinoma,” by Hung-Jui Tan, M.D., Khaled S. Hafez, M.D., Zaojun Ye, M.S., and others in the January 2012 *Journal of Urology* 187, pp. 60-67. ■ KB

Sulfonylurea medication linked to kidney function decline among patients with diabetes

People with type 2 diabetes are at increased risk for end-stage kidney disease. In fact, diabetes accounts for 45 percent of all cases. People with diabetes may take a variety of oral medications to control their diabetes. A new study concludes that individuals taking the class of diabetes drugs known as sulfonylureas increase their risk for kidney function decline compared to patients using metformin or rosiglitazone.

The study included 93,577 patients who received care from the Veterans Administration between 2001 and 2008. All had filled a prescription for an oral diabetes drug: 65 percent for metformin, 33 percent for a sulfonylurea, and 2 percent for rosiglitazone. The primary outcome looked at was a persistent decline in estimated glomerular filtration rate (eGFR), a measure of kidney function of 25 percent or more (eGFR event), or a diagnosis of end-stage renal

disease (ESRD). The secondary outcome was an eGFR event, ESRD, or death.

All-cause mortality rates were highest for patients taking sulfonylureas and lowest for rosiglitazone. Compared to metformin users, those taking sulfonylureas had a 20 percent increased risk of an eGFR event, developing ESRD, or death. These findings support national and international recommendations that metformin be used as a first-line therapy for patients with type 2 diabetes in the early stages of kidney disease. The study was supported in part by the Agency for Healthcare Research and Quality (Contract No. 290-05-0042).

See “Comparative effectiveness of incident oral antidiabetic drugs on kidney function,” by Adrian M. Hung, M.D., Christianne L. Roumie, M.D., Robert A. Greevy, Ph.D., and others in *Kidney International* 81, pp. 698-706, 2012. ■ KB

Self-management programs for patients with diabetes have a positive impact

Primary care providers face numerous barriers to optimizing care for patients with diabetes. Automated telephone self-management (ATSM) accompanied by nurse care management is an example of a health information technology tool that can assist with self-management support in diabetes care. A second type of self-management support program to address this area is characterized by group medical visits (GMVs) with physician and health educator facilitation. When researchers compared each of these programs to the usual care (UC) provided by patients' primary care clinics, they

found that primary care providers classified more patients exposed to ATSM (58.7 percent) and GMV (52.6 percent) as likely to engage in health-related goal setting than UC patients (33.3 percent).

The researchers surveyed 87 primary care providers caring for 245 patients with diabetes enrolled in one of these three programs. The providers rated the quality of care as poor or bad for 37.2 percent of their UC patients, 26.9 percent of GMV patients, and 14.3 percent of ATSM patients. Providers also reported that patients exposed to ATSM were helped more with respect to the barrier of limited

English proficiency than were those patients exposed to GMVs (82 percent vs. 44 percent). This study was supported by the Agency for Healthcare Research and Quality (HS14864).

See “Primary care provider perceptions of the effectiveness of two self-management support programs for vulnerable patients with diabetes,” by Neda Ratanawongsa, M.D., Vijay K. Bhandari, M.D., Margaret Handley, Ph.D., and others in the January 2012 *Journal of Diabetes Science and Technology* 6(1), pp. 116-124. ■ MWS

Low-income patients who perceive more control over their diabetes have higher quality of life

Patients with diabetes must maintain strict control of their blood-sugar levels through diet, exercise, and medication. Indigent patients treated for diabetes at a low-income clinic who perceived they had more control over their diabetes reported higher quality of life, according to a new study. Over the course of a year, researchers gave questionnaires to 188 patients with diabetes who received care at a low-income clinic that was part of a major academic medical center. The questionnaires asked about patients' perceived control of diabetes and health-related quality of life. The researchers also collected sociodemographic and clinical information, including patient race/ethnicity, marital and socioeconomic status, coexisting conditions, and insulin use.

More than half of participants (54 percent) were 50 to 64 years of age. The vast majority were female (71 percent) and 60 percent were black. Just under a quarter of participants (24 percent) were uninsured, with 54 percent covered by a government program such as Medicaid. The majority, 60 percent, did not use insulin. Average quality-of-life scores were below

national averages for the general population. However, there was a direct, positive association found between a patient's perceived control over diabetes and their physical and mental quality of life.

This relationship continued to be strong even after the researchers controlled for patient sociodemographic factors and number of coexisting conditions. The researchers suggest that clinicians can use assessments of perceived control to design specific approaches that empower patients to manage their diabetes by increasing their knowledge base and enhancing their self-efficacy which, in turn, will increase perceived control. The study was supported by the Agency for Healthcare Research and Quality (HS11418).

See "Effect of perceived control on quality of life in indigent adults with type 2 diabetes," by Melba A. Hernandez-Tejada, M.S., Cheryl P. Lynch, M.D., M.P.H., Joni L. Strom, M.D., M.P.H., and Leonard E. Egede, M.D., M.S., in the March/April 2012 *The Diabetes Educator* 38(2), pp. 256-261. ■ KB

Hepatitis C infection does not increase the risk for heart attack

Chronic infection with the hepatitis C virus (HCV) affects approximately 170 million people worldwide and 1.3 percent of adults in the United States. This chronic infection induces significant inflammation in the body, affecting the liver and potentially other organs, including the heart. But HCV does not increase the risk of having a heart attack, concludes a new study.

Researchers at the University of Pennsylvania Center for Education and Research on Therapeutics (CERT) identified 4,809 patients with HCV infection living in the United Kingdom. They were matched to 71,668 patients without HCV infection. All were 18 years of age or older with at least 6 months of followup and no history of heart attack. The researchers

calculated the incidence rates of heart attack, while controlling for established cardiovascular risk factors. Median followups were 2.1 years for HCV-infected patients and 3.22 years for those uninfected.

During followup, 264 patients with HCV infection and 248 without infection experienced a heart attack. No significant difference was found between HCV-infected and uninfected individuals (1.02 vs. 0.92 events per 1,000 person-years). After the researchers controlled for known cardiovascular risk factors, HCV infection still did not increase the risk of having a heart attack. Taking aspirin or antiretroviral medications for HCV did not have any significant impact on changing the risk of having a heart attack.

The researchers postulate that the type of inflammation seen with

HCV infection may be different from other chronic inflammatory diseases that increase the risk of having heart attacks. Also, patients with HCV infection have reduced lipid levels, which may mitigate any heart disease effects produced by this inflammation. This study was funded in part by the Agency for Healthcare Research and Quality (HS10399). For more information on the CERTs program, visit www.certs.hhs.gov.

See "Risk of myocardial infarction associated with chronic hepatitis C virus infection: A population-based cohort study," by Kimberly A. Forde, M.D., M.H.S., Kevin Haynes, Pharm.D., M.S.C.E., Andrea B. Troxel, Sc.D., and others in the *Journal of Viral Hepatitis* 19, pp. 271-277, 2012. ■ KB

Retention in HIV care is a problem for many patients

With HIV now treated as a chronic disease like diabetes, patients' engagement in their care is important to reduce mortality and improve outcomes. This includes initiating care early and then continuing care on a regular, consistent basis. However, one in five patients never establish HIV care after an initial visit. Even when patients do establish care, regularity and retention in care remain significant problems, according to a new study.

John A. Fleishman, Ph.D., of the Agency for Healthcare Research and Quality (AHRQ), and colleagues examined the rates of HIV care establishment, retention, and loss to followup by reviewing the medical record data on 22,984 adults with HIV who were receiving care at 12 clinics located in various geographic regions of the United States.

During the 9-year study period, the study team determined how well patients met three care criteria: establishing care, having regular monitoring visits, and remaining in care indefinitely. Establishing care was defined as having outpatient visits to the HIV clinic for longer than a 6-month period. Regularity of care was defined as having two or more outpatient visits separated by at least 91 days during a 12-month period. Retention in care was defined as not being lost to followup, where loss to followup reflected having more

than 12 months after the last outpatient visit and the end of the study period.

Among the patients studied, 21.7 percent never established outpatient HIV care. Women were more likely than men to establish care, as were blacks and Hispanics. Other patient groups likely to establish HIV care were men who had sex with men, those with private insurance, and patients 40 years of age or older.

Among established patients, 57.4 percent did not fulfill the regularity criterion; 34.9 percent were lost to followup. Only 20.4 percent of patients met all three criteria. Those patients most likely to meet all three criteria were women, older patients, Hispanics, and those patients with CD4 levels of <50 cells/ μ L (indicating more advanced HIV disease). The researchers recommend that care providers boost their adoption of existing interventions to retain patients in care while developing new and effective approaches.

More details are in "Establishment, retention, and loss to follow-up in outpatient HIV care," by Dr. Fleishman, Baligh R. Yehia, M.D., Richard D. Moore, M.D., M.HSc., and others in the July 1, 2012 *Journal of Acquired Immune Deficiency Syndrome* 69(3), pp. 249-259. Reprints (AHRQ Publication No. 12-R083) are available from AHRQ.* ■ KB

Emergency Care

Overcrowding in emergency departments increases the risk of preventable medical errors

A crowded emergency department (ED) can foster an environment where preventable medical errors (PMEs) can occur, suggests a new study. It found that patients seen during the highest crowding periods had more than twofold higher occurrences of PMEs. The researchers used data from the National ED Safety Study to look at the impact of ED crowding on development of PMEs in patients with a heart attack, asthma

exacerbation, or dislocated joint that required procedural sedation. A random sample of 533 patients was selected who had visited one of four EDs and were diagnosed with one of the three above conditions. Chart reviews revealed the presence of any PMEs. Each patient was also assigned an ED crowding score based on 10-minute crowding calculations.

At least 1 PME occurred in 46 of the 533 patient visits. Patients with

the highest average crowding exposure had more than twofold odds of having a PME compared to patients in the lowest quartile of crowding exposure. Those with a heart attack or joint dislocation had a greater risk of experiencing a PME compared to asthma patients. Most of the medical errors occurred in patients with dislocations requiring procedural sedation. The study was supported in part by the

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Agency for Healthcare Research and Quality (HS13099).

See “Emergency department crowding and risk of preventable medical errors,” by Stephen K. Epstein, M.D., David S. Huckins,

M.D., Shan W. Liu, M.D., and others in *Internal and Emergency Medicine* 7, pp. 173-180, 2012. ■
KB

Trauma patients often receive repeat CT imaging that increases radiation exposure and costs

The quick transfer of injured patients to a trauma center that can provide timely surgery should be done as efficiently as possible. However, the initial assessment of trauma patients often includes ordering imaging studies, such as computed tomography (CT). In fact, a new study shows that trauma patients often undergo repeat CT scans after they are transferred to a trauma center.

While these patients had no different outcomes, they did have substantially higher health care costs and patients were exposed to double the amount of radiation, exposing them to potential long-term risks, note the researchers. They suggest that repetitive imaging can be avoided by more hospitals using systems that allow the transfer of images electronically from the referring institution to the trauma center.

The researchers reviewed the medical records of 2,543 patients who were transferred to two trauma centers during a 4.5 year period to examine how common repetitive CT imaging of the chest and abdomen is performed in trauma patients. All patients had received an abdominal or chest CT (or both) during their trauma evaluation. Data collected included the mechanism and magnitude of the injuries, time intervals, and in-hospital mortality.

After arrival at the trauma center, 60 percent of patients had one or more CT studies repeated. Factors associated with repeat imaging indicated more severe injury. Arrival via helicopter, shorter transport times, and shorter time spent at the referring hospital were other factors associated with greater odds of repeat imaging. Patients who received a scan at the referring hospital spent longer time there before being transferred to the trauma center.

Repeat imaging added up to 25 minutes of delay at the trauma center. Those patients who underwent repeated CT scans tended to have longer intensive care unit and hospital stays. They were also more likely to be discharged to somewhere other than home, but had similar mortality rates. The study was supported in part by the Agency for Healthcare Research and Quality (HS00032).

See “Repeat imaging in trauma transfers: A retrospective analysis of computed tomography scans repeated upon arrival to a Level I trauma center,” by Dawn M. Emick, M.D., M.P.H., Timothy S. Carey, M.D., M.P.H., Anthony G. Charles, M.D., M.P.H., and Mark L. Shapiro, M.D., in the *Journal of Trauma* 72(5), pp. 1255-1262, 2012. ■ KB

Admission rates from emergency departments vary widely

A new study found a greater than 2.5-fold variation in the hospital admission rate from the emergency department (ED) in a sample of hospitals across 28 U.S. States. This indicates wide variation in a costly, everyday decision that will require more study, particularly in the context of hospital admissions being a major contributor to rising U.S. health care costs, according to the study authors. The researchers

found that for-profit hospitals, trauma centers, and hospitals with higher proportions of Medicare and uninsured patients had higher hospital admission rates from the ED.

Local practice patterns and availability of primary care doctors were also important factors. Lower local numbers of primary care doctors were associated with higher admission rates, and there were

significant “local practice” effects, which may reflect that admission decisions may have to do with local care standards.

For more details, see “Variation in Emergency Department Admission Rates Across the United States” by Jesse M. Pines M.D., Ryan L. Mutter Ph.D., and Mark S. Zochi M.P.H. in the January 6 online issue of *Medical Care Research and Review*. ■

Heart block in children following heart surgery increases length of hospital stay and total costs

Following surgery to repair congenital heart defects, children can develop postoperative complete heart block. That's when signals for the heart to beat are completely blocked. Analyzing information from a large national database, researchers discovered little change over time in the frequency of heart block following surgery on these children. They also found that the development of heart block increases the children's length of hospital stay and total costs.

Over a 10-year period, researchers collected data from the Kids' Inpatient Databases (KID) at four time points: 2000, 2003, 2006, and 2009. KID was developed by the Agency for Healthcare Research and Quality (AHRQ) to analyze inpatient visits by children up to age 20. For this study, children 24 months of age or younger were identified who had surgical repair of three different types of congenital heart defects. From this group, the researchers determined those children who experienced a postoperative complete heart block and those who required the placement of a pacemaker.

During the 10-year period, 16,105 children underwent heart surgery. Between 3.7 and 7.7 percent developed

heart block. Pacemakers were required for 0.9 and 2.3 percent of these patients before discharge. Although there was a decrease in postoperative mortality, there was no significant change in the number of patients who developed heart block or who required a pacemaker during the 10-year study period.

The highest rate of heart block was found in patients undergoing repair for atrioventricular canal defects. Hospital stays were longer and total costs were higher for patients who developed heart block. Age at the time of surgery was not a predictor of developing heart block, although there is a growing trend for these surgeries to be performed at a younger age. The study was supported in part by AHRQ (HS16957).

See "Postoperative heart block in children with common forms of congenital heart disease: Results from the KID database," by Jeffrey B. Anderson, M.D., M.P.H., Richard J. Czonek, M.D., Timothy K. Knilans, M.D., and others in the June 26, 2012 *Journal of Cardiovascular Electrophysiology* [Epub ahead of print]. ■ KB

Use of standardized feeding evaluation following surgery for congenital heart defect improves growth in affected newborns

Certain pediatric cardiology centers use a "bundle" of practices to closely monitor weight gain or loss in newborns with a congenital defect in the left ventricle (hypoplastic left heart syndrome, or HLHS) following stage 1 surgery. Newborns treated in these centers have significantly better growth during the multistage repair process than centers that use fewer interventions, according to a new study. Treatment of this congenital defect, in which the mitral valve and left ventricle do not develop properly and consequently reduce the heart's ability to pump blood, involves a series of surgeries to improve the heart's pumping

capacity during the infant's first 4–6 months of life.

The researchers compared nutritional practices in 16 centers that enrolled at least four infants with HLHS over a 2-year period, for a total of 132 infants in the study. All of the patients had stage 1 surgical palliation (one of several variants of the Norwood procedure) at a median age of 5 days. During the period just after the stage 1 surgery, 50 percent of the centers used standard feeding evaluation to determine whether the infants could get adequate nutrition orally.

By the time of hospital discharge (a median stay of 31 days), 83 percent

of the infants were being fed orally (though 46 percent required a feeding tube). At discharge, 63 percent of the centers sent the infants home with scales to monitor daily weight and weight changes, 63 percent of the centers used specific "red flags" to monitor for early signs of growth failure, and 9 centers did both. The researchers found that optimal growth of infants was associated with centers that used a combination of standard postoperative feeding evaluation before discharge, close weight monitoring after discharge with home scales, and specific weight

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Congenital heart defect

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gain/loss “red flags.” Newborns treated in centers using only standard gastrointestinal medications during the period between the surgical stages experienced the worst relative growth.

The researchers enrolled patients treated at centers participating in the National Pediatric Cardiology Quality Improvement Collaborative Registry and conducted structured interviews with members of each of the participating surgical sites for details of their nutritional interventions. The study was funded

in part by the Agency for Healthcare Research and Quality (HS16957).

More details are in “Variation in growth of infants with a single ventricle,” by Jeffrey B. Anderson, M.D., M.P.H., Srikant B. Iyer, M.D., M.P.H., David N. Schidlow, M.D., and others in the July 2012 *The Journal of Pediatrics* 161(1), pp. 16-21. ■ *DIL*

Care process model to treat feverish infants with possible serious bacterial infections improves outcomes, lowers costs

Implementing an evidence-based care process model (EB-CPM) for treating feverish infants up to age 3 months at pediatric or community hospitals can result in better diagnosis, shorter hospitalizations, shorter antibiotic treatment, and lower health care costs, according to a new study. Infants in this age range are often brought to the doctor because they have a fever that might represent a life-threatening serious bacterial infection (SBI). Although most of these fevers are indicators of viral or urinary tract infections, approximately 10 percent indicate the patient has an SBI.

Physical examination alone cannot distinguish feverish infants with SBI from infants with less dangerous infections, the researchers note. In response, they developed an EB-CPM that includes a history, physical examination, complete blood count (CBC), and urinalysis for all febrile infants. During the study period, the researchers observed 735 culture-confirmed cases of SBI, representing 9 percent of all febrile episodes and 12 percent of 6,363 infants who underwent bacterial cultures of their blood, urine, or cerebrospinal fluid.

After implementation of the EB-CPM in 2008, the researchers saw a 13 percent increase in infants who received recommended laboratory tests, with almost all admitted infants having a CBC and a urinalysis (93 percent and 99 percent, respectively). They also saw

higher percentages of infants having blood or urine cultures. In 61 percent of the febrile episodes, infants received antibiotic therapy. Infants at high risk of SBI were more likely to receive antibiotics than low-risk infants (85 percent vs. 63 percent). After implementation of the care process model, the mean hospital length of stay for infants without SBI shrunk from 60 hours to 44 hours, reducing total hospital stay by 1,644 days. In spite of shorter stays, there were no missed cases of SBI and several infant outcomes were improved, such as establishing viral or bacterial diagnoses and receipt of appropriate antibiotic therapy. The researchers estimated that the reduced costs per feverish infant admitted after model implementation represented savings of around \$1.9 million.

The study included 8,044 infants with 8,431 episodes of fever that resulted in evaluation at a tertiary children’s hospital and four regional medical centers in Utah from 2004 through 2009. Data from 2004–2007 represented baseline and training periods, and 2008–2009 represented implementation. The study was funded in part by the Agency for Healthcare Research and Quality (HS18034).

More details are in “Costs and infant outcomes after implementation of a care process model for febrile infants,” by Carrie L. Byington, M.D., Carolyn C. Reynolds, M.S., Kent Korgenski, M.S., and others in the July 2012 *Pediatrics* 130(1), pp. e16-e24. ■ *DIL*

Modifying pediatric quality care measures may capture more care services

Applying clinically relevant changes to national pediatric quality measures, and gathering data from electronic medical records (EMRs), finds more services provided to children than do strict national quality guidelines drawing on claims-based data, according to a new study. The need to modify the quality measures was motivated, in part, by the differences between claims-based data and EMR data (for example, claims-based data do not include information on patients who are uninsured), the researchers note.

They identified pediatric quality measures that had been developed to meet the mandate of the Children's Health Insurance Program Reauthorization Act of 2009 (CHIPRA) and were of interest to providers at the safety-net clinic they were studying. The measures include at least six well-child visits (WCVs) for children by 15 months; receipt of 10 recommended early childhood immunizations by age 2; receipt of a

specified new and booster adolescent immunization between ages 10 and 13; and recording (between ages 3 and 15) of the patient's body mass index (BMI) percentile within a year of the measurements.

For WCVs, 52 percent of children under 3 years old attended at least six WCVs by 15 months, and 61 percent had the required number by age 2. Also, 8 of the 10 early childhood vaccine series had been received by 65 percent of the children by age 2, a percentage rising to 70 percent by age 3. Using EMR data, the researchers were able to identify, and drop from the denominator, instances of parental refusal of a vaccine—noted as 15 percent of children whose parents refused at least 1 of 21 vaccine administrations. The CHIPRA mandate that adolescents receive a Tdap or TD booster plus a meningococcal vaccination by age 13 was met by 43 percent of the relevant age group (69 percent for Tdap or TD; 46 percent for

meningococcal vaccine). When the age limit was extended to 15 years, the compliance rates were 83 percent and 57 percent, respectively. For BMI documentation, recording the percentile within a year of the measurements occurred with 63 percent, which rose to 91 percent with a 36-month window.

Data were collected retrospectively from a single clinic for all children ages 6 months to 15 years as of July 1, 2011. The researchers conclude that strict adherence to measure definitions might miss the true quality of care provided, especially among populations that may have sporadic patterns of care use. Their study was funded in part by the Agency for Healthcare Research and Quality (HS18569).

More details are in "Are pediatric quality measures too stringent?" by Allison Casciato, B.A., Heather Angier, M.P.H., Christina Milano, M.D., and others in the September–October 2012 *Journal of the American Board of Family Medicine* 25(5), pp. 686-693. ■ DIL

Having a usual source of care is as important as having insurance in reducing children's unmet health care needs

Insurance is important for children to receive needed care. However, having a usual source of care (USC) is as important as having insurance in reducing unmet health care needs, according to a new study. Compared to children with insurance and a USC, children with no insurance but a USC had a 17 percent increased risk of experiencing an unmet health care need, children with insurance and no USC had a 24 percent increased risk, and children with no insurance and no USC had a 91 percent increased risk of experiencing an unmet health care need.

Uninsured children with a USC were not significantly more likely than children with both insurance and a USC to experience delayed urgent care, a problem in getting care, or a problem in seeing a specialist. Children with insurance but no USC were at 28 percent increased risk, and children with neither insurance nor

a USC were at 76 percent increased risk to experience specific unmet needs.

The findings were based on analysis of data from the Agency for Healthcare Research and Quality (AHRQ) Medical Expenditure Panel Survey–Household Component (2002–2007) for a study sample of children under 18 years of age who had at least one health care visit during the previous year and required additional care, tests, or treatment. The study was funded in part by AHRQ (HS16181 and HS18569).

More details are in "The effect of health insurance and a usual source of care on a child's receipt of health care," by Jennifer E. DeVoe, M.D., D.Phil., Carrie J. Tillotson, M.P.H., Lorraine S. Wallace, Ph.D., and others in the September/October 2012 *Journal of Pediatric Health Care* 26(5), pp. e25–e35. ■ DIL

Pediatricians need to make greater efforts to screen and counsel overweight adolescents

With the number of overweight and obese adolescents increasing, more needs to be done to screen these individuals and provide counseling. However, a new study finds that although obese adolescents are more likely to receive counseling on diet and exercise compared to normal-weight adolescents, overweight adolescents are being counseled at a much lower rate than their obese peers.

Lan Liang, Ph.D., of the Agency for Healthcare Research and Quality (AHRQ) and colleagues studied obesity counseling among 6,911 adolescent girls and 6,970 boys aged 11 to 17 years with parent-reported height and weight information. All adolescents had at least one visit with a health care provider within the past year. Parents of the adolescents were

surveyed to determine if their child had received diet and exercise counseling and when it took place.

A total of 17 percent of boys were overweight and 17 percent were obese. Girls had lower rates of 14 percent and 11 percent, respectively. Pediatric health professionals advised 47 percent of girls and 44 percent of boys to eat healthy. However, they only recommended 36 percent of boys and girls to exercise. Compared to their normal-weight peers, obese boys and girls were more likely to receive advice on how to eat healthy and to exercise more. But boys and girls who were overweight were much less likely to be counseled about such matters than those who were obese. Factors associated with receiving exercise and diet counseling from a provider

included living in the northeast, coming from higher-income households, having college-educated parents, and having a usual source of medical care. Since obesity is easier to prevent than treat, more work is needed to encourage providers to counsel adolescents about diet and exercise matters before adolescents become obese, suggest the study authors.

More details are in “Obesity counseling by pediatric health professionals: an assessment using nationally representative data,” by Dr. Liang, Chad Meyerhoefer, Ph.D., and Justin Wang, Ph.D., in the July 2012 *Pediatrics* 139(1), pp. 67-77. Reprints (AHRQ Publication No. 12-R096) are available from AHRQ.* ■ KB

Women's Health

Low-income women with breast cancer are less likely to initiate chemotherapy

Chemotherapy following surgery has remained the cornerstone of systemic therapy for patients with hormone receptor-negative breast cancer since 1990. Delaying or omitting initiation of adjuvant chemotherapy may contribute to breast cancer recurrence and mortality. Although guidelines for breast cancer treatment have focused on women under the age of 70, emerging evidence suggests clear benefits for older women as well.

A team of North Carolina-based researchers used Surveillance Epidemiology and End Results Medicare linked data to examine patterns of care for 6,678 elderly women diagnosed with stage II or stage III hormone receptor-negative breast cancer in 1994 to 2002, with claims data through 2007. The overall use of guideline-recommended adjuvant chemotherapy was

low at 43 percent. In general, low-income status, increasing age, and higher burden of coexisting conditions were all associated with significantly lower odds of postoperative chemotherapy initiation at 4 months after diagnosis.

Having cancer-positive lymph nodes, being diagnosed as stage II, being married, and being diagnosed in later years were generally associated with significantly higher odds of initiating chemotherapy within 4 months.

The researchers investigated whether structural/organizational factors, including distance to care and institutional affiliations, and select

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Breast cancer

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sociodemographic characteristics accounted for treatment differences. They found that the characteristics of the surgical facility where women were treated were not predictive of initiation of adjuvant chemotherapy within 4 months of diagnosis.

The researchers concluded that older women in good functional health who may benefit from chemotherapy may need better access to information about risks/benefits of adjuvant chemotherapy and improved

access to chemotherapy providers through better referral processes and transportation. This study was supported in part by the Agency for Healthcare Research and Quality (T32 HS00032).

See “Predictors of timing of adjuvant chemotherapy in older women with hormone receptor-negative, stages II-III breast cancer,” by Stephanie B. Wheeler, Ph.D., William R. Carpenter, Ph.D., Jeffrey Peppercorn, M.D., M.P.H., and others in *Breast Cancer Research and Treatment* 131, pp. 207-216, 2012. ■ MWS

Characteristics of care facilities may influence when elderly breast cancer patients receive radiation therapy

Structural/organizational characteristics of surgical facilities are significant predictors of radiation therapy (RT) initiation at 2, 6, and 12 months after breast-conserving surgery (BCS) among elderly women, and partially explain racial/ethnic variation in RT timing, concludes a new study.

North Carolina-based researchers examined Surveillance Epidemiology and End Results data linked to Medicare claims to identify women aged 65 and older diagnosed with stages I-III breast cancer and treated with BCS in 1994–2002. They examined the role of distance to RT providers, presence of on-site radiation services, surgical facility type/ownership, and size of surgical

facility in explaining racial/ethnic variation in the timing of initiation of guideline-recommended RT after BCS.

Increasing distance to RT providers generally was associated with lower odds of RT initiation at each time interval examined, with greater evidence of an access burden for Hispanic women. Delays in initiation of RT were associated with Federal and larger hospitals where care may be more fragmented. When the data were fully adjusted, racial/ethnic disparities in RT initiation disappeared within 6 and 12 months.

The researchers concluded that identifying modifiable health

system-level factors associated with quality cancer care (such as the availability of transportation) may help target policy interventions that can reduce disparities in outcomes. This study was supported in part by the Agency for Healthcare Research and Quality (T32 HS00032).

See “Structural/organizational characteristics of health services partly explain racial variation in timeliness of radiation therapy among elderly breast cancer patients,” by Stephanie B. Wheeler, Ph.D., William R. Carpenter, Ph.D., Jeffrey Peppercorn, M.D., M.P.H., and others in *Breast Cancer Research and Treatment* 133, pp. 333-345, 2012. ■ MWS

Disparities/Minority Health

Cultural myths may prevent low-income black women from exercising during pregnancy

Black women are at higher risk for obesity and physical inactivity during pregnancy than other groups of women. Cultural myths may prevent low-income black women from exercising during pregnancy, suggests a study by University of Pittsburgh researchers. They conducted a series of six focus group discussions with 34 low-income pregnant black women about their beliefs about exercise during pregnancy. Three major

themes emerged from these discussions: (1) black women had a broad definition of what types of activities constituted exercise, (2) they believed that exercise was generally beneficial during pregnancy, and (3) certain types of activities or movements could cause problems with pregnancy.

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Exercise during pregnancy

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The women in this study overwhelmingly believed that exercise has a positive impact on pregnancy. They often defined exercise as an activity of daily living such as housework and childcare in contrast to an activity performed outside of their daily routine. The researchers concluded that a lack of knowledge concerning the benefits of exercise is not a major contributor to inactivity among pregnant black women. However, a lack of detailed information about the type, frequency, and duration of exercise that is safe to perform during pregnancy prevented some women from exercising.

The women also described several cultural myths regarding certain types of activity during pregnancy. For example, women in each of the focus groups described hesitation and concern about performing

activities that would require them to place their arms over their heads. They were concerned that the umbilical cord would wrap around the baby's neck resulting in the strangulation and death of the fetus. The researchers believe that inquiring about cultural beliefs and dispelling misperceptions would reassure women and increase the types of exercise like stretching and yoga during pregnancy that black women engage in. This study was supported in part by the Agency for Healthcare Research and Quality (HS13913).



See “Low-income African American women’s beliefs regarding exercise during pregnancy,” by Elizabeth E. Krans, M.D., and Judy C. Chang, M.D., in *Maternal and Child Health Journal* 16, pp. 1180-1187, 2012. ■ MWS

Hospitals serving large minority populations have higher ambulance diversion rates

When emergency departments (EDs) become overcrowded, the hospital may divert ambulances to other institutions. Such diversions increase the time to care, which can have adverse outcomes for heart attack patients and others. Hospitals serving a predominantly minority population are more likely to divert ambulances than institutions that treat a lower proportion of minorities, reveals a new study.

The researchers examined ambulance diversion for 202 hospitals in California during 2007. EDs offering either basic or comprehensive services were included in the study. The researchers calculated hospital minority populations and the annual number of diversion hours for each hospital.

The mean number of hours on diversion for these hospitals was

724 per year. Substantial variation in annual diversion hours was observed within each county and among different counties.

Hospitals serving large minority populations were at the greatest risk for experiencing ambulance diversion. Those hospitals at the 90th percentile of minority ED visitors had 306 hours of annual ambulance diversion.

This was 4.1 times that of hospitals who served a 10th percentile of minority visitors. These hospitals had only 75 hours of diversion. Even when the researchers controlled for such things as ED capacity, hospital ownership, and other factors, minority-serving hospitals were still more likely to divert ambulances to another hospital ED.

Since diversion is a symptom of ED crowding issues, the

researchers propose that diversion bans be put into place. This has already been done in Massachusetts, where there has been no significant increase in wait times due to the ban. Putting a ban into place, either regionally or statewide, would force hospitals to examine other contributors to ED crowding, such as inadequate management of patient flow. The study was supported in part by the Agency for Healthcare Research and Quality (HS18098).

See “California hospitals serving large minority populations were more likely than others to employ ambulance diversion,” by Renee Yuen-Jan Hsia, M.D., Steven M. Asch, M.D., M.P.H., Robert E. Weiss, Ph.D., and others in the August 2012 *Health Affairs* 31(8), pp. 1767-1776. ■ KB

Disparities in adherence to blood pressure medications exist among older minorities

An important component of managing hypertension is for patients to adhere to their blood pressure medications. This is particularly important for blacks, for whom hypertension is more prevalent, uncontrolled, and associated with adverse outcomes. A new study found that medication adherence varied among a group of Medicare Part D beneficiaries, depending on patient factors, including race/ethnicity. Blacks had lower odds of adherence, as did other minorities, compared to whites. Medication adherence rates also differed from one geographic region to another.

Researchers reviewed claims data on 168,522 Medicare Part D enrollees with uncomplicated hypertension. Each had filled at least one prescription for blood pressure medication in 2006 and two prescriptions in 2007. The researchers looked at potential predictors of adherence that included age, sex, race/ethnicity, coexisting conditions, and other medications used.

The overall adherence rate for blood pressure medications was 79.5 percent. Two classes of anti-hypertensive drugs were prescribed the most: beta

blockers and diuretics. Blacks had the lowest rate of adherence (67.8 percent), followed by 69.3 percent for Hispanics and 81.5 percent for whites. There was a 47 percent lower odds of adherence for blacks and 42 percent lower odds of adherence for Hispanics compared with whites. Factors associated with lower adherence included having more coexisting conditions and using more medications. Given these findings, hypertensive patients with more coexisting conditions and concurrent medications are particularly vulnerable for adherence problems, note the researchers. They suggest targeting this group with individualized attention and programs to improve their levels of adherence. The study was supported in part by the Agency for Healthcare Research and Quality (HS17695).

See “Ethnic disparities in adherence to antihypertensive medications of Medicare Part D beneficiaries,” by Holly M. Holmes, M.D., Ruili Luo, Ph.D., Joseph T. Hanlon, Pharm.D., M.S., and others in the July 2012 *Journal of the American Geriatric Society* 60(7), pp. 1298-1303. ■ KB

Race linked to lower use of shared electronic medical records by patients with diabetes

Shared medical records (SMRs) provides patients with online services for their care management, including secure electronic messaging with providers, requesting prescription refills, and viewing lab test results and summaries of visits.

A new study reports that SMRs are used at different rates by diabetes patients of different races/ethnicities. The differences in SMR usage among black (34 percent) and Asian (37 percent) patients compared to white (62 percent) patients could not be fully explained by differences in age, sex, income level, health status, or

characteristics of clinicians.

After fully adjusting for these factors, the researchers found that black patients with diabetes had one-fifth and Asian patients two-fifths the odds of using the SMR compared to white patients.

Even when limiting the comparison to patients who were at least occasional Internet users, black patients with diabetes still were one-fourth as likely as white patients to use SMR services. This suggests that racial/ethnic differences in SMR use may go beyond basic access to or knowledge about computers. The findings were based on a 2009

survey of patients with diabetes at five racially and ethnically diverse clinics within the Group Health integrated health care delivery system located in western Washington State. The study was funded in part by the Agency for Healthcare Research and Quality (HS13853 and HS16759).

More details are in “Race/ethnicity and shared medical record use among diabetes patients,” by Courtney R. Lyles, Ph.D., Lynne T. Harris, M.S., Luesa Jordan, B.A., and others in the May 2012 *Medical Care* 50(5), pp.434–440. ■ DIL

Education and income influence the black–white crossover in mortality at advanced ages

Blacks generally have higher rates of mortality than whites in the United States during the course of their life. However, evidence indicates a mortality “crossover” that occurs when elevated age-specific mortality rates among blacks invert with those of whites at advanced ages. A new study reveals that this crossover is influenced by income in elderly men, but not elderly women. The researchers used data on 4,162 elderly individuals in North Carolina enrolled in an ongoing epidemiologic study. The individuals were interviewed at baseline (age 65 and older) in 1986–1987, with follow-up interviews in 1989, 1992, and 1996.

A significantly higher proportion of blacks (84 percent of black men and 86 percent of black women) than whites (65 percent of white men and 63 percent of white women) had less than 12 years of education (“low education”). Also, 74 percent of black women and 47 percent of black men had income below \$7,000 per year compared with 45 percent of white women and 20 percent of white men.

The association between low education and mortality did not vary by race or age and was only significant for

men. A significantly higher proportion of black men than white men died during the study period, but there was no racial difference in mortality for women. Blacks had a greater risk of death at age 65 compared with whites (39 percent higher for men, 64 percent higher for women), but the increased risk of death with age was smaller for blacks than whites (2 percent less for men, 3 percent less for women), resulting in a crossover at age 79 years for men and 83 years for women. Low education did not change the increase in mortality with age. When income was taken into account, the increased risk of death with age associated with low income was 38 percent weaker for black men than white men. The interaction between race and income moved the crossover for men to before age 65 years. The study was funded in part by the Agency for Healthcare Research and Quality (T32 HS00079).

More details are in “Socioeconomic status and the black–white mortality crossover,” by Jessica M. Sautter, Ph.D., Patricia A. Thomas, Ph.D., Matthew E. Dupre, Ph.D., and Linda K. George, Ph.D., in the August 2012 *American Journal of Public Health* 202(8), pp. 1566–1571. ■ *DIL*

Same-sex couples report more barriers to care and poorer interactions with providers than those in heterosexual marriages

Compared to married heterosexual couples, individuals who are part of same-sex couples report more difficulty in seeing specialists and getting medical care when needed, and more frequently experience delays in having required prescriptions filled, according to a new study. James Kirby, Ph.D., of the Agency for Healthcare Research and Quality (AHRQ), and Joseph Clift, Ed.D., M.S., P.M.P., of the Health Resources and Services Administration, examined 12 years of data from AHRQ’s Medical Expenditure Panel Survey. The researchers report that the 696 men and women who belonged to same-sex couples were significantly younger, better educated, and had

higher incomes than the 136,676 men and women who were part of different-sex married couples. Both groups were comparable in having a usual source of care and having a routine checkup in the past year.

However, a significantly lower percentage of individuals in same-sex couples reported getting nonurgent care when they wanted it (74.3 percent vs. 83.7 percent) or found it easy to see a specialist (62.2 percent vs. 76.6 percent). A greater percentage of men in same-sex couples received flu shots than did men in different sex couples (42.9 percent vs. 31.4 percent), possibly because of recommendations from the Centers

for Disease Control and Prevention for men who have sex with men.

A smaller percentage of individuals in same-sex couples reported that their doctor explained health information so it could be understood or that the doctor showed them respect, though these percentages were not significantly different from persons in different-sex married couples. Significantly fewer women in same-sex couples than women in different-sex married couples reported that their doctor spent enough time discussing their health concerns (76.0 percent vs. 86.1 percent).

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Same-sex couples *continued from page 17*

More details are in “Health care access and perceptions of provider care among individuals in same-sex couples: Findings from the Medical Expenditure Panel Survey

(MEPS),” by Drs. Clift and Kirby in the 2012 Special Issue on *LGBT Health Research of the Journal of Homosexuality* 59(6), pp. 839–850. Reprints (AHRQ Publication No. 13-R006) are available from AHRQ.* ■ *DIL*

Hispanics settling in ‘new’ destinations are more likely to have unmet health needs than those settling in traditional areas

U.S.-born Hispanics settling in “new” metropolitan locales (such as metro areas in Nevada, Georgia, and North Carolina) are more likely to have unmet needs for medical care and be dissatisfied with their care than those living in metro areas that have traditionally been home to the majority of U.S. Hispanics (such as metro areas in Texas, California, New York, New Jersey, Florida, Illinois, Massachusetts, Maryland, Virginia, and the District of Columbia). That’s the finding of a new study that focused on U.S.-born Mexican-Americans and Mexican immigrants.

The researchers examined data from the Agency for Healthcare Research and Quality (AHRQ) Medical Expenditure Panel Survey Household Component on a sample of 15,783 working age U.S.-born Mexican Americans and Mexican immigrants living in metropolitan areas. They found that in U.S. metropolitan areas overall, 65 percent of U.S.-born Mexican-Americans and 48 percent of Mexican immigrants had a usual source of care. The U.S.-born group was more likely to have an office-based visit, an emergency department visit, or any medical care expense than the immigrants. The U.S.-born group was also more likely to be highly satisfied with their usual source of care—and more likely to be highly satisfied with any care than were the immigrants.

Immigrant Mexicans in new destinations were significantly more likely than those in traditional destinations to have an inpatient discharge, an ED visit, and any medical expenditures—suggesting poorer access to ambulatory care. U.S.-born Mexican Americans living in new destinations for Hispanics were significantly more likely to have unmet needs for medical care or prescription drugs, and to be dissatisfied with their care over the past 12 months.

This may have been due to fewer Hispanic, Spanish-speaking, or other culturally competent providers in the new destinations than traditionally Hispanic destinations, suggest the researchers. Controlling for characteristics of the local area, the researchers found fewer significant differences for Mexican immigrants between new and traditional destinations, but most of the differences for U.S.-born Mexican-Americans remained. The study was funded by the Agency for Healthcare Research and Quality (HS17567).

More details are in “Health care experiences of Hispanics in new and traditional U.S. destinations,” by Carole Roan Gresenz, Ph.D., Kathryn Pitkin Derose, Ph.D., M.P.H., Teague Ruder, M.A., and others in the December 2012 *Medical Care Research and Review* 69(6), pp. 663-678. ■ *DIL*

South Asians may not perceive themselves as being overweight or obese

Racial and ethnic identities may influence what is considered to be an acceptable weight in certain communities. A new study reveals that South Asian Americans, despite having a high risk of type 2 diabetes and cardiovascular disease starting at a lower body mass index (BMI) than other racial groups, may not appropriately perceive themselves as being overweight or

obese. They also may not be aware of the relationship between their weight and chronic disease, such as type 2 diabetes.

Researchers interviewed 75 South Asian Americans from a health center and a community center that provided immigrant services. During the interviews, the participants were asked what they

thought of their weight and how it affects their health and well-being. Their height, weight, and BMI were also measured.

Responses showed that this group perceived themselves as having a normal weight, even when overweight or obese. Overall, 40

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South Asians

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percent of participants were overweight; 27 percent were obese. Among those who were overweight, 40 percent believed they had a normal weight or were underweight. Among those who were obese, 12 percent had similar incorrect assumptions.

Nearly half (48 percent) of overweight and 82 percent of obese

individuals felt that their health was affected by the excess weight. They cited physical problems, such as shortness of breath and joint pain. However, few recognized the link between being overweight or obese and the risk of developing a chronic disease. The researchers suggest that interventions to promote weight loss will need to start by reforming misperceptions about a healthy weight. The study

was supported in part by the Agency for Healthcare Research and Quality (T32 HS00078).

See “South Asian American perspectives on overweight, obesity, and the relationship between weight and health,” by Joyce W. Tang, M.D., Maryann Mason, Ph.D., Robert F. Kushner, M.D., and others in *Preventing Chronic Disease* 9, pp. 1-9, 2012. ■ KB

Mental Health

Having poor family relationships increases the risk for depression

Treatment for depression tends to focus on individual interventions, such as medication and psychotherapy. However, studies show that social support can protect against the development of depression. In fact, a new study found that individuals who reported not being very close to family members had a threefold increased risk for depression compared to those who felt “very close” to family.

The study used a sample population of 6,082 persons participating in a national survey that focuses on racial and ethnic differences in mental disorders. The majority of individuals surveyed were African Americans, Caribbean blacks, and non-Hispanic whites. Those surveyed were asked questions about how close they felt towards family and friends. Researchers measured the risk of depression by using standard diagnostic criteria.

Most of the participants reported overall closeness with family and friends. Caribbean Blacks and non-Hispanic whites reported feeling very close to friends at higher rates than African Americans. Blacks had lower risk of depression compared to non-Hispanic whites. This association continued, even after the

researchers controlled for social support variables and demographics. They point out, however, that a lower risk of depression among blacks does not mean they are less vulnerable to depression. In reality, blacks are more likely than whites to be underdiagnosed or misdiagnosed. When they are diagnosed with depression, it tends to be more chronic and severe.

These findings confirm earlier studies documenting the important relationship between social support and depression. The researchers suggest that perhaps a re-examination of individualistic models of treatment that are most evaluated in the United States may be in order. They call for more clinical trials to study the effects of social support interventions on risk of depression. Their study was supported in part by the Agency for Healthcare Research and Quality (HS19470).

See “Racial/ethnic disparities, social support, and depression: Examining a social determinant of mental health,” by Ruth S. Shim, M.D., M.P.H., Jiali Ye, Ph.D., Peter Baltrus, Ph.D., and others in the Winter 2012 *Ethnicity & Disease* 22, pp. 15-20. ■ KB

Seasonal influenza has a substantial impact on activities of daily living in nursing home residents

Getting influenza can debilitate anyone, but the elderly are most vulnerable to its effects. In fact, seasonal flu outbreaks cause a substantial decline in functioning among nursing home residents, particularly in their ability to carry out activities of daily living (ADL), according to a new study.

Researchers identified 2,351 freestanding nursing homes in 122 cities where weekly influenza mortality data is tracked by the Centers for Disease Control and Prevention. They studied six influenza seasons from October 1999 to September 2005. They measured ADL-decline indicators, such as weight loss, new or

worsening pressure ulcers, and infections, from a national nursing home patient database.

Physical function outcome measures, including ADL decline, mirrored the seasonal trends of influenza severity and mortality. There was a strong association between influenza mortality and high ADL decline, weight loss, and infections. No associations were found for restraint use, antipsychotic medications, or persistent pain—control measures of nursing home quality that were not expected to vary with seasonal influenza.

The researchers call for more studies to understand the

effectiveness of influenza vaccination to prevent functional decline in nursing home residents. They also suggest research to understand how some nursing homes are able to identify influenza cases early, minimize resident exposure, and reduce its impact on functional decline. The study was supported in part by the Agency for Healthcare Research and Quality (HS18462).

See “Effect of influenza on functional decline,” by Pedro L. Gozalo, Ph.D., Aurora Pop-Vicas, M.D., Zhanlian Feng, Ph.D., and others in the July 2012 *Journal of the American Geriatric Society* 60(7), pp. 1260-1267. ■ KB

Primary Care

Primary care physicians feel responsible for assessing patients' medication adherence, but rarely ask older patients about it directly

Physicians recognize a responsibility to assess whether their patients are taking medications as prescribed, but in actual patient encounters, rarely ask patients whether they are complying with their medication regimens, according to a new study. Nonadherence to taking medications as prescribed affects up to 40 percent of older adults in the United States and is associated with poor patient outcomes (including increased hospitalizations and mortality) at a cost of \$290 billion/year.

The researchers analyzed focus groups with 22 physicians from multispecialty group practices in New Jersey, Washington State, and the District of Columbia. They also did content analysis for visits between 100 elderly patients and 28 primary care physicians. The focus groups revealed that the physicians felt they had a responsibility to discuss medication adherence with

patients, mainly by asking patients general questions about their medication. If the physicians became aware of patients' nonadherence, regardless of the source of the information, the physicians felt the need to address it. Few physicians mentioned using observational strategies to determine patient adherence to medication, and most physicians felt more comfortable talking about nonadherence face-to-face. However, their lack of intrusive questions about medication taking during office visits may reflect lack of physician recognition of the questions needed to fully assess adherence, note the researchers.

Based on recorded office visits, they identified medication nonadherence in 39 instances during 32 of 100 visits. However, in half (20) of these cases,

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Medication adherence

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comments volunteered by the patient led to identifying nonadherence, not physician questioning. In all cases with nonadherence, the physicians tried to educate the patient about the importance of taking the drug as prescribed, or adjusted the medication for patients who were not adhering because of unpleasant side-effects. The study was funded in part by the

Agency for Healthcare Research and Quality (HS16391).

More details are in “Provider views about responsibility for medication adherence and content of physician–older patient discussions,” by Derjung M. Tarn, M.D., Ph.D., Thomas J. Mattimore, M.D., Douglas S. Bell, M.D., Ph.D., and others in the June 2012 *Journal of the American Geriatrics Society* 60(6), pp. 1019-1026. ■ *DIL*

Experienced primary care physicians want to know about your clinical status while you are in the hospital

Your primary care physician (PCP) wants to receive a wide array of information about your status and care when you are hospitalized, but not a copy of your daily progress notes, according to a new consensus survey. For example, your physician wants access to initial lab and radiology test results, medications ordered, admitting diagnoses, and consultants’ examinations.

The two-round modified Delphi survey involved 12 physicians with 8–30 years of experience in primary care, who ranked 89 candidate items of information that they would like to receive about patients from their practice who are hospitalized. The online survey’s first round included five family

physicians and seven general internists and the second round included four family physicians plus five general internists.

The PCPs came to agreement in the first round of the study on 37 items they wanted to have access to, and one, daily progress notes, that they did not. In the second round, a smaller group of PCPs reviewed the 51 remaining items and agreed on another 6 items that they wanted.

Upon their patients’ discharge, physicians wanted to receive a brief description of the patients’ hospital course and information on discharge medication/medication reconciliation, pending tests, and followup plans.

Between admission and discharge, the physicians only wanted to be

alerted to medical crises (such as cardiac arrest, respiratory failure). The PCPs came to no consensus on how they preferred receiving information, although email was the most favored method, followed by fax; standard mail via the U.S. Postal Service was the least preferred method. The study was funded in part by the Agency for Healthcare Research and Quality (HS18151 and HS18721).

More details are in “Information primary care physicians want to receive about their hospitalized patients,” by Kenneth J. Smith, M.D., M.S., Sunday Clark, Sc.D., M.P.H., Wishwa N. Kapoor, M.D., M.P.H., and others in the June 2012 *Family Medicine* 44(6), pp. 425-430. ■ *DIL*

Health Information Technology

Patient-centered interactive health records can improve use of preventive services

Americans receive only one-half of recommended preventive services. In an effort to improve patient use of preventive care, researchers developed and tested a higher-functioning personal health record, called an interactive preventive health record (IPHR). Sixteen months after access to the IPHR was provided, one out of four IPHR users were up-to-date on all preventive services—nearly double that of nonusers. A causal

effect is suggested by large increases in the delivery of specific preventive services for users, such as cancer screening and immunizations, compared to little or no increase in the control and nonuser groups. The researchers included 4,500 patients from 8 northern Virginia primary care practices in their study.

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Interactive health records

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The IPHR is an online, evidence-based, non-commercial patient portal with the capacity to interface with multiple electronic health records and perform various functions. The IPHR links patients to their clinician's records, explains information in lay language, displays tailored recommendations and educational resources, and generates reminders. The IPHR addressed 18 preventive services recommended by the U.S. Preventive Services Task Force.

The researchers believe that information systems that feature patient-centered functions, such as the IPHR,

have potential to increase preventive service delivery. Engaging more patients to use these systems could have important public health benefits. This study is supported in part by the Agency for Healthcare Research and Quality (HS17046). A research brief is available at <http://healthit.ahrq.gov/KristSuccessStory2010.pdf>.

See "Interactive preventive health record to enhance delivery of recommended care: A randomized trial," by Alex H. Krist, M.D., Steven H. Woolf, M.D., Stephen F. Rothemich, M.D., and others in the *Annals of Family Medicine* 20, pp. 312-319, 2012. ■ MWS

Web-based patient portal improves perceptions of patient-centeredness and receipt of preventive services

Primary care-based implementation of a Web-based Wellness Portal can improve the quality of patient-centered preventive care, suggests a new study. The Wellness Portal is a novel, internet-based patient portal that focuses on wellness, prevention, and longitudinal health, which was developed and tested by a group of researchers at the University of Oklahoma. They found that patients who had access to the portal were more likely to perceive that their care was patient-centered and were more likely to receive recommended preventive services than patients without access to the portal (84.4 percent vs. 67.6 percent), despite having fewer office visits (average of 2.9 vs. 4.3).

Children whose parents had access to the portal were more likely to receive immunizations than others (95.5 percent vs. 87.2 percent). The recommended preventive services included taking low-dose aspirin, if indicated, receiving Pneumovax (a pneumonia vaccine) because of chronic health conditions, and, for children,

receiving all recommended immunizations. To determine the portal's effect on the degree to which recommended services were individualized and provided, the researchers examined the behavior and experiences of both patients and primary care providers.

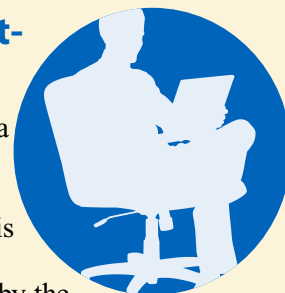
The portal was tested in four Oklahoma primary care practices. Two of the practices were small rural practices and the others were medium-size suburban family practices. The study included 422 adult patients between the ages of 40 and 75 and parents of 116 children between the ages of 2 and 5.

Portal users received basic technical assistance. They could sign up for the portal online. Once registered, each patient was offered the following menu of options: update preventive services history, assess personal risk factors, review personalized wellness plan, track and chart vital signs and laboratory results, work on symptom diary, update medical encounters history, manage medication and problem list, and

download a personal health record. This study was supported by the Agency for Healthcare Research and Quality (HS17188) as part of an initiative on Enabling Patient-Centered Care through Health IT (www.ahrq.gov/clinic/tp/pchhttp.htm) that is a part of the Agency's Ambulatory Safety and Quality Program.

For a brief video highlighting this study, select <http://healthit.ahrq.gov/AHRQHealthITSuccessStoriesMoldVideo>. A research brief is also available at <http://healthit.ahrq.gov/MoldSuccessStory2013.pdf>.

See "Impact of a wellness portal on the delivery of patient-centered preventive care" by Zsolt Nagykaladi, Ph.D., Cheryl B. Aspy, Ph.D., Ann Chou, Ph.D., and James W. Mold, M.D. in the March-April 2012 *Journal of the American Board of Family Medicine* 25(2), pp. 158-167. ■ MWS



Electronic health record tools help physicians identify and counsel overweight patients

As the epidemic of obese and overweight people continues in the United States, physicians will need more ways to identify these patients and provide effective weight-loss counseling. Tools embedded in an electronic health record (EHR) may help, suggests a new study. Researchers randomized two groups of 15 physicians to receive the EHR tools or to continue with usual care.

Their patients were eligible to participate in the study if they were overweight, but non-obese (with a body mass index between 27 and 29.9 kg/m²). Physicians in the intervention group received a set of EHR tools to use. These consisted of a point-of-care alert to identify a patient as overweight, a template used to counsel patients, and an order set designed to document an overweight diagnosis and to generate patient handouts.

During the 6-month study period, 958 patients were seen by the intervention physicians and 1,156 patients were seen by the control group physicians. The EHR-based alerts increased the documentation of overweight patients, as well as the frequency of counseling sessions. Patients also reported short-term behavior change when these tools were used.

For example, patients in the intervention group were more likely than those of usual care physicians to be diagnosed as overweight (22 percent vs. 7 percent) and to receive weight-specific counseling (27 percent vs. 15 percent). Most patients who received counseling from their doctor reported increased motivation to lose weight (90 percent) and taking steps toward their goal (93 percent).

Of the intervention physicians, 91 percent reported that the point-of-care alert helped them identify patients they did not consider to be overweight. The EHR tools also improved counseling efforts, with 55 percent reporting an increase in the frequency of counseling of overweight patients. Time was cited as the most frequent barrier to using the intervention, even though it only took 7.5 minutes to use. The study was supported by the Agency for Healthcare Research and Quality (T32 HS00078).

See “Electronic tools to assist with identification and counseling for overweight patients: A randomized controlled trial,” by Joyce W. Tang, M.D., Robert F. Kushner, M.D., Kenzie A. Cameron, Ph.D., M.P.H., and others in the *Journal of General Internal Medicine* 27(8), 933-999, 2012. ■ KB

Studies identify patients most and least likely to communicate with physicians using a secure Internet-based portal

Younger age, higher income and education levels, and lack of a chronic illness are factors that make primary care patients more likely to use a secure, Internet-based patient-physician communications system (a portal), according to a new study. Such portals are being used increasingly by health care systems to improve two-way communications between patients and physicians. These portals can also be used by patients to place medication refill orders, schedule appointments, see their electronic health record and test results, take online health risk appraisals, inform clinicians of any health changes, receive patient reminders and alerts, and more.

In an effort to make secure Internet-based portals useful for as many patients as possible, the researchers recruited 674 patients at five primary care clinics affiliated with an academic health center, 95 percent of whom completed initial waiting room surveys. Of 369 patients who enrolled in the portal during its pilot-testing at three of the clinics, 295 were sent enrollment surveys and 355 were sent the follow-up survey (3 months after portal enrollment). The study, described in two papers here, was funded in part by the Agency for Healthcare Research and Quality (HS17035).

Kruse, R.L., Koopman, R.J., Wakefield, B.J., and others. (2012 May). “Internet use by primary care patients: Where is the digital divide?” *Family Medicine* 44(5), pp. 342-347.

The researchers approached 713 patients to participate in a cross-sectional (waiting room) survey of primary care outpatients about desired Internet portal features. The 638 respondents included 499 Internet users (78 percent) and 139 nonusers (22 percent). The most common barriers to Internet use reported by the nonusers were lack of computer or Internet access, and not knowing how to use email or

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Internet-based portal

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the Internet. Younger age, higher levels of education, higher household income, and lack of chronic illness were associated with greater Internet use. Once the researchers adjusted their data for age and other factors, having a chronic illness was not a significant factor in predicting lack of Internet use. The researchers suggest that the Internet access of older adults with chronic illness will need to be improved if this group is to reap the benefits of health information technology.

Wakefield, D.S., Kruse, R.L., Wakefield, B.J., and others.
“Consistency of patient preferences about a secure

Internet-based patient communications portal: Contemplating, enrolling, and using.” (2012, November/December). *American Journal of Medical Quality* 27(6); pp. 494-502.

In this paper, the researchers looked at the intensity of internet use among the 499 Internet users participating in the waiting room survey. Patients who enrolled and used a patient portal initially perceived only limited improvements in care because of the portal. Of the 163 respondents to the enrollment survey, 50.3 percent reported having emailed their physicians within the past year, with 37 percent sending four or more emails. The majority (79.8 percent) had not ordered

prescription refills online, and only 13.9 percent had previously used an online personal health record.

Enrollment survey respondents were much more interested than waiting room respondents in sending their doctors emails, viewing lab and test results, and requesting medication refills. The 79 patients who completed both the enrollment and followup surveys and logged into the portal reported only modest use of the portal during the first 3 months. Many reported problems navigating the secure email function or they did not receive timely answers, and a large proportion of those surveyed reported inaccuracies in their medication lists. ■ *DIL*

Behavioral health providers are generally positive about health information exchanges

A new study suggests that the majority of behavioral health providers, such as psychologists, mental health counselors, and social workers, are receptive to health information exchanges (HIEs). Despite this positive attitude, many believe these systems would add cost and time burdens to their practices. They are also concerned about access to client information, as well as their legal and ethical vulnerabilities.

Researchers collected survey data on 674 behavioral health providers in Nebraska. The providers included different types of licensed practitioners, therapists, social workers, counselors, and psychologists. The majority practiced in the outpatient setting in metropolitan areas of 250,000 to 1 million residents. The survey asked participants about their beliefs about HIEs in four areas: improved care and communication, added cost and time burdens, access and vulnerability concerns, and impact on workflow and control of access to client information.

Overall, 67 percent of those surveyed felt positive about the impact of HIEs on behavioral health services. These individuals believed that HIE improves care, communication, workflow, and the control of access to client information. The other 33 percent believed HIE would add cost and time burdens, have a negative impact on workflow and control, and posed access and vulnerability concerns. Providers who were more positive about HIEs tended to be younger, confident in their computer skills, and had prior satisfaction with electronic health records. The study was supported by the Agency for Healthcare Research and Quality (HS017838).

See “Behavioral health providers’ beliefs about health information exchange: A statewide survey,” by Nancy Shank, Ph.D., M.B.A., in the *Journal of the American Medical Informatics Association* 19, pp. 562-569, 2012. ■ *KB*

Electronic alerts do not increase risk-appropriate care for patients with chest pain

Evaluation of chest pain represents a significant diagnostic challenge for primary care physicians in that the physician wants to avoid missing a patient's risk of heart attack, while at the same time limit excess testing. Providing clinicians with electronic alerts with real-time information to promote risk-appropriate clinical decisions did not affect the tests used for high-risk and low-risk primary care patients, found a new study. Doctors who received the alerts had no significant difference in tests used than doctors who did not receive the alerts.

A team led by Thomas D. Sequist, M.D., of Brigham and Women's Hospital developed a set of two

electronic alerts based on automated calculation of the patient's Framingham Risk Score at the time of the office visit. During the office visits for high-risk patients, clinicians received an alert recommending the performance of an electrocardiogram and the administration of aspirin. The alerts allowed for a "one-click" ordering of these recommendations. During office visits for low-risk patients complaining of chest pain, clinicians ordering cardiac stress tests received an alert recommending against performance of this test.

The study included 215 physicians, nurse practitioners, and physician assistants practicing across 15

health centers that are a part of integrated multispecialty group practice. Over 7,000 of their patients were included in the study. These patients were at least 30 years old on the first occasion of their presenting with chest pain to clinicians. This study was supported by the Agency for Healthcare Research and Quality (HS17075).

See "Electronic risk alerts to improve primary care management of chest pain: A randomized, controlled trial," by Dr. Sequist, Shane M. Morong, B.S., Amy Marston, B.A., and others in the *Journal of General Internal Medicine* 27(4), pp. 438-444, 2012.

■ MWS

Clinical quality measures useful in estimating quality across different electronic health records

A recent study supported by the Agency for Healthcare Research and Quality (AHRQ) examined the sensitivity and specificity of clinical quality measures generated by electronic health records. "Accuracy of Electronically Reported Meaningful Use Clinical Quality Measures: A Cross-Sectional Study" appeared in the *Annals of Internal Medicine* on January 15. The study looked at the accuracy of interoperable electronic reporting for 12 quality measures, finding that 9 of the clinical quality measures showed good consistency in estimating

quality of care. This suggests that electronic quality measurement has the capability to identify areas in need of improvement and quantify the impact of changes that have been made. This research was a part of AHRQ's ongoing efforts to study ways to improve electronically enabled quality measurement. For a short video about this project, select: <http://healthit.ahrq.gov/EQMKAushalVideo>. The abstract is available at: www.ncbi.nlm.nih.gov/pubmed/23318309. ■

AHRQ Stats

Patient survival after heart attack in the hospital has improved

Patients' survival following a heart attack in the hospital has improved since 2001, according to AHRQ projections. The in-hospital death rate is projected to fall to 5.4 percent by the end of 2012 compared with 9.9 percent in 2001. (Source: *HCUP Projections: Cardiovascular/Cerebrovascular Conditions and Procedures 2011 to 2012*, which can be viewed at www.hcup-us.ahrq.gov/reports/projections/2012-02.pdf.)

Hospital admissions and emergency department visits for influenza rose from 2008 to 2009

Hospital emergency department visits for influenza increased from 491,900 in 2008 to 1,281,700 in 2009 and hospital admissions for influenza rose from 88,300 to 163,200. (Source: HCUP Statistical Brief 147, *Emergency Department Visits and Hospital Inpatient Stays for Seasonal and 2009 H1N1 Influenza, 2008-2009*, which can be viewed at www.hcup-us.ahrq.gov/reports/statbriefs/sb147.pdf.)

Hospital stays grow by 12 percent, but costs jump 62 percent

Hospital stays increased by 12 percent between 1997 and 2010, but their cost jumped 62 percent—from \$232 billion to \$376 billion. You can read the Healthcare

Cost and Utilization Project (HCUP) Statistical Brief #144, *Overview of Hospital Stays in the United States, 2010*, at www.hcup-us.ahrq.gov/reports/statbriefs/sb144.pdf.

Hospital admissions projected for hip replacement

Hospital admissions of patients needing hip replacement for the first time were projected to reach 440,000 by the end of 2012, at a cost of \$19,000 per patient. Two-thirds of the hip replacement admissions were due to osteoarthritis. (Source: *HCUP Projections: Mobility/Orthopedic Procedures 2011 to 2012*, which can be viewed at www.hcup-us.ahrq.gov/reports/projections/2012-03.pdf.)

Fewer rural than urban blacks had preventive care visits in 2009

Only 58 percent of blacks living in rural areas of the United States saw a doctor in 2009 for a routine preventive care visit compared with 70 percent of their urban counterparts. (Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey Statistical Brief #383: *Preventive Health Care Utilization by Adult Residents of MSAs and non-MSAs: Differences by Race/Ethnicity, 2009*, which can be viewed at http://meps.ahrq.gov/mepsweb/data_files/publications/st383/stat383.shtml. ■

New children's electronic health record format announced

The benefits of electronic health records (EHRs) may become more widely available to children through an EHR format for children's health care recently announced by the U.S. Department of Health and Human Services' Agency for Healthcare Research and Quality (AHRQ) and Centers for Medicare & Medicaid Services (CMS).

Growing use of EHRs continues to improve the quality and safety of health care in the United States, but many existing EHR systems are not tailored to capture or process health information about children. The new EHR format for children's health care includes recommendations for child-specific data elements such as vaccines, as well as functionality that will enable EHR developers to broaden their products to include modules tailored to children's health.

"Health care for children is a calling that carries special challenges," said AHRQ Director Carolyn Clancy, M.D. "This new children's EHR format will help software developers meet the needs of health care providers for children by combining best practices in clinical care, information technology, and the contributions of health care providers who treat children every day."

The children's EHR format was authorized by the 2009 Children's Health Insurance Program Reauthorization Act (CHIPRA) and developed by AHRQ and CMS. The format is intended to improve care for children, including those enrolled in Medicaid and the Children's Health Insurance Program (CHIP), by guiding EHR developers to understand the types of information that should be included in EHRs for children. The format is designed for EHR developers and providers who wish to augment existing systems with additional features or to build new EHR systems for the care of children.

The format includes a minimum set of data elements and applicable data standards that can be used as a blueprint for EHR developers seeking to create a product that can capture the types of health care components most relevant for children. Child-specific data elements and functionality recommendations are sorted into topic areas that include prenatal and newborn screening tests, immunizations, growth data, information for children with special health care needs, and child abuse reporting. The EHR format provides guidance on structures that permit interoperable exchange of data, including data collected in school-

based, primary care, and inpatient care settings. The format is compatible with other EHR standards and facilitates quality measurement and improvement through the collection of clinical quality data.

"We have been pleased to partner with AHRQ on this first and much needed step to move EHR products to better capture the health care needs of children and adolescents," said Cindy Mann, CMS deputy administrator and director of CMS's Center for Medicaid and CHIP Services. "The EHR format provides a foundation upon which developers can build EHRs that, by differentiating between children and adults, ultimately will lead to better quality information about children's health."

AHRQ and CMS led development of the children's EHR format by multiple experts including the American Academy of Pediatrics (AAP) and the American Academy of Family Physicians. The format is built on specifications from sources that include the Health Level Seven International (HL7®) EHR-S Functional Model, the HL7 Child Health Work Group's Child Health Functional Profile, and the HHS Health Resources and Services Administration's Health IT for Children Toolbox.

"Children are special—they are not little adults where one size can be made to fit all, including one-size EHRs," said Thomas McInerney, M.D., president of the AAP. "Until now many EHRs have lacked child-specific functionality such as the ability to record age-appropriate development, nutrition, immunizations, or growth."

Next steps include testing by two CHIPRA quality demonstration grantees, the Commonwealth of Pennsylvania and the State of North Carolina. As part of the longer term vision, CMS will work toward integration of the format into future editions of the Office of the National Coordinator for Health Information Technology's EHR Standards and Certification Criteria. This would be required for achieving "meaningful use" of certified EHR technology in future stages of the Medicare and Medicaid EHR incentive programs.

For more information about the children's EHR format, please visit <http://healthit.ahrq.gov/childehrFormat>. For more information about Medicaid and CHIP, please visit www.Medicaid.gov. ■

AHRQ reviews highlight treatment options for rheumatoid and psoriatic arthritis

Two updated research reviews from AHRQ's Effective Health Care Program reinforce the current standards of care for drug therapies used to treat rheumatoid arthritis (RA) and psoriatic arthritis (PsA). Limited evidence on oral and biologic disease-modifying antirheumatic drug (DMARD) therapies prevents firm conclusions on their effectiveness and risks for treating RA and on the superiority of one oral DMARD over another. For PsA, the new review found limited evidence supporting the efficacy of biologic DMARDs. However, evidence is insufficient to draw firm conclusions about the effectiveness of DMARDs or their

impact on functional status, health-related quality of life, or tolerability. The new clinician and patient resources compare the latest research on RA and PsA treatments.

The summaries reinforce the current standards of care for drug therapies for both conditions. Findings indicate that oral DMARDs remain effective first-line treatments for RA, but biologic DMARDs are more effective in treating RA symptoms. For the treatment of PsA, evidence supports the general efficacy of both oral and biologic DMARDs. No conclusions can be reached about whether some DMARDs and

treatment strategies are better than others for minimizing PsA joint damage and improving quality of life. New RA resources include a patient summary, clinician summary, activity, and faculty slide set, based on the review *Drug Therapy for Rheumatoid Arthritis in Adults: An Update*. New PsA resources include a patient summary and clinician summary based on the review *Drug Therapy for Psoriatic Arthritis in Adults: Update of a 2007 Report*. All summaries and reviews can be viewed on AHRQ's Effective Health Program Web site at www.effectivehealthcare.ahrq.gov. ■

Announcements

TeamSTEPPS® training module for primary care practices now available

A new TeamSTEPPS training module for primary care practices is now available in draft form. Primary care practices can use this training curriculum to improve patient safety by teaching health care providers and staff how to communicate better, work more effectively, and make a greater commitment to teamwork. TeamSTEPPS is an evidence-based learning approach jointly developed by AHRQ and the Department of Defense. The new module applies

the four TeamSTEPPS core competencies—team leadership, situation monitoring, mutual support, and communication — to the primary care setting. It also includes case studies and videos relevant to primary care to illustrate these evidence-based concepts. For more information on the new Primary Care TeamSTEPPS module, go to www.ahrq.gov/teamstepstools/primarycare. ■

AHRQ report reveals use of Medicaid home and community-based services

A new AHRQ report found that 2.2 million Medicaid patients—one of every 25 beneficiaries of the Federal-State health insurance program—were provided home health care or other home and community-based services in 2005. The report includes findings on the availability and use of home and community-based services and potentially avoidable hospital admission rates. For details, see

“Health and Welfare of the Medicaid Home and Community-Based Services Population” at www.ahrq.gov/research/lrc/hcbsfindings.

To view a related report, “Development of Quality Indicators for the Home and Community-Based Services Population: Technical Report,” go to www.qualityindicators.ahrq.gov.

The researchers also published the article, “Users of Medicaid Home and Community-Based Services Are Especially Vulnerable to Costly Avoidable Hospital Admissions,” in the June 2012 issue of *Health Affairs*. You can access the abstract on PubMed at: www.ncbi.nlm.nih.gov/pubmed/22665828. ■

Experts propose new Health Literate Care Model

Primary care providers can address their patients’ health literacy needs by using a Health Literate Care Model, according to a new study published in the February 4 online issue of *Health Affairs*. More than one-third of patients in the United States are not health literate enough to understand all that they need to do to take care of their health, according to study authors, Department of Health and Human Services Assistant Secretary for Health Howard K. Koh, M.D., Cindy Brach, M.P.P., of the Agency for Healthcare Research and Quality (AHRQ), and others.

The Care Model, the method currently used by medical providers to improve the quality of their patients’ care, has drawn attention to the importance of informed patient engagement, but it does not include specific strategies to make sure all patients understand health information and can navigate the complex health care

system. The proposed Health Literate Care Model would integrate tools from AHRQ’s 2010 Health Literacy Universal Precautions Toolkit into each of the Care Model’s six elements—health care organization, self-management support, delivery system redesign, decision support, clinical information systems, and community linkages.

According to the authors, use of the Health Literate Care Model will make health literacy an organizational value while introducing health literacy universal precautions such as confirming patient understanding through “teach back” into the care system. For details, see “Improving Patient Engagement through the Health Literate Care Model,” in the February 4 *Health Affairs*. To access AHRQ’s Health Literacy Universal Precautions Kit, go to www.ahrq.gov/qual/literacy. ■

AHRQ reports summarize quality gaps across health care

A new summary of evidence reports from AHRQ on opportunities to improve health care quality is now available. Beginning in 2004, the eight “Closing the Quality Gap” reports assessed evidence for improvement for selected settings, interventions, and clinical conditions. Individual reports examined the effectiveness of bundled payment programs,

effectiveness of the patient-centered medical home, strategies to address health disparities, effectiveness of medication adherence interventions, effectiveness of public reporting, prevention of healthcare-associated infections, measurement of outcomes for people with disabilities, and health care and palliative care for patients with advanced and serious illness.

The summary, *Closing the Quality Gap: Revisiting the State of the Science*, is designed to provide a deeper understanding of the nature and extent of quality gaps across health care, as well as the systemic changes necessary to close them. You can read the report at www.ahrq.gov/clinic/tp/gapsump.htm. ■

Launch of open-access journal on electronic clinical data

The Agency for Healthcare Research and Quality and the Electronic Data Methods Forum are pleased to announce the official launch of eGEMs (Generating Evidence and Methods to improve patient outcomes). eGEMs is an open-access journal focused on using electronic clinical data to advance research and quality improvement, with the overall goal of

improving patient and community outcomes. Authors are welcome to submit papers, images, or other media focused on data methods, informatics, governance, and the learning health system.

You can access the journal at <http://repository.academyhealth.org/egems>. ■

Save May date for two AHRQ data user workshops

The Agency for Healthcare Research and Quality (AHRQ) will be hosting two separate workshops for researchers who use either AHRQ's Healthcare Utilization Project (HCUP) or Medical Expenditure Panel Survey (MEPS), two of AHRQ's data resources. Both workshops use computers to give participants hands-on experience with the data. Both will be held at AHRQ headquarters in Rockville, Maryland.

- **May 8**
HCUP Data Users Workshop
- **May 8-9**
MEPS Data Users Workshop

For more information about HCUP and MEPS, go to www.ahrq.gov/data. Details about the two workshops will be in next month's newsletter. Registration will be required. ■

Andrews, A.M., Zhang, N., Magee, J.C., and others. (2012, June). “Increasing donor designation through black churches: Results of a randomized trial.” (AHRQ grant HS08574). *Progress in Transplantation* 22(20), pp. 161-167.

A program using church members trained as lay health advisors was able to increase minority enrollment in an organ donor registry, even absent a change in attitudes. The advisors conducted organ donation discussions with church groups and showed a DVD created for this program.

Campbell, N.L., Boustain, M.A., Skopelja, E.N., and others. (2012, June). “Medication adherence in older adults with cognitive impairment: A systematic evidence-based review.” (AHRQ grant HS19818). *The American Journal of Geriatric Pharmacotherapy* 10(3), pp. 165-177.

This review identified barriers to medication adherence in cognitively impaired older adults as well as interventions to improve adherence. Barriers included: understanding new directions, living alone, and scheduling medication administration into the daily routine. Successful interventions to improve medication adherence focused on frequent human communication as reminder systems.

Chang H.-Y., Weiner J.P., Richards T.M., and others. (2012,

April). “Predicting costs with Diabetes Complications Severity Index in claims data.” (AHRQ Contract No. 290-05-0034). *American Journal of Managed Care* 18(4), pp. 213-219.

The Diabetes Complications Severity Index (DCSI) without laboratory test results is a better predictor of total costs for a patient with diabetes than counts of complications, found this study. The DCSI scores each of seven diabetes complication categories (retinopathy, nephropathy, cerebrovascular disease, cardiovascular disease, peripheral vascular disease, and metabolic syndrome) 0, 1, or 2—to produce an index value (range, 0–13).

Chien, A.T. (2012, October). “Can pay for performance improve the quality of adolescent substance abuse treatment?” (AHRQ grant HS17146). *Archives of Pediatric Adolescent Medicine* 166(10), pp. 962-963.

This article comments on a new study of the effects of a pay-for-performance (P4P) plan on adolescent substance abuse treatment and outcomes. The author cites it as the first such study on a subpopulation of children with special health care needs and places it in the context of other P4P studies on adults. In addition, she points to large gaps in the understanding of the effectiveness of P4P strategies and discusses questions relating to P4P program design that have emerged in the broader P4P literature.

Clancy, C. (2013). “New hospital readmission policy links financial and quality incentives.” *Journal of Nursing Care Quality* 28(1), pp. 1-4. Reprints (AHRQ Publication No. 13-R020) are available from the Agency for Healthcare Research and Quality.*

Under provisions included in the Affordable Care Act, hospitals with high readmission rates for certain procedures could see their annual hospital Medicare payments reduced by up to 1 percent. In response, hospitals must learn to maintain effective and consistent levels of nurse staffing, which has been shown to decrease preventable readmissions, and invest in nurses’ capability to educate patients.

D’Allesandro, A.M., Peltier, J.W., and Dahl, A.J. (2012, June). “A large-scale qualitative study of the potential use of social media by university students to increase awareness and support for organ donation.” (AHRQ grant HS13416). *Progress in Transplantation* 22(20), pp. 183-191.

This project identified a conceptual model of how college students, especially those in student organizations, can be the social media catalyst for viral communications designed to motivate others to learn about the need for organ donation and become organ donors. The findings of the study suggest that the donation community can motivate college students to register as

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donors and become advocates through outreach efforts that use social media.

DeVoe, J.E., Westfall, N., Crocker, S., and others. (2012, January). “Why do some eligible families forego public insurance for their children? A qualitative analysis.” (AHRQ grants HS14645, HS16181, and HS18569). *Family Medicine* 44(1), pp. 39-46.

The researchers interviewed 24 parents of children eligible for public insurance and identified four barriers to children’s enrollment. These included: (1) parental confusion about enrollment and eligibility requirements, (2) difficulties navigating the complexities of obtaining public coverage, (3) frustrations with the limited availability of providers, and (4) often finding that many services are not covered or that there are coverage gaps.

Grossman, J.M., Cross, D.A., Boukus, E.R., and others. (2012, May/June). “Transmitting and processing electronic prescriptions: Experiences of physician practices and pharmacies.” (AHRQ Contract No. 290-05-0007). *Journal of the American Medical Informatics Association* 19(3), pp. 353-359.

Physician practices and pharmacies are generally satisfied with electronic transmission of new prescriptions, but use of this process for renewals is inconsistent, requiring workarounds for both parties that reduced efficiency, according to a new study. Despite e-prescribing, the pharmacies may have to enter the drug name semi-manually because the National Drug Code in the physician

practice’s system or the pharmacy’s database may not be up-to-date.

Jarvik, J.G., Comstock, B.A., Bresnahan, B.W., and others. (2012, May). “Study protocol: The back pain outcomes using longitudinal data (BOLD) registry.” (AHRQ grant HS19222). *BMC Musculoskeletal Disorders* 13, p. 64.

The overall goal of this project is to establish a rich, sustainable registry to describe the natural history and evaluate prospectively the effectiveness, safety, and cost-effectiveness of interventions for patients 65 and older with back pain. By establishing this registry, the researchers are creating a resource that contains patient-reported outcome measures as well as electronic medical record data for elderly patients with back pain.

Jones, M., Samore, M.H., Carter, M., and others. (2012, June). “Long-term care facilities in Utah: A description of human and information technology resources applied to infection control practice.” (AHRQ Grant No. HS14017). *American Journal of Infection Control* 40(5), pp. 446-450.

The researchers surveyed all 80 long-term care facilities in Utah to get information on the staffing and operation of their infection control (IC) programs. The surveys showed that most infection preventionists (71 percent) were registered nurses and 82 percent had on-the-job training. For 94 percent of the staff, IC was a secondary assignment. Information infrastructure was not up-to-date, except for the provision of desktop computers.

Kesselheim, A.S. and Avorn, J. (2012). “The Food and Drug

Administration has the legal basis to restrict promotion of flawed comparative effectiveness research.” (AHRQ grant HS18465). *Health Affairs* 31(10), pp. 2200-2205.

The authors review the legal and methodological issues surrounding the authorization of promotional claims for drugs based on observational studies and support the FDA’s wariness in authorizing such claims. They point out that, as comparative effectiveness research matures, the FDA may choose to modify that perspective, along with its definition of acceptable, adequate, and well-controlled investigations, in limited circumstances.

Kesselheim, A.S., Lee, J.L., Avorn, J., and others. (2012, January). “Conflict of interest in oncology publications: A survey of disclosure policies and statements.” (AHRQ grant HS18465). *Cancer* 118(1), pp. 188-195.

The authors find that there is still much variation among cancer-related journals in their policies for reporting authors’ conflicts of interest. Among 131 cancer research journals identified by the researchers, only 112 provided disclosure policies. Of these 112 journals, 99 requested that authors disclose conflicts of interest, but 13 did not require it.

Leeman, J. and Sandelowski, M. (2012). “Practice-based evidence and qualitative inquiry.” (AHRQ grant HS19468). *Journal of Nursing Scholarship* 44(2), pp. 171-179.

The authors present a framework for the use of qualitative methods to

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contribute to the following categories of practice-based evidence: (a) practice-based interventions and implementation strategies, (b) causal mechanisms, (c) approaches to adaptation, (d) how-to guidance, unanticipated effects, and (f) relevant contextual factors. They argue that qualitative inquiry has an essential role to play in incorporating more practice-based evidence into the evidence base for nursing practice.

Norris, S.L., Holmer, H.K., Burda, B.U., and others. (2012, May). “Conflict of interest policies for organizations producing a large number of clinical practice guidelines.” (AHRQ grant HS18500). *PLoS ONE* 7(5), e37413 (12 pp.).

Conflict of interest (COI) policies related to the writing of clinical practice guidelines (CPGs), among organizations that develop multiple CPGs, fail to meet all seven of the principles set out in the Institute of Medicine’s 2011 standards for CPG developers, according to the researchers. They identified 17 COI policies directly relevant to CPGs from 37 organizations with five or more guidelines in the AHRQ National Guideline Clearinghouse between January 2009 and November 2010.

Saldanha, I.J., Wilson, L.M., Bennett, W. L., and others. (2012, September). “Development and pilot test of a process to identify research needs from a systematic review.” (AHRQ Contract No. 290-07-10061). *Journal of Clinical Epidemiology* [Epub ahead of print].

There is a need for a methodologically rigorous process

of identifying and prioritizing research needs from systematic reviews in order to effectively distribute resources to areas of highest priority. The authors pilot-tested an eight-step process to identify clinically important research needs in the area of gestational diabetes mellitus. They suggest this process should be tested using systematic reviews of other diseases.

Shaikh, U., Nettiksimmons, J., Bell, R.A., and others. (2012, March). “Accuracy of parental report and electronic health record documentation as measures of diet and physical activity counseling.” (AHRQ grant HS18567). *Academic Pediatrics* 12(2), pp. 81-87.

The study objective was to determine whether parental reports and electronic records of physician counseling reflect actual counseling provided. The researchers concluded that parental report via a questionnaire administered directly after the medical visit was a better alternative to electronic health record documentation in quality improvement or research studies when resources do not allow for direct observation.

Stefanone, M., Anker, M., Thomas, M.E., and Feeley, H. (2012, June). “Click to ‘like’ organ donation: The use of online media to promote organ donor registration.” (AHRQ grant HS0961). *Progress in Transplantation* 22(20), pp. 168-174.

These authors describe results of an intervention to promote organ donor registration that relies solely on online media to communicate to target audiences. The study used 3 formats: traditional online

advertising, student seeders’ social networking sites campaigns, and challenge campaigns. Online advertising was less effective than the other two formats.

Taylor, J.L., McPheeters, M.L., Sathe, N.A., and others. (2012, September). “A systematic review of vocational interventions for young adults with autism spectrum disorders.” (AHRQ Contract No. 290-07-10065). *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 (ASDs). Assessment of 1,035 full-text articles led the researchers to only 6 papers (representing 5 studies) that addressed vocational interventions for teens and young adults with ASD, ages 13 to 30 years. Because of the poor quality of the studies identified, no conclusions could be drawn.

Utter, G.H., Cuny, J., Strater, A., and others. (2012, September). “Variation in academic medical centers’ coding practices for postoperative respiratory complications.” (AHRQ Contract No. 290-04-0020). *Medical Care* 50(8), pp. 792-800.

AHRQ’s Patient Safety Indicator 11 uses ICD-9 Clinical Modification diagnosis code 518.81 (“acute respiratory failure”)—but not the closely related alternative, code 518.5 (“pulmonary insufficiency after trauma and surgery”)—to detect cases of postoperative respiratory failure. The researchers investigated whether hospitals vary in the use of 518.81 vs. 518.5 and

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whether such variation correlates with coder beliefs.

Weech-Maldonado, R., Carle, A., Weidmer, B., and others. (2012, September). “The Consumer Assessment of Healthcare Providers and Systems (CAHPS®) Cultural Competence (CC) Item Set.” (AHRQ grant HS16980). *Medical Care* 50(9) Suppl. 2, pp. S22-S31. (Reprint?)

There is a need for reliable and valid measures of cultural competence from the patient’s perspective. The authors evaluated the reliability and validity of the Consumer Assessment of Healthcare Providers and Systems (CAHPS®) 26-item cultural competence set and found that it demonstrated adequate measurement properties and can be used as a supplemental item set to the CAHPS Clinician and Group Surveys in assessing culturally competent care from the patient’s perspective.

Weidmer, B.A., Brach, C., and Hays, R.D. (2012, September). “Development and evaluation of CAHPS® survey items assessing how well healthcare providers address health literacy.” *Medical Care* 50(9) Suppl 2, pp. S3-S11. Reprints (AHRQ Publication No. 13-R015) are available from the Agency for Healthcare Research and Quality.*

The researchers developed and tested CAHPS® 22 survey items for addressing health literacy and assessing how well providers communicate health information. After reviewing 601 completed surveys and developing two composite measures derived from the 22 items, they concluded that the CAHPS® Item Set for Addressing Health Literacy was both reliable and valid.

Weidmer, B.A., Brach, C., Slaughter, M.E., and Hays, R.D. (2012, September). “Development of items to assess patients’ health literacy experiences at hospitals

for the Consumer Assessment for Healthcare Providers and Systems (CAHPS®) Hospital Survey.” *Medical Care* 50(9) Suppl 2, pp. S12-S21. Reprints (AHRQ Publication No. 13-R014) are available from the Agency for Healthcare Research and Quality.*

The researchers developed and tested an Item Set for Addressing Health Literacy to supplement the CAHPS® Hospital Survey to assess how well hospitals communicate health information to inpatients. After analyzing 1,013 surveys and identifying three composites (communication about tests, communication about how to care for self and medicines, communication about forms) drawn from the 62 items, they found that their study supported the measurement properties of the Item Set. ■



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