



# Research Activities



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Agency for Healthcare Research and Quality

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## Report issued to Congress on electronic prescribing to cut errors and costs

A report released to Congress reveals the results of an electronic prescribing (e-prescribing) pilot project that supports the adoption of new e-prescribing standards. These standards, required by the Medicare Modernization Act of 2003, would help cut both medication errors and health care costs.

The pilot project demonstrated that three initial standards are already capable of supporting e-prescribing transactions in Medicare Part D. These are standard transactions that provide physicians with patients' formulary and benefit information, medication history, and the fill status of their medications. The report also found that, with some adjustments, e-prescribing can work successfully in long-term care settings.

Some of the initial e-prescribing standards tested by the pilot project were found to have potential but still need further development if they are

to be adopted as e-prescribing standards. These include standards used to convey structured patient instructions, a terminology to describe clinical drugs, and messages that convey prior authorization information.

The pilot project, conducted through an interagency agreement between the Centers for Medicare & Medicaid Services and the Agency for Healthcare Research and Quality (AHRQ), selected five pilot sites operating in eight States to test initial standards to determine if they were ready for widespread adoption. Those pilot sites were Achieve Healthcare Information Technologies, LLP; Brigham and Women's Hospital; Rand Corporation; SureScripts, LLC; and University Hospitals Health System.

Copies of the report to Congress and the full evaluation contractor's report are available on the AHRQ Web site at <http://healthit.ahrq.gov/erxpilots>. ■



## An educational and support program can improve blood pressure control among immigrant Korean American seniors

**K**orean Americans in the United States are predominantly first-generation immigrants and they typically experience drastic lifestyle changes when they arrive in this country. One side effect of the stress related to acculturation, diet, and lifestyle changes may be high blood pressure (HBP). Studies show that senior Korean Americans have a high prevalence of high blood pressure and frequently experience severe HPB-related complications such as stroke. A pilot educational and support program can significantly improve blood pressure control among senior Korean Americans. The program includes structured behavioral education on HBP management, home BP monitoring, and monthly support groups facilitated by a bilingual nurse.

Of the 49 Korean American seniors (60 years or older) who agreed to participate in the study, 31 stayed involved in the program and completed the followup interviews at 6 months. The proportion of program seniors who had blood pressure control (less than 140/90 mm Hg) rose from 29 percent at baseline to 69 percent 6 months later. Likewise, the mean systolic

and diastolic BP values of 142.7 mm Hg and 87.1 mm Hg at baseline decreased to 129.3 mm Hg and 75.3 mm Hg, respectively, after 6 months of followup.

These results highlight the efficacy of the self-help program for this traditionally underserved immigrant group. The 2-hour weekly education sessions were held for 6 weeks at three community sites. They were delivered by nurses and aimed at improving knowledge of HBP and its treatment, reducing cardiovascular risk factors, promoting self-care behaviors for BP control, and informing Korean American seniors about available resources and strategies for managing stress. Each participant received an electronic BP monitor and was shown how to use it. Monthly support groups provided emotional support. The study was supported in part by the Agency for Healthcare Research and Quality (HS13160).

More details are in “Constructing and testing a self-help intervention program for high blood pressure control in Korean American seniors—a pilot study,” by Miyong T. Kim, Ph.D., R.N., F.A.A.N., Hae-Ra Han, Ph.D., R.N., Hyun Jeong Park, M.S.N., M.P.H., C.R.N.P., and others, in the March/April 2006 *Journal of Cardiovascular Nursing* 21(2), pp. 77-84. ■

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## Both poor and black patients are more likely to believe that a positive self-presentation can affect the quality of their medical care

**S**tudies have repeatedly shown that whites in the United States are more likely than blacks to receive quality medical care. Other studies have shown that lower income patients, regardless of insurance coverage, have less access to care and receive lower quality of care than higher income patients. A recent study indicates that poor and black patients are more likely to present themselves as positively as they can by being friendly and wearing nice clothes to improve their chance of obtaining optimal medical care.

Researchers used data from the 2004 Greater Cincinnati Survey that asked individuals how

*continued on page 3*

## Positive self-presentation

*continued from page 2*

important they thought it was to wear nice looking clothes to an appointment, to look very clean, arrive on time, be friendly with the doctor and office staff, let the doctor know that they cared about their health, and show that they were intelligent persons in order to get the best treatment possible at the doctor's office. All of these items reflect a white, middle class standard, which would most likely be similar to the doctor's culture.

Blacks, on average when compared with whites, rated positive self-presentation as more important. Those with less education and less income also rated positive self-presentation as more important than did people with more education and income. For example,

an individual with a high school degree and \$10,000 to \$20,000 annual income rated such presentation strategies 1 point higher than a counterpart with a college degree and a \$30,000 to \$50,000 annual income. Blacks' overall presentation rating was 1.3 points higher than whites, after controlling for age, gender, and insurance status. Also, increasing age and being female predicted higher ratings of the benefits of positive self-presentation. The study was supported in part by the Agency for Healthcare Research and Quality (HS13280).

More details are in "Race, socioeconomic status, and the perceived importance of positive self-presentation in health care," by Jennifer R. Malat, Ph.D., Michelle van Ryn, Ph.D., M.P.H., and David Purcell, in the May 2006 *Social Science & Medicine* 62, pp. 2479-2488. ■

## Child Adolescent Health

### The shortage of pediatric rheumatologists limits residency training in pediatric rheumatology among general pediatricians

Less than one-fifth of pediatricians feel adequately trained to diagnose and treat juvenile rheumatoid arthritis, with 42 percent of them referring these children to pediatric rheumatologists. However, there is a shortage of pediatric rheumatologists. This not only limits available specialized care for children with arthritis and other rheumatology problems, but also limits medical education. For example, more than 40 percent of medical directors of 127 pediatric residency programs surveyed in the United States reported that they did not have a pediatric rheumatologist on site.

Programs with on-site pediatric rheumatologists were significantly more likely than those without one to have an on-site pediatric rheumatology rotation available (94 vs. 9 percent) to train pediatric residents. The involvement of pediatric rheumatologists in four curriculum areas relevant to

pediatric rheumatology was nearly universal in the programs with on-site pediatric rheumatologists. Yet, nearly two-thirds of programs without on-site pediatric rheumatologists had to rely on internist rheumatologists, general pediatricians, or other physicians to cover these areas.

This lack of exposure to pediatric rheumatology during residency may impede general pediatricians' ability to identify and treat children with rheumatic diseases, undermine resident interest in this field, and perpetuate the low supply of pediatric rheumatologists, concludes Michelle I. Mayer, Ph.D., M.P.H., R.N., of the University of North Carolina at Chapel Hill. The study was supported in part by the Agency for Healthcare Research and Quality (HS13309).

See "Availability of pediatric rheumatology training in United States pediatric residencies," by Dr. Mayer, Laura Brogan, M.S.P.H.,

and Christy I. Sandborg, M.D., in the December 15, 2006 *Arthritis & Rheumatism* 55(6), pp. 836-842. ■

#### Also in this issue:

Use of influenza vaccine in children, see page 6

Reducing bloodstream infections in the ICU, see page 9

Use of high-risk medications among pregnant women, see page 12

Medically unnecessary emergency transports, see page 16

Treatment of patients hospitalized for heart attack, see page 21

## Study provides the first national estimates of the average distances that children travel to see a pediatric subspecialist

The majority of U.S. children live within a 1-hour drive to a pediatric subspecialist such as neonatologist, pediatric cardiologist, or pediatric oncologist. However, care is less widely available for certain subspecialties and in certain regions, according to the first national estimate of the distances U.S. children travel to pediatric subspecialists. The study revealed that the average distance to a subspecialist ranged from 15 miles for neonatology to 78 miles for pediatric sports medicine. For most pediatric subspecialties, more than two-thirds of children lived within 40 miles of a certified physician.

Although the practice locations of pediatric subspecialists paralleled the geographic distribution of children in the United States, many hospital referral regions lacked certain pediatric subspecialists. For example, fewer than one-half of hospital referral regions had a provider for 7 of 16 pediatric subspecialties. These findings suggest that either the supply of pediatric subspecialists is inadequate,

pediatric subspecialists are distributed inequitably, or the market for pediatric subspecialists is larger than the hospital referral regions, concludes Michelle L. Mayer, Ph.D., M.P.H., R.N., of the University of North Carolina at Chapel Hill.

Dr. Mayer used data from the American Board of Pediatrics and another database to calculate subspecialty-specific straight-line distances between each zip code and the nearest board-certified specialist. She also used these data to estimate the percentage of hospital referral regions with pediatric subspecialists and to calculate physician-to-population ratios for each of 16 pediatric medical subspecialties. The study was supported by the Agency for Healthcare Research and Quality (HS13309).

More details are in "Are we there yet? Distance to care and relative supply among pediatric medical subspecialties," by Dr. Mayer, in the December 2006 *Pediatrics* 118(6), pp. 2313-2321. ■

## Children with cerebral palsy have a greater risk of surgical complications and poor outcomes than other children

Children with cerebral palsy (CP), who undergo numerous surgeries, tend to suffer more surgical complications and poorer outcomes than children without CP. In 1997, 5,614 surgeries were performed in children with CP to manage the nutritional, gastrointestinal, or orthopedic complications of the disease. That year, the most common surgeries performed in children with CP were gastrostomy tube placements (1,743), soft tissue musculoskeletal procedures (1,393), anti-reflux surgery (1,062), spinal fusions with instrumentation (765), and bony hip surgeries (651). Together, these 5 procedures accounted for nearly 50,000 hospital days and over \$150 million in hospital charges.

About one-third of children with CP are under-nourished and

gastrostomy tubes and anti-reflux procedures are often indicated, with about 8 percent of CP children having one of these procedures in 1997. Nutritional deficiencies, coupled with recurrent bouts of aspiration and gastrointestinal motility disorders can increase the risk for post-operative complications in these children.

Musculoskeletal surgeries of the hips and extremities of children with CP were associated with low rates of complications and relatively brief hospitalizations. Only about 2 percent of children suffered from pneumonia or respiratory failure and even fewer developed urinary tract infections. Of the five surgical procedures studied, spine surgery resulted in the largest difference in hospital length of stay, charges, mortality, and complication rates between

children with and without CP. Death was an infrequent outcome during hospitalization for each of the surgeries studied. However, 4 of 765 children with CP (0.5 percent) who underwent spine surgeries died. These findings are the first to describe the national impact of surgery on the more than 100,000 U.S. children with CP based on analysis of the 1997 Healthcare Cost and Utilization Project Kids' Inpatient Database. The study was supported by the Agency for Healthcare Research and Quality (HS11826).

More details are in "A national perspective of surgery in children with cerebral palsy," by Nancy A. Murphy, M.D., Charles Hoff, Ph.D., Trisha Jorgensen, B.S., and others, in the July 2006 *Pediatric Rehabilitation* 9(3), pp. 293-300. ■

## Fullness of the neonatal intensive care unit influences early discharge of moderately preterm infants

Decisions about discharging moderately preterm infants from hospital neonatal intensive care units (NICUs) are based partly on how crowded the NICU is, according to a new study supported by the Agency for Healthcare Research and Quality (T32 HS00063 and HS10131). A moderately preterm infant was 20 percent less likely to be discharged than expected when the NICU census was very low and 32 percent more likely to be discharged than expected when the NICU census was high. Infants with prolonged lengths of stay, minor congenital anomalies, and a higher SNAP II score (indicator of more severe illness) were less likely to be discharged when NICUs were crowded.

Nevertheless, these findings suggest that unit workload and strains on staff influenced clinical decisionmaking. Jochen Profit, M.D., M.P.H., of Children's Hospital Boston and Texas Children's Hospital, and colleagues divided the daily census from each of 10 NICUs in Massachusetts and California into quintiles and tested whether discharges were

evenly distributed among them. Only in the middle three census quintiles were infants discharged as expected given their clinical status and severity of illness. Overall, infants discharged at high unit census did not differ from their peers in terms of parental satisfaction, emergency department visits, home nurse visits, or rehospitalization rates. However, given the low illness severity of these moderately preterm infants, these measures may not have been sensitive enough to signal a care quality problem. NICUs will experience staffing constraints for the foreseeable future. Thus, it is important to optimize work processes so that providers can manage their high workload while still providing quality care, suggest the researchers.

See "Neonatal intensive care unit census influences discharge of moderately preterm infants," by Dr. Profit, Marie C. McCormick, M.D., Sc.D., Gabriel J. Escobar, M.D., and others, in the February 2007 *Pediatrics* 119(2), pp. 314-319. ■

## Parents who explore a preventive health Web site before well-child visits discuss more prevention topics with doctors

Due to time and other constraints, pediatricians spend less than 10 minutes of well-child visits discussing preventive care. However, access to a prevention-focused Web site can prompt parents to bring up prevention topics with their child's provider during well-child visits. It can also increase parental and physician adoption of preventive measures, according to a study supported by the Agency for Healthcare Research and Quality (HS13302). Dimitri A. Christakis, M.D., M.P.H., of the University of Washington, and colleagues randomly assigned 887 children age 11 and younger to 4 groups: usual care, Web content only, Web content and physician notification of topics of interest to the child's parents, and physician notification only.

The Web site, My Healthy Child, provided information to parents about prevention topics based on their child's age and baseline questionnaire data. Physicians could also access the site from their office computers to find out the information of interest to parents. Topics of interest ranged from hot water heater temperature, gun storage, and television viewing to use of bike helmets and car seats. Complete data, including responses to telephone surveys conducted 2 to 4 weeks after the visit, were available for 767 families.

Before their child's checkup, 93 percent of parents visited the Web site; 13 percent did so from the kiosk in the doctor's waiting room. Providers accessed the Web site 160 times. The researchers estimated provider usage at about 46 percent, given the number of patients. Parents in the

notification/content and in the notification alone groups reported discussing 9 percent and 8 percent, respectively, more healthy child topics with their provider. Differences between the content-only arm and the usual care arm were not significant. Also, parents in the content/notification or content alone groups reported implementing 7 percent and 5 percent, respectively, more healthy child topic suggestions at home. Differences between the notification-only arm and the usual care group were not significant.

More details are in "Improving pediatric prevention via the Internet: A randomized, controlled trial," by Dr. Christakis, Frederick J. Zimmerman, Ph.D., Frederick P. Rivara, M.D., M.P.H., and Beth Ebel, M.D., M.P.H., M.Sc., in the September 2006 *Pediatrics* 118(3), pp. 1157-1166. ■

## Study supports recommendation to expand use of influenza vaccine to children older than 2 years of age

Influenza causes significant complications, more hospitalizations, and increases care costs among children older than 2 years of age, according to a new study. These findings provide support for the 2006 recommendations by the Centers for Disease Control and Prevention Advisory Committee on Immunization Practices to expand the group of people who should get annual flu shots to include children ages 24 to 59 months. The researchers estimate that the new guideline would target 80 percent of children hospitalized for influenza. They retrospectively studied 325 children, who were hospitalized with laboratory-confirmed influenza at 1 medical center during 3 influenza seasons. Of this group, 28

percent were under 6 months of age, 33 percent were between 6 and 23 months of age, and 39 percent were over 2 years of age.

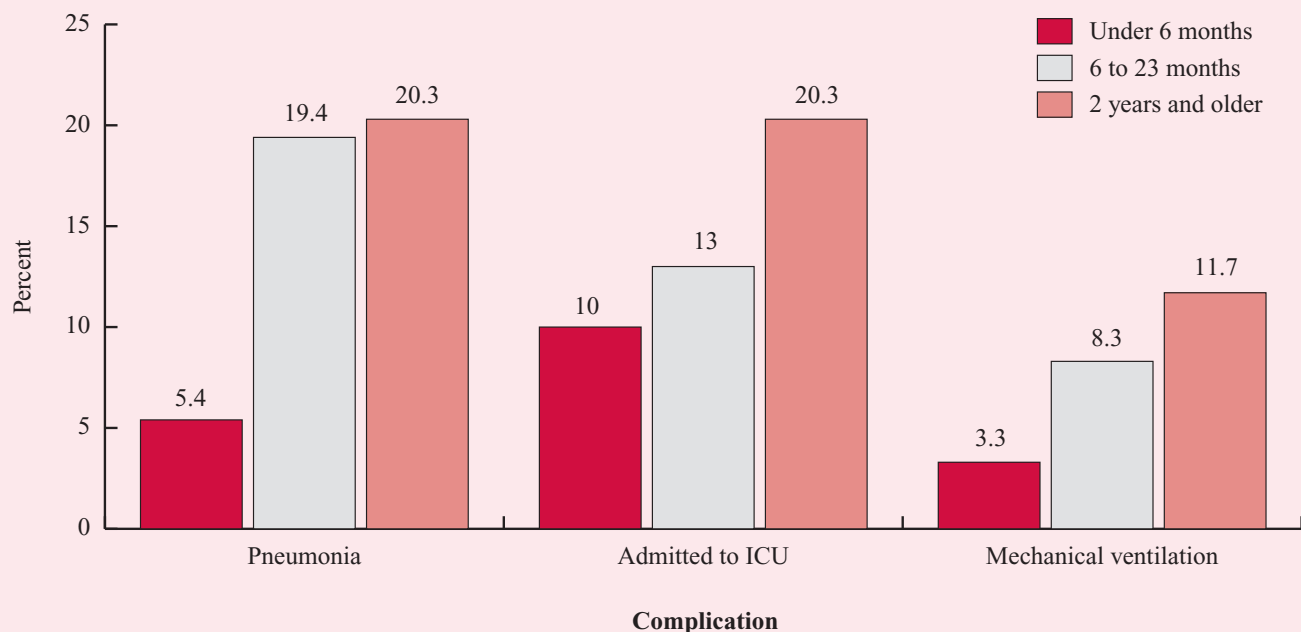
Overall, 49 children (15 percent) were treated in the intensive care unit (ICU) and 27 required mechanical ventilation. Half of these children were older than 2 years of age. The total hospital cost for the whole group was \$2 million, with 55 percent accounted for by children older than 2 years of age. When comparing the three age groups (less than 6 months, 6 to 23 months, and 2 years and older), there were significant differences in the proportion of children who developed pneumonia (5.4 vs. 19.4 vs. 20.3 percent), were admitted to the ICU (10 vs. 13 vs. 20.3 percent), and required mechanical ventilation

(3.3 vs. 8.3 vs. 11.7 percent), respectively (see figure below).

Overall, children 2 years or older stayed in the hospital significantly longer and had higher total hospital costs (median cost \$3,127 vs. \$2,534) than those younger than 6 months old, and similar stays and costs to those 6 months to 23 months of age. The study was supported in part by the Agency for Healthcare Research and Quality (HS11826).

See “Epidemiology, complications, and cost of hospitalization in children with laboratory-confirmed influenza infection,” by Krow Ampofo, M.B., B.S., Per H. Gesteland, M.D., M.S., Jeffery Bender, M.D., and others, in the December 2006 *Pediatrics* 118(6), pp. 2409-2417. ■

Complications in children hospitalized with influenza



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

## Pediatricians with more knowledge of and confidence in identifying and managing child abuse are more likely to identify abuse

**P**ediatricians are legally required to report injuries they suspect are due to child abuse to the State's Child Protective Services (CPS). Given how common childhood injuries are, identifying child abuse as the cause of injuries is not easy. The correct diagnosis can save a child from further harm, while a wrong diagnosis can destroy a family. A random national sample of pediatricians were surveyed about their knowledge, attitudes, and experience related to child abuse, and asked their interpretation of the cause of a girl's injury in a purposely vague vignette.

Overall, nearly two-thirds of pediatricians expressed confidence in their ability to identify (61 percent) and manage (62 percent) patients injured by child abuse, especially those pediatricians who received some child abuse continuing medical education. Those with positive attitudes about child abuse screening and confidence in identifying and managing child abuse were more likely to identify the vignette case as probably due to child abuse. Experience with CPS was predictive of whether they would report the case to CPS.

Most pediatricians who had reported child abuse to CPS felt it was a positive move. Nearly two-thirds (62 percent) said that patients were protected from further abuse, 52 percent said the families received intervention and parenting improved, 44 percent indicated that children had been placed outside of the home and thrived, and 24 percent said a patient or family appreciated that they had intervened. Of the pediatricians who reported negative consequences of reporting the abuse, 40 percent indicated they had lost the reported family as patients, and 21 percent said a child was subjected to further abuse because CPS did not respond adequately to the report. Two percent of pediatricians stated that they were sued for malpractice because they reported abuse. The study was supported in part by the Agency for Healthcare Research and Quality (HS10746).

More details are in "Pediatrician characteristics associated with child abuse identification and reporting: Results from a national survey of pediatricians," by Emalee G. Flaherty, M.D., Robert Sege, M.D., Ph.D., Lori Lyn Price, M.S., and others, in the November 2006 *Child Maltreatment* 11(4), pp. 361-369. ■

### Patient Safety and Quality

## Studies examine how to improve patient safety with instructional systems design

**T**he Institute of Medicine has recommended the redesign of health care systems in the 21st century to make them safer and more effective, patient-centered, timely, efficient, and equitable. How does one achieve care quality and safety by design? Also, is it possible to actually design in quality and design out failure? These are a few of the questions addressed in a special 2006 issue of *Quality and Safety in Health Care*, 15 (1 Suppl.). Following are brief summaries of articles that appear in the issue, which were written either by researchers at the Agency for Healthcare Research and Quality (AHRQ) or by AHRQ-supported researchers.

### **Battles, J.B. "Quality and safety by design," pp. 1-3.**

This author introduces the topic of the journal supplement by providing a three-level conceptual framework for the six quality aims laid out by the Institute of Medicine. The first, or core, level of the framework would be designing for patient-centered care, with safety as the second level. The third level of design would address efficiency, effectiveness, timeliness, and equity. Design methods and approaches are available that can be used for the design of health care organizations and facilities, notes the author. These methods and approaches can also be used for design of learning systems to train and maintain competency of

health professionals, clinical systems, clinical work, and information technology systems. Reprints (AHRQ Publication no. 07-R043) are available from AHRQ.\*

### **Battles, J.B. "Improving patient safety by instructional systems design," pp. 25-29.**

One way to ensure safety by design is to apply established design principles to education and training, notes the author. Instructional systems design (ISD) is a systematic method of developing education and training programs for improved learner performance. The ISD process involves five integrated steps: analysis, development, design,

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## Instructional systems design

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implementation, and evaluation (ADDIE). The application of ISD using the ADDIE approach can eliminate as a factor or prevent education and training from being a contributing factor to health-related injury or harm, and can also be effective in preventing injury or harm. Reprints (AHRQ Publication no. 07-R044) are available from AHRQ.\*

### **Henriksen, K. and Dayton, E. “Issues in the design of training for quality and safety,” pp. 17-24.**

Despite swift advances in medical science and technology, cost containment and productivity pressures on clinicians make the clinical environment less than ideal for training. The theoretical underpinnings and design aspects of training have been largely unrecognized and unexamined in health care, note the authors of this paper. They describe how health care training and education can benefit

from findings in the behavioral and cognitive sciences. Next, they explore the extent to which a systems approach to training can be applied to the clinical environment. Finally, they examine innovative training and education techniques that are already gaining acceptance in health care. Reprints (AHRQ Publication no. 07-R042) are available from AHRQ.\*

### **Carayon, P., Hundt, A.S., Karsh, B-T., and others. “Work system design for patient safety: The SEIPS model,” pp. 50-58. (AHRQ grant HS11561).**

Most errors and inefficiencies in patient care arise from conflicting, incomplete, or suboptimal systems. Thus, models and methods of work system design need to be developed and implemented to advance research in and design for patient safety, note the authors of this paper. They describe how the Systems Engineering Initiative of Patient Safety (SEIPS) model of work system and patient safety can be used toward these ends. The SEIPS model provides a framework for understanding the structures,

processes, and outcomes of health care and their relationships. The authors apply the SEIPS model to the outpatient surgery setting and describe other practice and research applications of the model.

### **Karsh, B-T., Holden, R.J., Alper, S.J., and Or, C.K. “A human factors engineering paradigm for patient safety: Designing to support the performance of the healthcare professional,” pp. 59-65. (AHRQ grant HS13610).**

The main paradigms for directing patient safety improvement efforts to date have focused on reducing injuries, reducing errors, or improving evidence-based practice. The authors of this paper propose a human factors engineering paradigm that focuses on designing systems to improve the performance of health care professionals and to reduce hazards. They provide several arguments to show that designing health care delivery systems to support health care professional performance and hazard reduction should yield significant patient safety benefits. ■

## Examining use of “rescue drugs” in a hospital can reveal previously unreported adverse drug events

**W**hen hospitalized patients are given “rescue drugs” to revive them from a dangerous state, it may be due to a previously unreported adverse drug event (ADE), suggests a new study. These events are any incident in which use of a medication, a medical device, or a special nutritional product (for example, infant formula) may have harmed the patient. The study authors performed 3,572 patient chart audits at a rural hospital to identify patients given “rescue” drugs during a 6-month period. They then looked for a specific diagnosis of ADE or a mention of possible drug reaction, overdose, adverse effect, or signs of toxicity in nursing notes. Using this approach, they found that less than 4 percent of all ADEs involving use of rescue drugs had been reported, comparable to published rates.

Of the chart audits, 1,011 included administration of rescue drugs. In 109 of these cases, or 3 percent of discharges, an ADE was believed to have occurred. The ADE was deemed to have been preventable in about one-

quarter (0.8 percent) of these cases. Rescue drugs included vitamin K (reverses the blood-thinning effect of warfarin), naloxon (reverses oversedation of narcotics), sodium polystyrene sulfonate (reverses high serum potassium), flumazenil (reverses the effects of benzodiazepines), diphenhydramine (treatment of allergy), digoxin immune fab (reverses digoxin toxicity), and D50W/oral glucose (reverses the effects of insulin or oral hypoglycemic agents).

The researchers concluded that their approach to surveillance of ADEs to detect underreporting is feasible, but labor-intensive. The study was supported by the Agency for Healthcare Research and Quality (HS14920).

See “Improving self-reporting of adverse drug events in a West Virginia hospital,” by Charles P. Schade, M.D., M.P.H., Karen Hannah, M.B.A., Patricia Ruddick, M.S.N., A.P.R.N.-B.C., and others, in the September 2006 *American Journal of Medical Quality* 21(5), pp. 335-341. ■



## Americans can obtain quality heart care at hospitals that are not ranked in the top 50 by *U.S. News & World Report*

For information on hospital quality, many people rely on resources such as the magazine, *U.S. News & World Report*, which publishes annual ratings for hospitals based on their performance. Yet, when rated by how well they follow clinical guidelines for heart attack and heart failure, some top-ranked heart and heart surgery hospitals fall short in the quality of care they provide to heart patients. At the same time, many lesser known hospitals routinely provide cardiovascular care that is consistent with American College of Cardiology and American Heart Association clinical treatment guidelines, according to a new study.

This suggests that there are many other hospitals across the country, besides the “top” hospitals, where patients can

receive high-quality heart care, conclude the study authors. They found that 41 hospitals selected in the magazine as top hospitals in heart care and heart surgery performed significantly better on 5 of 10 measures of a cardiovascular composite index than the other 733 hospitals included in the study, which did not make the top magazine’s top 50 list. Six measures of quality for care of a heart attack ranged from giving aspirin and/or a beta-blocker within 24 hours of hospital arrival to prescribing a beta-blocker at discharge. Four measures of quality for care of heart failure ranged from left ventricular function assessment upon hospital admission to prescribing of an angiotensin converting enzyme inhibitor and instructions about diet, weight, and worsening symptoms at discharge.

As a group, the top hospitals performed significantly better than their peers. Individually, however, only 23 of the top hospitals achieved statistically better-than-average performance compared with the hospital average, and 9 performed significantly worse; 167 hospitals in the study routinely implemented evidence-based heart care 90 percent or more of the time. The performance measures used in this study were evaluated with support from the Agency for Healthcare Research and Quality (HS13728).

More details are in “Performance of top-ranked heart care hospitals on evidence-based process measures,” by Scott C. Williams, Psy.D., Richard G. Koss, M.A., David J. Morton, M.S., and Jerod M. Loeb, Ph.D., in the August 2006 *Circulation* 114, pp. 558-564. ■

## Hand washing, barrier protection, and other procedures can reduce catheter-related bloodstream infections in the ICU

Catheter-related bloodstream infections that occur in hospital intensive care units (ICUs) are common, costly (an average cost of \$45,000 per infection), and potentially lethal. However, using team leaders to implement recommended infection control procedures reduced catheter-related bloodstream infections in Michigan hospital ICUs by 66 percent, according to a new study. The study targeted clinicians’ use of five evidence-based procedures that are recommended to prevent catheter-related

bloodstream infections: hand washing, using full-barrier precautions during the insertion of central venous catheters, cleaning the skin around the catheter insertion site with chlorhexidine, avoiding the femoral site if possible, and removing unnecessary catheters.

Clinicians were educated about infection control practices as well as the harm resulting from catheter-related bloodstream infections. Clinicians were also provided with a central-line cart with necessary

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## Bloodstream infections

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supplies, and a checklist to ensure adherence to infection control practices. In nonemergency situations, clinicians were stopped if these practices were not being followed. The removal of unnecessary catheters was discussed at daily rounds, and the teams received feedback regarding the number and rates of infections at monthly and quarterly meetings.

Peter Pronovost, M.D., Ph.D., of Johns Hopkins University School of Medicine, and coinvestigators compared infection rates before, during, and up to 18 months after implementation of the study intervention.

The median rate of catheter-related bloodstream infections per 1,000 catheter days decreased from 2.7 infections at baseline to none at 3 months after implementing the infection control intervention. The mean rate per 1,000 catheter days decreased from 7.7 at baseline to 1.4 at 16 to 18 months of followup - a 66 percent sustained reduction. The study was supported by the Agency for Healthcare Research and Quality (HS14246).

See “An intervention to decrease catheter-related bloodstream infections in the ICU,” by Dr. Pronovost, Dale Needham, M.D., Ph.D., Sean Berenholtz, M.D., and others, in the December 28, 2006 *New England Journal of Medicine* 355(26), pp. 2725-2732. ■

## Applying strategies that focus on laboratory specimen labeling errors can significantly reduce specimen identification errors

A typical hospital clinical laboratory receives thousands of specimens to analyze daily. A mislabeled clinical laboratory specimen, a common and avoidable problem, can lead to devastating consequences for patients. Applying strategies that focus on laboratory specimen labeling errors can significantly reduce specimen identification errors, according to a new study supported in part by the Agency for Healthcare Research and Quality (HS11512).

Researchers used a clinical laboratory database to analyze three blood specimen/patient identification errors: unlabeled specimens, mislabeled specimens, and specimen/requisition mismatch

(specimen received with a requisition that did not match the request or patient identified on the tube or container). Error trends were followed over a 2-year period both before and after implementation of three patient safety projects. These included: reorganization of phlebotomy services to 24-hour service and intensive care unit nursing in-service phlebotomy education; implementation of an online electronic adverse event reporting system; and installation of an automated specimen processing system. Of 16,632 total specimen errors, mislabeled specimens, requisition mismatches, and unlabeled specimens represented 1 percent, 6.3 percent, and 4.6 percent of errors, respectively.

The most serious errors, mislabeled specimens, declined significantly after implementation of the three patient safety projects compared to before their implementation. Trend analysis also revealed decreases in all three clinical specimen error types for 26 months.

More details are in “Patient safety in the clinical laboratory: A longitudinal analysis of specimen identification errors,” by Elizabeth A. Wagar, M.D., Lorraine Tamashiro, B.S., Bushra Yasin, Ph.D., and others, in the November 2006 *Archives of Pathology and Laboratory Medicine* 130, pp. 1662-1668. ■

## Women's Health

### Women with disabilities report poorer health and more problems accessing health care than other women

About 16 percent of adult women have difficulty with at least one of eight functional limitations (FL), according to a national study. These limitations range from difficulty lifting 10 pounds or walking up 10 steps without resting to difficulty standing for 20 minutes or using fingers to grasp or handle something. Women with functional limitations

tend to have poorer health than other women, and those with three or more FLs are more likely to report being unable to get medical and dental care than other women, concludes a new study.

Frances M. Chevarley, Ph.D., of the Agency for Healthcare Research and Quality, and coinvestigators

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## Women with disabilities

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analyzed data from the 1994-1995 National Health Interview Survey, Supplement on Disability (NHIS-D) of U.S. civilian noninstitutionalized persons. They compared the demographic characteristics, reported health measures, clinical preventive services, access to care indicators, and health insurance of women with one or two FLs and three or more FLs with women with no FLs. The prevalence of having at least one FL increased with age, from 6 percent of women aged 18 to 44 years up to 65 percent of women 85 years and older. The proportion of black non-Hispanic women who had three or more FLs (12.1 percent) was higher than for Hispanic women (8.8 percent) and white non-Hispanic women (7.1 percent).

Women with FLs were less likely to rate their health as excellent or very good and more likely to report their health as fair or poor than women with no FLs. Women with FLs were also more likely to currently

smoke, have hypertension, be overweight, and experience mental health problems. Among women 65 years or older, those with FLs were less likely to have received Pap smear tests within the past year and those with three or more FLs were less likely to have received mammograms within the past year than women with no FLs. Women with three or more FLs were more likely to report being unable to get general medical care, dental care, prescription medicines, or eyeglasses, regardless of age group, compared with women with no FLs. The main reasons reported for being unable to receive general care were financial problems or limitations in health insurance.

More details are in "Health, preventive health care, and health care access among women with disabilities in the 1994-1995 national health interview survey, supplement on disability," by Dr. Chevarley, JoAnn M. Thierry, Ph.D., Carol J. Gill, Ph.D., and others, in the November/December 2006 *Women's Health Issues* 16, pp. 297-312. Reprints (AHRQ Publication No. 07-R037) are available from AHRQ.\* ■

## Older women who are depressed following breast cancer therapy are less likely to fully recover shoulder mobility

**A**fter breast cancer therapy, women often suffer from limited range of shoulder motion, as well as shoulder pain, weakness, and/or swelling. These problems can interfere with their ability to engage in activities such as cooking, housework, and grocery shopping. Older women newly diagnosed with breast cancer who have depressive symptoms 2 months after diagnosis are less likely to recovery shoulder mobility a year later, concludes a new study. Women with depression are probably less likely to adhere to treatment to improve range of motion, notes Jean L. Freeman, Ph.D., of the University of Texas Medical Branch, Galveston.

Dr. Freeman and coinvestigators examined depressive symptoms 2 months after diagnosis of breast cancer among 187 women aged 60 years and older involved in a nurse case management trial from 1993

to 1996. They also examined their sociodemographic characteristics, type of breast cancer treatment, and shoulder range of motion at 12 months after diagnosis. Each unit increase in depressive symptoms at 2 months following diagnosis was associated with an 8 percent decreased odds of having full range of shoulder motion, after controlling for other relevant patient and treatment factors.

A large number of women were over 70 years old. Older women were more likely to have full shoulder range of motion than younger women. However, younger women were more often recruited from public hospitals, and their insurance may not have enabled them to use appropriate services to improve shoulder problems. White race, lack of disability in carrying out daily activities, and local breast cancer staging were associated with likelihood of having full range of

shoulder motion at 12 months. Women who did not receive radiation therapy, which can trigger the transformation and proliferation of fibroblasts (connective tissue cells), were also more likely to have full range of motion. Cognitive status, type of breast cancer surgery, dissection of axillary lymph nodes, and nurse case management did not significantly affect full shoulder range of motion. The study was supported in part by the Agency for Healthcare Research and Quality (HS11618).

See "The relationship between depressive symptoms and shoulder mobility among older women: Assessment at one year after breast cancer diagnosis," by Mabel E. Caban, M.D., Dr. Freeman, Dong D. Zhang, Ph.D., and others, in the June 2006 *Clinical Rehabilitation* 20, pp. 513-522. ■

## Despite the benefits of early breastfeeding, many women find it unexpectedly difficult and painful

**B**reastfeeding has regained popularity in North America during the past decade; however, breastfeeding during the first month after birth can be physically challenging. Christa M. Kelleher, Ph.D., of the University of Massachusetts, interviewed 52 women from Canada and the United States approximately 1 month postpartum about their experience of breastfeeding. Nearly two-thirds (63 percent) of the women mentioned the pain and/or discomfort associated with breastfeeding.

These women were generally surprised by the extent, intensity, and duration of the discomfort and pain, which ranged from mild to severe. Several women even noted that the discomfort of breastfeeding affected their relationship with their baby. Other women said that they were hesitant to continue the practice due to feelings of physical vulnerability, pain, and/or discomfort. Finally, assistance provided by health care practitioners had both positive and negative effects on women's experiences of breastfeeding.

Many women, particularly first-time mothers, said they felt overwhelmed by the enormous responsibility

of breastfeeding, concerned about failing, and guilty when they acknowledged their own physical limitations or personal needs. Of all the women who initiated breastfeeding during the first days following birth, the vast majority were still breastfeeding by the time of the interview 1 month postpartum. Of these women, more than half (53 percent) were breastfeeding exclusively at the time of the interview, 17 percent fed their infants pumped breast milk in addition to breastfeeding, 21 percent used formula in addition to breastfeeding, and 9 percent combined breastfeeding with pumping and formula feeding. Dr. Kelleher recommends that acknowledging the physical challenges of breastfeeding would better validate many women's experiences. Her study was supported by the Agency for Healthcare Research and Quality (HS10790).

More details are in "The physical challenges of early breastfeeding," by Dr. Kelleher, in the November 2006 *Social Science & Medicine* 63, pp. 2727-2738. ■

## Use of high-risk medications by pregnant women is not uncommon

**M**any pregnant women require medications to manage previously diagnosed conditions such as asthma and hypertension or to treat pregnancy-induced conditions. For example, a 2-year survey found that during half of outpatient visits, pregnant women were prescribed one or more medications (54 percent of hospital outpatient clinic visits and 44 percent of visits to private physician offices). The majority of medications prescribed were from drug classes not considered risky during pregnancy by the U.S. Food and Drug Administration (FDA). However, prescriptions for FDA Class D or X medications, which can harm the fetus when given to pregnant women, accounted for 6.4 percent and 2.9 percent of visits to private physicians and hospital clinics, respectively.

Category D drugs include progesterone, tetracycline, aspirin, cortisone, tretinoin (Retin-A), and lithium. Category X drugs include oral contraceptives and estrogens as well as medroxyprogesterone, simvastatin, trazolam, and warfarin. The survey also revealed that in 1 of every 10 private physician visits, a pregnant woman received a drug with unknown pregnancy risk. Sixty percent of drugs in the Physician's Desk Reference have not been assigned FDA pregnancy categories, note the researchers.

Drug prescriptions for pregnant women also varied by regions. Clinic and physician office visits in the Midwest were less likely to be associated with high-risk drugs compared with the Northeast. However, women who visited hospital clinics in the West were nearly twice as likely to be prescribed category D or X drugs

than in other regions, while those from the South were 70 percent less likely. These findings agree with reports from other studies on the prevalent use of medication and exposure to higher risk medications during pregnancy. They were based on analysis of outpatient visits by pregnant women during 1999 and 2000 detailed in the National Ambulatory Medical Care Survey and the National Hospital Ambulatory Medical Care Survey. The study was supported by the Agency for Healthcare Research and Quality (HS11673).

More details are in "National patterns of medication use during pregnancy," by Euni Lee, Pharm.D., Ph.D., Mary K. Maneno, B.S., Leah Smith, Pharm.D., and others, in the August 2006 *Pharmacoepidemiology and Drug Safety* 15, pp. 537-545. ■

### Elderly Medicare patients with low health literacy receive little tangible support for their health care needs

**L**ow health literacy, prevalent among the elderly, limits their ability to comprehend health information and to follow medical instructions which, in turn, can harm their health. Yet, 60 percent of elderly Medicare managed care plan members who had trouble understanding medical information received little or no social support from others, according to a new study. This low literacy group was much more likely than their more health literate counterparts (40 vs. 12 percent) to receive read help reading information on drug labels or filling out medical forms at least some of the time; however, they were less likely to receive tangible support, which was linked to better physical and mental health in both groups. Tangible support included having someone drive them to the doctor's office or help them with meals or chores if they were sick.

Two additional types of social support—medical information and healthy reminder support (for example, reminders to take medication or to follow dietary restrictions)—were significantly correlated with worse physical and mental health in both groups. It could be that older adults in poorer health are in need of, and therefore receive, more of these types of support, note the researchers. Yet, healthy reminders were correlated with more frequent doctor visits and lower risk of hospitalization in the high health literacy group. The study was supported by the Agency for Healthcare Research and Quality (HS13004).

See “Health literacy and social support among elderly Medicare enrollees in a managed care plan,” by Shoou-Yih D. Lee, Julie A. Gazmararian, Ph.D., and Ahsan M. Arozullah, M.D., M.P.H., in the August 2006 *Journal of Applied Gerontology* 25(4), pp. 324-337.

**Editor's note:** In a related study, also supported by the Agency for Healthcare Research and Quality (HS13233), researchers developed and validated a health literacy test, the Short Assessment of Health Literacy for Spanish-speaking Adults (SAHLSA). Validation of SAHLSA involved testing and comparing the tool with other health literacy instruments in a sample of 201 Spanish-speaking and 202 English-speaking subjects recruited from one ambulatory care center. The SAHLSA-50 score was significantly and positively associated with the physical health status of Spanish-speaking participants, holding constant age and years of education. The instrument displayed good internal reliability and test-retest reliability. The researchers conclude that the SAHLSA-50 could be used in the clinical or community setting to screen for low health literacy among Spanish speakers. For more information, see “Development of an easy-to-use Spanish health literacy test,” by Shoou-Yih D. Lee, Ph.D., Deborah E. Bender, Ph.D., M.P.H., Rafael E. Ruiz, Sc.M., and Young Ik Cho, Ph.D., in the August 2006 *Health Services Research* 41(4), pp. 1392-1412. ■

### Growth hormone is not recommended as an antiaging therapy

**H**uman growth hormone (GH) has recently become popular as an antiaging therapy for healthy adults, even though it has not been approved by the U.S. Food and Drug Administration for this use. The limited studies that have evaluated GH therapy in healthy elderly persons suggest that GH is associated with a small increase in lean body mass and a small decrease in body fat. However, it is also associated with increased rates of problems such as soft tissue

swelling, joint pain, and diabetes. Based on this evidence, GH cannot be recommended as an antiaging therapy, concludes Hau Liu, M.D., M.B.A., M.P.H., of Stanford University.

Dr. Liu and fellow researchers systematically reviewed studies on the safety and efficacy of growth hormone in the healthy elderly. Of the studies reviewed, 31 articles describing 18 unique study populations met the inclusion criteria. A total of 220 persons who received GH completed their

respective studies. Study participants were elderly (mean age, 69 years) and overweight (mean body mass index, 28 kg/m<sup>2</sup>). Initial daily GH dose (mean of 14ug/kg of body weight) and treatment duration (mean of 27 weeks) varied. In those treated with GH compared with those not treated with GH, overall fat mass decreased by 2.1 kg and overall lean body mass increased by 2.1 kg without a significant change in

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## Growth hormone

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weight. Men experienced more of these changes than women.

Total cholesterol levels decreased insignificantly, after adjustment for body composition changes. Other outcomes, including bone density and other serum lipid levels, did not change. On the other hand, persons

treated with GH were significantly more likely to experience soft tissue swelling, joint pain, carpal tunnel syndrome, and gynecomastia (breast development in males). GH-treated persons were also somewhat more likely to develop diabetes and impaired fasting glucose. The researchers caution that the studies had some methodological problems and most of them had small sample

sizes. The study was supported in part by the Agency for Healthcare Research and Quality (HS00028).

See “Systematic review: The safety and efficacy of growth hormone in the healthy elderly,” by Dr. Liu, Dena M. Bravata, M.D., M.S., Ingram Olkin, Ph.D., and others, in the January 2007 *Annals of Internal Medicine* 146, pp. 104-115. ■

## Outcomes/Effectiveness Research

### More intensive treatment contributes to better hypertension control in the United States compared with western Europe

**H**ypertension is widely underdiagnosed and undertreated in Europe and the United States. However, U.S. hypertension guidelines tend to have more aggressive treatment recommendations than those in European countries. Based on the nationally representative CardioMonitor survey of hypertensive outpatient visits in 2004, latest blood pressure (BP) levels were lower and hypertension control was better in the United States than in five western European countries studied. Lower treatment thresholds (U.S. doctors tend to start medication at lower BP levels) and more intensive treatment contribute to better hypertension control in the United States.

The survey included 21,053 hypertensive patients visiting 291 cardiologists and 1,284 primary care physicians in 5 western European countries and the United States. The main outcome measures were latest systolic and diastolic blood pressure levels, hypertension control (latest BP level of less than 140/90 mm Hg), and medication intensification (dose escalation of a drug, addition of a second drug, or

change of drug therapy) for inadequately controlled hypertension. At least 92 percent of patients in each country received antihypertensive drug treatment.

The initial pretreatment BP levels were lowest and use of combination drug therapy (two or more antihypertensive drug classes) was highest in the United States. After controlling for other factors, European patients had 5.3 to 10.2 mm Hg higher latest systolic BP levels and 1.9 to 5.3 mm Hg higher diastolic BP levels, 50 to 73 percent smaller likelihood of hypertension control, and a 35 to 71 percent smaller likelihood of medication increase for inadequately controlled hypertension. The study was supported in part by the Agency for Healthcare Research and Quality (HS11313).

See “Outpatient hypertension treatment, treatment intensification, and control in western Europe and the United States,” by Y. Richard Wang, M.D., Ph.D., G. Caleb Alexander, M.D., M.S., and Randall S. Stafford, M.D., Ph.D., in the January 22, 2007 *Archives of Internal Medicine* 167, pp. 141-147. ■

### Hip fracture patients with osteoarthritis have longer hospital stays, but similar functional gain as those without the condition

**E**lderly hip fracture patients with osteoarthritis (OA) have longer hospital stays for rehabilitation than patients without OA. However, they have similar weekly gains in function from in-hospital rehabilitation, and a similar percentage are discharged home rather than to another facility,

according to a new study. The longer hospital stay for patients with OA probably resulted in equitable functional recovery at followup.

Researchers analyzed outcomes of 1,953 elderly hip fracture patients with OA and 11,441 elderly hip fracture patients without

OA, who were hospitalized from 1994 to 2001. Mean length of stay for patients with OA was 18.1 days versus 16.5 days for those without OA. After adjusting for age, sex, race/ethnicity, coexisting conditions, Functional

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## Hip fracture patients

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Independence Measure (FIM) ratings at hospital admission (for example, cognition, ability to walk and climb stairs, and ability to engage in self-care activities), and total hip replacement, OA was associated with a 1.4 day longer rehabilitation stay and slightly higher discharge FIM ratings. However, OA was not associated with lower weekly rehabilitation

gain (mean weekly gain of 11.8 for those with OA vs. 11.9 for those without OA), followup FIM ratings, and discharge home.

The researchers note that these hospitalizations for hip fracture took place during the fee-for-service payment system prior to the 2002 implementation of the Medicare Prospective Payment System (PPS). Under PPS, hip fracture patients with OA are more likely to be discharged before they are fully functional, because PPS

pays for the same length of stay for patients with or without OA. Their study was supported in part by the Agency for Healthcare Research and Quality (HS11618).

See "Impact of osteoarthritis on rehabilitation for persons with hip fracture," by Tracy U. Nguyen-Oghalai, M.D., Kenneth J. Ottenbacher, Ph.D., Carl V. Granger, M.D., and others, in the December 15, 2006 *Arthritis & Rheumatism* 55(6), pp. 920-924. ■

## Emergency Medicine

### Study profiles the number, distribution, and basic use patterns of U.S. emergency departments

**O**f the 4,917 hospitals in the United States, 4,862 have an emergency department (ED). The distribution and use of these EDs varies dramatically, according to a 2001 profile study. For example, a median of 15,711 patients visited U.S. EDs in 2001. However, 1 in 3 U.S. EDs saw less than 8,760 patients and, together, accounted for only 6 percent of all ED visits. This volume of patients is equal to an average of at least one patient per hour, 24 hours per day, 7 days per week. Excluding the low-volume EDs, the remaining two-thirds of EDs typically saw 28,000 patients per year and accounted for 94 percent of all ED visits. The highest volume hospitals saw a median of 48,920 patients per year.

State-specific ED visit rates ranged from a low of 23 visits per year per 100 people in Hawaii to 65 visits per 100 people in Washington, DC. ED visit rates were highest in Washington, DC, West Virginia, and Mississippi. Most (83 percent) of the small-volume EDs were concentrated in rural areas, with only 17 percent located in metropolitan areas. In contrast, only 28 percent of high-volume EDs were in a nonurban setting, with 72 percent located in metropolitan areas.

The proportion of higher volume EDs also varied by region. In 2001, 72 percent of the 1,834 EDs in the South were considered higher volume (more than

8,760 patients per year). The Midwest had a total of 1,425 EDs, 55 percent of which were higher volume. The West had a total of 890 EDs of which 66 percent were higher volume. The Northeast had the lowest number of EDs (713), but the highest percentage of higher volume EDs (89 percent). The Northeast received the most annual visits per ED and the Midwest received the fewest. Regional ED use can be influenced by heavy "safety net" use by persons without a usual care provider, primary care shortages in the area, and patients' proximity to an ED. The profiles were based on data from the first national database of U.S. EDs, the National Emergency Department Inventory, which was developed by the study authors. They suggest that the United States should consider classifying EDs as it does trauma centers. The study was supported in part by the Agency for Healthcare Research and Quality (HS13099).

See "A profile of U.S. emergency departments in 2001," by Ashley F. Sullivan, M.S., M.P.H., Ilana B. Richman, B.A., Christina J. Ahn, B.A., and others, in the December 2006 *Annals of Emergency Medicine* 48(6), pp. 694-701. ■

## Emergency physicians ask over half of female patients if they smoke, but don't counsel or advise them to quit

Emergency departments (EDs) treat 25 million smokers each year, which provides an opportunity to identify smokers and encourage them to quit. ED physicians are likely to ask female patients about smoking, but are not likely to counsel or advise them to quit, according to a new study supported in part by the Agency for Healthcare Research and Quality (HS11096). Researchers found that physicians spent little time discussing smoking with their patients beyond the initial screening. They rarely assessed patients' readiness to change, provided advice to quit, or provided referrals for tobacco cessation resources. Physicians tended to screen and discuss smoking when

patients had a health condition that could be aggravated by smoking.

Researchers analyzed 871 audiotapes of emergency physician-female patient interaction during visits to 2 socioeconomically diverse EDs, an urban academic ED and a suburban community hospital ED. They found that emergency physicians asked 56 percent of female patients if they smoked. One-third of women said they did, but only slightly more than half of the women who smoked (56 percent) were advised to quit, and 13 percent received a referral, most often to primary care physicians. About 16 percent of smoking discussions included an assessment of readiness to quit. Physician empathy and

encouragement was associated with patients' detailing their attempts to quit smoking.

Tobacco screening was twice as high at the urban ED than at the suburban ED, even though smoking prevalence at the urban site was only slightly higher. However, rates of smoking-related discussions at the urban ED were 59 percent lower.

See "Should I give you my smoking lecture now or later?" Characterizing emergency physician smoking discussions and cessation counseling," by Natalie I. Vokes, Jeannine M. Bailey, M.A., and Karin V. Rhodes, M.D., M.S., in the October 2006 *Annals of Emergency Medicine* 48(4), pp. 406-414. ■

## One in six emergency transports of children to South Carolina emergency rooms is medically unnecessary

One in every six children transported by emergency medical services (EMS) to hospital emergency departments (EDs) in three South Carolina counties is medically unnecessary, according to a new study. Children under 2 years of age had the highest proportion of medically unnecessary trips (26.6 percent), as did children in rural locales and Medicaid-insured children (who are less likely to receive routine or sick care or to have transportation). Based on information for all EMS-to-hospital transports of children in the three counties between January 1, 2001 and March 31, 2003, 16.4 percent of transports were deemed medically unnecessary.

The researchers classified all transports involving a car accident, death on arrival, and death during transport as medically necessary, as were EMS/paramedic codes of unconsciousness, cardiac and stroke-related conditions, respiratory distress, altered mental status, gastrointestinal problems, and genitourinary problems. Of the 1,714 diagnosis codes encountered in the ED data, 620 were classified as medically unnecessary, 334 as medically necessary, and 760 as uncertain (which were recoded as medically necessary to err conservatively).

The most common medically unnecessary conditions varied by age group. For children through age 4, upper respiratory problems and related conditions such as otitis media (bacterial infection of the middle ear) were among the most common diagnoses. For ages 5 to 12, no single diagnosis represented more than 10 percent of medically unnecessary transports. However, possible viral conditions and upper respiratory problems were notable. From age 13 on, behavioral conditions, including drug use, depression, and conduct disorders were the most common diagnoses associated with a medically unnecessary transport. The researchers suggest that interventions targeting unnecessary use of EMS transport should consider improving access to care by improving alternative and public modes of transportation. The study was supported by the Agency for Healthcare Research and Quality (T32 HS00032).

More details are in "Medically unnecessary emergency medical services (EMS) transports among children 0 to 17 years," by P. Daniel Patterson, Ph.D., Elizabeth G. Baxley, M.D., Janice C. Probst, Ph.D., and others, in *Maternal and Child Health Journal* 10, pp. 527-536, 2006. ■



### Case management may improve adherence to antiviral therapy as well as outcomes of HIV-infected homeless persons

Case management (CM) may be one way to improve adherence to antiretroviral therapy and clinical outcomes among HIV-infected homeless and marginally housed adults, according to a new study. Most HIV case management is funded through the Ryan White CARE Act of 1990, which provides grants to States and cities to promote access to health care for impoverished HIV-infected persons. Case managers of HIV-infected patients manage complex medication regimens, coordinate primary medical care, and assist with referrals to housing, mental health, and substance abuse services, explains Margot B. Kushel, M.D., of the University of California, San Francisco.

Dr. Kushel and coinvestigators prospectively studied a sample of HIV-infected homeless and marginally housed adults in San Francisco. They examined their

receipt of primary care, emergency department (ED) visits and hospitalizations, and adherence to antiretroviral therapy, as well as CD4 cell count and HIV load (indicators of disease progression) in association with the degree of CM they received over a 5-quarter study period. This ranged from none or rare (any CM in less than 25 percent of quarters in the study) to moderate (more than 25 percent but 75 percent or less) or consistent (more than 75 percent).

CM was not associated with increased use of primary care, ED use, or hospitalizations. However, patients who received moderate CM compared with no or rare CM were more likely to comply with their antiretroviral medication regimen. Patients who received consistent and moderate CM were 10.7 and 6.5 times, respectively more likely to have 50 percent or greater improvement in CD4 cell count (signaling improved immune

system functioning). CM was not significantly associated with HIV load less than 400 copies/mL (undetectable viral load), when antiretroviral therapy adherence was considered. The benefits of CM are likely due to case managers' encouragement to adhere to medication, their assistance in communicating side effects to primary care providers, and their regular checking on clients to make sure medications are prescribed and refilled, note the researchers. Their study was supported in part by the Agency for Healthcare Research and Quality (HS11415).

See "Case management is associated with improved antiretroviral adherence and CD4 cell counts in homeless and marginally housed individuals with HIV infection," by Dr. Kushel, Grant Colfax, M.D., Kathleen Ragland, Ph.D., and others, in the July 15, 2006 *HIV/AIDS* 43, pp. 234-242. ■

## End-of-Life Care

### Use of a multidisciplinary team to care for homeless patients can address their end-of-life needs and improve their care

From 2.3 to 3.5 million persons in the United States are homeless each year, with 10 to 20 percent becoming homeless for more than 1 year. Many homeless persons have substance abuse problems and mental illness, lack social support, and have no medical insurance. These challenges complicate their ability to engage in end-of-life advance planning, adhere to medications, and find an adequate site to receive terminal care. By acknowledging the realities of the patients' life and introducing end-of-life planning over repeated visits, the clinician and a multidisciplinary team have the

opportunity to build trust despite the prevalence of mental illness, substance abuse, and chronic illness in this population. New paradigms such as "housing first" and ensuring that curative and palliative care are not contingent upon cessation of street drug use, are necessary to improve care at the end of life for chronically homeless individuals, suggest Margot B. Kushel, M.D., and Christine Miaskowski, R.N., Ph.D., of the University of California, San Francisco.

In a recent paper, the researchers discuss the challenges of providing end-of-life care for homeless

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## Homeless patients

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people and offer specific management recommendations. They assert that social workers, discharge planners, and case managers have expertise regarding local resources and are central to a multidisciplinary approach to caring for homeless patients. The authors recommend providing homeless patients with a written pain agreement, prescribing once-daily medications when possible, avoiding those that require refrigeration, minimizing those that need to be taken with food or water or that have adverse effects that require frequent use of restrooms, and dispensing small quantities of medication with

frequent refills (to reduce the temptation to sell or trade medications). They also recommend performing a comprehensive pain, substance abuse, and psychiatric assessment. Chronically homeless persons may chafe at institutional care such as skilled nursing facilities. The creation of palliative care services in hospitals that serve large numbers of homeless people would provide a setting for end-of-life care. The study was supported in part by the Agency for Healthcare Research and Quality (HS11415).

See “End-of-life care for homeless patients,” by Drs. Kushel and Miaskowski, in the December 27, 2006 *Journal of the American Medical Association* 296(24), pp. 2959-2966. ■

## Health Care Costs and Financing

### A study of one managed behavioral health care organization does not show a shift in treatment costs to drugs and primary care

**M**anaged behavioral health care organizations (MBHOs) have reduced the costs of specialty mental health and substance abuse treatment, primarily by substituting less expensive outpatient services for inpatient care. There remains concern that MBHOs may shift mental health treatment to primary care and prescription drugs (use of drugs instead of psychotherapy) in order to reach contractual cost-savings goals in the specialty mental health sector. However, a case study of a single MBHO found no evidence to suggest that it shifted treatment costs in this way.

Nevertheless, MBHOs are ubiquitous, and powerful market incentives remain for MBHOs to shift costs toward alternative treatments and settings. Samuel H.

Zuvekas, Ph.D., of the Agency for Healthcare Research and Quality, and coinvestigators analyzed claims data from 1991-1995 from an insurer that introduced an MBHO in 1992 to control treatment costs. The MBHO faced incentives related to reputation and contract renewal to shift costs to primary care treatment or prescription drugs.

The use of any psychotropic medication rose 64 percent over the 4-year period among enrollees of the large employer group that had parity for physical and mental health care and by 87 percent in the smaller groups without parity. Often these medications were prescribed in primary care settings. Introduction of the MBHO was not significantly associated with the use of any psychotropic medication

alone, and for newer antidepressants, it was associated with a 2.4 percentage point decrease in medication use alone in the large group. The savings achieved by reducing inpatient spending may have allowed the MBHO to meet performance targets without aggressively shifting costs, suggest the researchers. They call for more studies on the effect of MBHOs on the overall quality of care for people with mental illnesses.

See “Cost shifting under managed behavioral health care,” by Dr. Zuvekas, Agnes Rupp, Ph.D., and Grayson Norquist, M.D., M.S.P.H., in the January 2007 *Psychiatric Services* 58(1), pp. 100-108. Reprints (AHRQ Publication no. 07-R036) are available from AHRQ.\* ■

## Reconciliation of MEPS and the National Health Expenditure Accounts aids benchmarking and policy simulation efforts

The National Health Expenditure Accounts (NHEA) and Medical Expenditure Panel Survey (MEPS) provide two of the most comprehensive sources of estimates of national health care expenditures. The NHEA include the entire U.S. population and are primarily based on provider revenue and government administrative data. In contrast, MEPS contains person-level data on health care expenditures from a survey of a nationally representative sample of households in the civilian, noninstitutionalized population. A study compared the two estimates for 2002 to aid benchmarking efforts for both estimates and to provide a consistent baseline of health expenditure data for health policy simulations. After adjusting MEPS and NHEA for differences in population, covered services, and other measurement concepts, the study estimated a \$133 billion or 13.8 percent difference in their estimates of U.S. health care expenditures.

Agency for Healthcare Research and Quality (AHRQ) researchers Merrile Sing, Ph.D., Jessica S. Banthin, Ph.D., and Thomas M. Selden, Ph.D., and colleagues at the Centers for Medicare and Medicaid Services (CMS) emphasize that aligning or reconciling the two estimates entails numerous assumptions. The reconciliation required detailed estimates for expenditure categories and population subsets that are often difficult to measure accurately. Some of the differences they found between MEPS and NHEA by service category and source of payment may be due to

measurement issues. For MEPS, although physician utilization measures align closely with physician utilization data from the National Ambulatory Medical Care Survey, the gaps found for physician and hospital expenditures underscore the merit of improving data collection from high-expenditure cases. For NHEA, part of the large gaps in private health insurance and out-of-pocket expenditures may arise because private expenditures in NHEA are calculated as the residual of total health minus government expenditures. Thus, they are subject to measurement issues associated with provider surveys as well as government expenditure data.

There may also be NHEA measurement issues that stem from the complex financial arrangements in the U.S. health care system, which include provider payments (such as bonuses) that are not directly linked to specific patient care events. The authors' explanation of why MEPS and NHEA yield different expenditure estimates will help AHRQ and CMS focus future research efforts in the appropriate areas to improve expenditure estimates from MEPS and the NHEA.

More details are in "Reconciling medical expenditure estimates from the MEPS and NHEA, 2002," by Drs. Sing, Banthin, Selden, and others, in the Fall 2006 *Health Care Financing Review* 28(1), pp. 25-40. Reprints (AHRQ Publication no. 07-R033) are available from AHRQ.\* ■

## U.S. health care spending has become less concentrated among the top spenders in the past decade

Historically, a small fraction of the U.S. population has accounted for a large share of total health care spending. However, this concentration in health care spending has begun to decline, according to a study of 1996-2003 Medical Expenditure Panel Survey (MEPS) data. For example, up until 1996, the top 1 percent of spenders accounted for more than one-fourth of all health care expenses and the top 5 percent accounted for more than half. Yet, by 2003, the percentage of expenditures accounted for by the top 1 percent of spenders declined from 28 to 24 percent and those of the top 5 percent declined from 56 to 49 percent. These declines were evident among both elderly and nonelderly groups and both the publicly and privately insured.

Rapid growth in prescription drug spending combined with slower growth in inpatient care spending largely accounted for this change in concentration of spending, note Samuel H. Zuvekas, Ph.D., and Joel W. Cohen, Ph.D., of the Agency for Healthcare Research and Quality. Prescription drug spending, which is diffused over a large fraction of the population, increased from 12 to 20 percent of total health care expenditures. In contrast, inpatient care spending (usually by the sicker and smaller segment of the population) declined from 39 to 34 percent of total expenditures.

From 1996 to 2003, prescription drug spending per person more than doubled (125 percent increase) from \$424 to \$950, while inpatient (12 percent), ambulatory

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## Health care spending

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(23 percent), and other medical services spending (19 percent) increased only modestly. The concentration of prescription drug and ambulatory treatment spending declined at the same time. For example, the top 10 percent of drug spenders accounted for 66 percent of spending in 1996, but 64 percent in 2003. The top 5

percent of ambulatory care spenders accounted for 54 percent of expenditures in 1996, but only 48 percent in 2003.

More details are in “Prescription drugs and the changing concentration of health care expenditures,” by Drs. Zuvekas and Cohen, in the January 2007 *Health Affairs* 26(1), pp. 249-257. Reprints (AHRQ Publication no. 07-R031) are available from AHRQ.\* ■

## Transfer of health care funding from California State to counties maintained commitment to social service spending for the indigent

In the past decade, control of health and social programs for the poor has shifted from the Federal to State governments. In 1991, California further decentralized control of health, mental health, and social services from the State to the counties. This realignment gave the State’s counties inordinate financial flexibility by effectively reducing their matching-fund rate for indigent health services by more than half. County-level governments appeared to maintain a level of commitment to social service spending that recent studies indicate may be lacking at the State level, concluded Richard Scheffler, Ph.D., of the University of California, Berkeley, and Richard B. Smith, Ph.D., of the University of South Florida.

Counties in the postrealignment period did divert about two-thirds of targeted health revenues away

from their intended purpose.

However, the diverted funds went into other services (mainly mental health) that were part of the package of realigned programs benefitting low-income and medically indigent populations. Therefore, despite having greater authority and financial flexibility following realignment, counties tended to demonstrate the same level of commitment and support for providing these services that existed prior to decentralization.

One explanation is that several mental health programs became eligible for Medi-Cal (the State Medicaid program) funding in the years following realignment. Counties in California (as opposed to the State) have taken full advantage of matching Federal Medicaid dollars in expanding health and mental health services for the poor and uninsured. State-level government lacks the

redistributive power and policy focus of the Federal level, while also lacking the same proximity and commitment to local populations of county and lower levels of government, explain the researchers. Their conclusions were based on a review of the economics literature on intergovernmental transfers and data constructed for this study, supported in part by the Agency for Healthcare Research and Quality (HS00086).

See “The impact of government decentralization on county health spending of the uninsured in California,” by Drs. Scheffler and Smith, in the September 2006 *International Journal of Health Care Finance and Economics* 6, pp. 237-258. ■

### Studies examine effect of physician practice size and opening of specialty cardiac hospitals on treatment of heart attack patients

Clinical practice guidelines recommend early heart imaging (via cardiac catheterization) and reopening of blocked arteries (revascularization) by coronary artery bypass graft surgery (CABG) or coronary angioplasty for heart attack patients. Physicians in solo practices may be less likely than those in group practices to follow guidelines calling for quick use of cardiac imaging and angioplasty for Medicare patients, suggests a new study supported in part by the Agency for Healthcare Research and Quality (HS11114). On the other hand, the opening of a specialized cardiac hospital in a region is associated with higher rates of coronary revascularization in Medicare patients, according to a second AHRQ-supported study (HS15571). Both studies are summarized here.

**Ketcham, J.D., Baker, L.C., and MacIsaac, D. (2007, January). "Physician practice size and variations in treatments and outcomes: Evidence from Medicare patients with AMI." *Health Affairs* 26(1), pp. 195-205.**

Physician practice size may be associated with care of hospitalized heart attack patients covered by traditional fee-for-service Medicare. Researchers found that patients of physicians in group practices had 10 to 12 percent higher rates of cardiac catheterization and 10 to 26 percent higher rates of angioplasty within one day of hospital admission than patients of solo-practice physicians in the same hospital. Patients of physicians in group practices also had lower mortality rates, even

after accounting for patient and physician characteristics.

The research team used Medicare claims data on 116,671 heart attack patients to examine whether the practice size of attending physicians was related to within-hospital differences in their care. They used the Medicare Unique Physician Identification Number to link physician characteristics and practice size with individual patients. Overall, 39 percent of patients had an attending doctor from a solo practice, 16 percent from a practice of 2 to 5 physicians, 11 percent from a practice of 6 to 9, 10 percent from a practice of 10 to 19, 7 percent from a practice of 20 to 49, and 7 percent from a practice of 50 or more.

For the smallest three practice size categories, treatment rates increased and mortality rates decreased with greater practice sizes. However, these trends did not appear to continue among practices with 10 or more physicians. One explanation for the study results is that solo-practice physicians may not benefit from the ease of information sharing and consultation of group practices.

**Nallamothu, B.K., Rogers, M.A., Chernew, M.E., and others. (2007, March). "Opening of specialty cardiac hospitals and use of coronary revascularization in Medicare beneficiaries." *Journal of the American Medical Association* 297(9), pp. 962-968.**

Specialty cardiac hospitals are opening at a rapid pace across the United States. This study found that the opening of a cardiac hospital within a hospital referral

region (HRR) or health care market was associated with increasing population-based rates of coronary revascularization (i.e., bypass surgery or coronary angioplasty) in Medicare beneficiaries. The opening of cardiac hospitals in the 13 HRRs studied between 1999 and 2003 was associated with an estimated 3,032 additional coronary revascularizations. Adjusted rates of change in revascularization were more than 2-fold higher in HRRs 4 years after cardiac hospitals opened (19.2 percent) than in HRRs where new cardiac programs opened at general hospitals (6.5 percent) and in HRRs with no new programs (7.4 percent).

The findings do raise some concern about the influence of physician ownership of cardiac hospitals on decisions about the use of coronary revascularization. For example, among heart attack patients, the subset of patients who are likely to gain the most from angioplasty, there was no association between the opening of a regional cardiac hospital and the rate of angioplasty. Growth in angioplasty rates were largely driven by its increased use for patients who had not suffered a heart attack, a group for whom the benefits of this procedure are often less clear.

Alternatively, these findings may reflect improved efficiencies in patient care that do not directly reflect financial incentives. The findings were based on calculation of annual population-based rates for CABG and angioplasty among Medicare beneficiaries from 1995 through 2003 in 13 HRRs. ■

## Assessing all health conditions and heart attack severity at admission helps assess patients' risk of dying

Public reporting of hospital mortality rates for heart attack patients is intended to improve health care quality by directing patients to hospitals with lower-than-expected mortality rates based on their patients' severity of illness. Generally, hospital administrative data on heart attack patients is used to adjust patients' risk of dying, and includes information on cardiac risk factors such as diabetes and cerebrovascular disease. However, these data do not include patients' other health conditions or heart attack severity present at hospital admission. A new risk model that includes these two variables improves assessment of risk of dying among hospitalized heart attack patients.

Using a more comprehensive risk model may lead to more accurate comparisons of quality-of-care differences for heart attack patients among hospitals. George J. Stukenborg, Ph.D., of the University of Virginia Medical School, and colleagues used an acute myocardial infarction (AMI or heart attack) mortality risk adjustment model, which adjusts for coexisting disease and for AMI severity reported at admission, to predict mortality risk for heart attack patients at California hospitals from 1996 through 1999. They compared results from the new model to two mortality risk-adjustment models used to assess hospital AMI

mortality outcomes by the State of California and to two other models used in prior research.

Their model obtained better discrimination between predicted survival and inpatient death, measured a wider range of mortality risk, and had more explanatory power than the other models they considered. Besides shock, the categories of coexisting disease that contributed most to the model's performance were coma, stupor, and brain damage; acute and unspecified renal disease; respiratory failure, insufficiency, and cardiac arrest; and acute cerebrovascular disease. In addition to infarct location, the new model included four other conditions related closely to heart attack severity present at admission: cardiac arrest and ventricular fibrillation, heart disease related closely to AMI, coronary atherosclerosis, and other related heart disease. The study was supported by the Agency for Healthcare Research and Quality (HS10134 and HS11419).

See "Present-at-admission diagnoses improved mortality risk adjustment among acute myocardial infarction patients," by Dr. Stukenborg, Douglas P. Wagner, Ph.D., Frank E. Harrell Jr., Ph.D., and others, in the February 2007 *Journal of Clinical Epidemiology* 60, pp. 142-154. ■

## Regionalizing stroke care to high-volume hospitals may not improve stroke outcomes or lower costs for some regions

Redirecting patients who need complex cardiac and other surgical procedures to hospitals that perform a high volume of such procedures tends to improve patient outcomes due to the expertise of the high-volume hospitals. However, this regionalization of care may not significantly affect the outcome or costs of acute stroke patients in some regions. Case Western Reserve University investigators, Mark E. Votruba, Ph.D., and Randall D. Cebul, M.D., retrospectively studied 12,150 Medicare patients admitted for acute stroke to 1 of 29 hospitals in Cleveland during a 7-year period.

Overall, 15 percent of stroke patients died within 30 days. For each 100-patient increase in hospital annual volume of stroke patients, risk-adjusted mortality declined 0.9 percentage points, with no significant difference in hospital costs. Yet, for each 1-mile increase in patient distance to the nearest hospital, mortality increased 0.6 percentage points. This suggests that efforts to direct stroke patients to selected hospitals could have unintended consequences. Only 3 of the 29 hospitals (10 percent) treated more than 250 stroke patients a year. Using this volume threshold would have redirected over 81 percent of patients and increased patients'

distance to the nearest stroke-treating hospital an average of 1.44 miles. This would have resulted in a net reduction in mortality of 0.4 percent. Lower hospital volume thresholds would redirect fewer patients and have negligible effects on mortality. In addition, hospital volume explained only 17 percent of the variation in adjusted mortality rates across hospitals. Indeed, two of the best performing hospitals in the study were those treating the fewest stroke patients. This analysis makes it difficult to attribute improvements in mortality to a hospital's high volume of stroke patients. However, the authors caution that their findings

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## Stroke care

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were based on comparatively old data (1991 to 1997) from one urban area. The study was supported in

part by the Agency for Healthcare Research and Quality (HS09969).

See “Redirecting patients to improve stroke outcomes: Implications of a volume-based

approach in one urban market,” by Drs. Votruba and Cebul, in the December 2006 *Medical Care* 44(12), pp. 1129-1136. ■

## Agency News and Notes

### New DVD trains health care workers to provide respiratory care during disasters

The Agency for Healthcare Research and Quality (AHRQ) has released a DVD titled “Cross Training Respiratory Extenders for Medical Emergencies (Project XTREME)” to train health care professionals who are not respiratory care specialists to provide basic respiratory care and ventilator management to adult patients in any mass casualty event. Among the possible emergencies when such auxiliary clinical help may be necessary are an influenza pandemic, a bioterrorist attack involving anthrax or other agents, or an outbreak of severe acute respiratory illnesses. Principal target groups for the training are physicians, physician assistants, and nurses.

The DVD includes six training modules with interactive quizzes to test viewers’ knowledge. The modules cover infection control, respiratory care terms and definitions, manual ventilation (using hand-held bags), mechanical ventilation (using the two types of ventilators included in the Federal government’s Strategic National Stockpile of medicines and medical

supplies for emergencies), airway maintenance, and airway suctioning.

The DVD was produced for AHRQ by a team of respiratory care specialists at the Denver Health Medical Center led by Michael Hanley, M.D., as part of Project XTREME. A related report also funded by AHRQ, “Project XTREME: Model for Health Professionals’ Cross-Training for Mass Casualty Respiratory Needs,” provides further information on the training model as well as the research and methodologies used in developing it. A free, single copy of the DVD and a CD-ROM with the report (AHRQ Publication no. 07-0017) are available from AHRQ.\*

**Editor’s note:** AHRQ has funded more than 60 emergency preparedness-related studies, workshops, and conferences to help hospitals and health care systems prepare for public health emergencies. More information about these projects can be found online at [www.ahrq.gov/prep/](http://www.ahrq.gov/prep/). ■

## Announcements

### Grant final reports now available from NTIS

The following grant final reports are now available from the National Technical Information Service (NTIS). Each listing identifies the project’s principal investigator, his or her affiliation, grant number, and project period and provides a brief description of the project. Records of documents archived at NTIS—including many AHRQ documents and final reports from all

completed AHRQ-supported grants—can now be searched on the new NTIS Web site. For information about findings from the projects described here, please access the relevant final reports at the NTIS Web site. Also, all items in the database from 1997 to the present can be downloaded from the NTIS Web site. Go to [www.ntis.gov](http://www.ntis.gov) for more information.

**Editor’s Note:** In addition to these final reports, you can access information about these projects from several other sources. Most of these researchers have published interim findings in the professional literature, and many have been summarized in *Research Activities* during the course of the project. To find information presented in back issues of *Research Activities*, go to

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## Grant final reports

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www.ahrq.gov, and select "Search Research Activities." To search for information, enter either the grant or contract number or the principal investigator's last name in the query line. A reference librarian can help you find related journal articles through the National Library of Medicine's PubMed®.

***CUBS: Preventive Services for at Risk Infants.*** W. Robert Pace, M.D., LSU health Sciences Center, New Orleans. AHRQ grant HS13562, project period 9/30/02-9/29/04.

The purpose of this grant was to facilitate the development of the supportive infrastructure for the Louisiana State University Collaborative of University Based Services (CUBS) practice-based research network. The mission of CUBS is improving the quality of care for infants and children of Louisiana using evidence-based medicine, working in a collaborative fashion on quality improvement projects and research. This report describes the formal infrastructure that was developed as a framework to facilitate the aims of CUBS as well as the research protocol, research tools, and research variables. Abstract and final report (NTIS accession no. PB2007-107230; 8 pp, \$14.00 paper, \$14.00 microfiche) are available from NTIS.\*\*

***From Best Practices to Quality Patient Care – Business Models for Health Information Technologies.*** E. Andrew Balas, M.D., Ph.D., St. Louis University School of Public Health. AHRQ grant HS12087, project period 07/16/02-11/14/03.

The goal of the conference was to examine the process of cost-effective health information

technology transfer and advance the business case for innovation that improves outcomes and protects patient safety. This conference was designed to advance the work started earlier in previous conferences ("Transferring research to practice in the information age," November 12-13, 1998 and the AMIA Spring 2000, Information Technologies for Quality Improvement in Health Care, May 23-25, 2000). The outcomes and recommendations resulting from these sessions have been summarized in a white paper. Abstract and final report (NTIS accession no. PB2007-107231; 11 pp, \$14.00 paper, \$14.00 microfiche) are available from NTIS.\*\*

***Best Practices in FAS Prevention and Intervention.*** Sarah H. Bobo, Arc/Muskegon. AHRQ grant HS14646, project period 4/01/04-3/31/05.

The purpose of the Michigan Statewide Fetal Alcohol Syndrome (FAS) Workgroup's conference was to disseminate research findings to individuals and organizations that have the capacity to use the information to improve the outcomes, quality, access to, cost, and utilization of healthcare services pertaining to FAS and its prevention. Five plenary sessions and 16 workshop sessions were provided over two days with 238 participants. Topics included an overview of model programs, research projects and informational presentations pertaining to FAS prevention and intervention. Participants completing the evaluation forms indicated a clear ability to accomplish the conference objectives. This knowledge increased the participants' ability to prevent alcohol exposed pregnancies and intervene with alcohol affected individuals. Abstract and final

report (NTIS accession no. PB2007-107231; 10 pp, \$14.00 paper, \$14.00 microfiche) are available from NTIS.\*\*

***Institutional Factors Affecting Hospital Organ Donation Rates.*** Pamela Crenshaw Spain, Virginia Commonwealth University. AHRQ grant HS14666, project period 9/01/04-6/30/05.

This study sought to identify why hospitals differ in their organ donor potential and organ donor recovery rates using data from the Health Care Cost and Utilization Project's Statewide Inpatient Discharge (SID) merged with data from the United Network for Organ Sharing and the American Hospital Association. Although the donor conversion rate for the entire sample was unchanged over time, significant variation in the growth trajectory for the sample indicated that hospitals had differing growth rates. Analyses in a sub-sample of hospitals with a low recovery rate in 2000 showed a significantly positive growth trajectory. The proportion of deaths due to trauma and the number of transplant centers in the hospital's market were negative predictors of donor recovery rates. This study contributes to a limited body of research examining hospital-level organ donations and demonstrates the value of SID data as an alternative to chart reviews identify potential organ donors. Abstract and final report (NTIS accession no. PB2007-107227; 19 pp, \$26.50 paper, \$14.00 microfiche) are available from NTIS.\*\*

***Creating a Primary Care Practice-based Research Network (PBRN).*** Louis M. Bell, M.D., The Children's Hospital of Philadelphia. AHRQ grant HS13492, project period 9/30/02-9/29/04.

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## Grant final reports

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This project resulted in a pediatric PBRN using existing practices in The Children's Hospital of Philadelphia (CHOP) Healthcare Network to provide a structure to foster high quality clinical research to improve patient safety, quality of care and outcomes in the ambulatory setting. Now named the CHOP Pediatric Research Consortium (PeRC), activities included 1) an assessment of the clinical infrastructure and capability; 2) improved communication about clinical research projects among providers; and 3) creation of a CHOP PBRN Project Advisory Committee which included primary care providers to review proposed clinical research projects. The surveys were

completed, the PeRC Project review process was developed, and a CHOP PeRC Project Advisory Committee was formed. Abstract and final report (NTIS accession no. PB2007-107229; 19 pp, \$26.50 paper, \$14.00 microfiche) are available from NTIS.\*\*

### ***Economic Benefits of a Breastfeeding Promotion Intervention: A Controlled Clinical Trial.* Karen A. Bonuck, Ph.D., Montefiore Medical Center/Albert Einstein College of Medicine. AHRQ grant HS10900, project period 9/01/00-11/30/04.**

The purpose of this study was to determine whether an individualized, pre- and post-partum Lactation Consultant intervention resulted in increased breastfeeding and decreased

“breast-feeding sensitive” illness up to 52 weeks. Participants included 382 Hispanic women recruited from 2 community health centers serving low-income, primarily and/or Black women. The intervention group achieved the Healthy People 2010 goal of 50 percent breastfeeding until 5 or 6 months and had greater continued breastfeeding through Week 20 compared with the control group. There were no significant differences in exclusive breastfeeding at any time nor were there differences in the incidence of: gastrointestinal infection, respiratory infection, or otitis media. Abstract and final report (NTIS accession no. PB2007-107228; 19 pp, \$26.50 paper, \$14.00 microfiche) are available from NTIS.\*\* ■

## Research Briefs

### **Backer, E.L., Gregory, P., Jaén, C.R., and Crabtree, B.F. (2006, May). “A closer look at adult female health care maintenance visits.” (AHRQ grant HS08776). *Family Medicine* 38(5), pp. 355-360.**

Researchers analyzed data from observational field notes on actual health care maintenance (HCM) visits, medical record reviews, and in-depth interviews for overall content, process, and style of 95 visits with adult females (to 47 different clinicians) at 18 Midwestern urban, suburban, and rural family practices. The preventive services delivered in more than 50 percent of visits included blood pressure measurements (98 percent); weight (93 percent), breast (93 percent), and pelvic (88 percent) examinations; identification of smoking status (87 percent) and

related counseling (63 percent); and mammography recommendations (70 percent). Key preventive issues less often addressed were cholesterol screening (21 percent of visits), colon cancer screening (12 percent), alcohol use (32 percent), and tetanus/influenza/pneumococcal vaccinations (13, 18, and 21 percent, respectively). Clinicians were inconsistent in their health habit counseling about obesity.

### **Binkley, S., Fishman, N.O., LaRosa, L.A., and others. (2006, July). “Comparison of unit-specific and hospital-wide antibiograms: Potential implications of selection of empirical antimicrobial therapy.” (AHRQ grant HS10399). *Infection Control and Hospital Epidemiology* 27(7), pp. 682-687.**

The selection of antibiotic therapy is based largely on antimicrobial susceptibility rates compiled in a hospital's antibiogram. The authors of this study collected antimicrobial susceptibility results for all inpatient clinical bacterial isolates recovered over a 3-year period. They evaluated a total of 9,970 bacterial isolates. The percentages of bacterial isolates resistant to antibiotics were significantly higher in the medical intensive care unit (ICU) and surgical ICU than the hospital-wide antibiogram would have predicted. In contrast, the percentages of isolates susceptible to antibiotics were significantly higher in the non-ICU units compared with the hospital overall. The authors conclude that unit-specific antibiograms are

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important for making informed decisions about antibiotic therapy.

**Bradburn, M.J., Deeks, J.J., Berlin, J.A., and Localio, A.R. (2007). “Much ado about nothing: A comparison of the performance of meta-analytical methods with rare events.” (AHRQ grant HS10399). *Statistics in Medicine* 26, pp. 53077.**

Many methods of meta-analysis are based on large sample approximations, and may be unsuitable when events are rare. Through simulation, these authors evaluated the performance of 12 methods for pooling rare events, considering estimability, bias, coverage, and statistical power. Simulations were based on data sets from 3 case studies, each with between 5 and 19 trials. Most of the commonly used meta-analytical methods were biased when data were sparse. At event rates below 1 percent, the Peto one-step odds ratio method was the least biased and most powerful method, and provided the best confidence interval coverage. This was the case if there was no substantial imbalance between treatment and control group sizes within trials and treatment effects were not exceptionally large. In other circumstances, the Mantel-Haenszel odds ratio method without zero-cell corrections, logistic regression, and the exact method performed similarly to each other, and were less biased than the Peto method.

**Calfee, C.S., Shah, S.J., Wolter, P.J., and others. (2007, February). “Anchors away.” (AHRQ grant HS11540). *New England Journal of Medicine* 356(5), pp. 504-509.**

This article recounts the case of a 50-year-old Asian woman who developed a papulonodular, erythematous rash on her legs below the knees, but had no fever, joint pain, or other systemic symptoms. The physician made an initial diagnosis of sarcoidosis, which was consistent with a chest x-ray that revealed scattered nodules and increased interstitial markings. She later developed dizziness, hoarseness, and inability to swallow liquids or solids. She also developed a fever, high blood pressure, and rapid heart rate. Further testing confirmed a diagnosis of lymphomatoid granulomatosis. She was put on a regimen of rituximab, etoposide, cyclophosphamide, vincristine, doxorubicin, and prednisone, followed by maintenance therapy with interferon alfa. She remained disease-free 2 years later.

**Call, K.T., Davern, M., and Blewett, L.A. (2007). “Estimates of health insurance coverage: Comparing State surveys with the current population survey.” (AHRQ contract 290-00-0017). *Health Affairs* 26(1), pp. 269-278.**

The U.S. Census Bureau produces annual State-level estimates of health insurance coverage using the Current Population Survey (CPS) Annual Social and Economic Supplement. More than 40 States also conduct their own surveys to get better State-level estimates of health insurance coverage. In most cases, the State survey estimates of uninsurance are lower than the estimates produced by the CPS. This discrepancy fuels debate about the true count of uninsured Americans and changes in that number over time. This paper compares State survey and CPS estimates of uninsurance, highlights key reasons for these differences, and discusses the policy

implications of this persistent discrepancy.

**Callahan, C.M., Boustani, M.A., Unverzagt, F.W., and others. (2006, May). “Effectiveness of collaborative care for older adults with Alzheimer disease in primary care.” (AHRQ grant HS10884). *Journal of the American Medical Association* 295(18), pp. 2148-2157.**

Collaborative care by an interdisciplinary group who use Alzheimer’s disease treatment guidelines can significantly improve the quality of primary care of these patients and reduce behavioral symptoms such as aggression or psychosis. Researchers randomized 153 older adults with Alzheimer’s disease and their caregivers to receive either collaborative care management (84 adults) or augmented usual care (69 adults) at primary care practices within 2 university-affiliated health care systems during an 18-month period. Collaborative care patients were more likely to receive cholinesterase inhibitors (79.8 vs. 55.1 percent) and antidepressants (45.2 vs. 27.5 percent) than the controls. They also had significantly fewer behavioral and psychological symptoms of dementia as measured by the total Neuropsychiatric Inventory score at 12 months, when the collaborative care program ended, as well as 18 months later. These improvements were achieved without significantly increasing the use of antipsychotics or sedative-hypnotics. Caregivers also showed improvement in depression.

**Chan, K.S., Bird, C.E., Weiss, R., and others. (2006). “Does patient-provider gender concordance affect mental health care received by primary care patients with**

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**major depression?” (AHRQ grant HS08349). *Women’s Health Issues* 16, pp. 122-132.**

An analysis of 1,428 patients of 389 providers from the Quality Improvement for Depression Collaboration Study and 714 patients of 157 providers from the Partners-In-Care subproject for detection of anxiety disorder and alcohol or drug problems found that 40 percent of patients suffering from major depression were diagnosed and treated or referred by their primary care provider during health screening visits. Only 25 percent of depressed patients with anxiety and 9 percent of those at risk for drinking or substance abuse problems reported that their provider talked to them about these issues during their visit. With few exceptions, rates of depression diagnosis and care were comparable regardless of the gender of the doctor or whether the gender of the doctor and the patient were the same. The few exceptions were that female providers were more likely to counsel their depressed patients about anxiety. Also, female providers were less likely than male providers to counsel on alcohol or drug use (2 vs. 8 percent), and female patients were less likely to be counseled compared with male patients (3 vs. 12 percent). Male patients of male providers reported the most counseling and female patients of female providers reported the least counseling (14 vs. 1 percent) about drug or alcohol use.

**Clancy, C.M. (2006). “Closing the health care disparities gap: Turning evidence into action.” *Journal of Health Care Law & Policy* 9(1), pp. 121-135.**

The Agency for Healthcare Research and Quality (AHRQ)

publishes the *National Healthcare Disparities Report* each year, documenting health care disparities in many areas. In this paper, the AHRQ director recounts the disparities uncovered by AHRQ research, and emphasizes the importance of closing the gap for low-income and minority groups. She notes that many of the same factors that put the residents of New Orleans and other devastated communities in harm’s way, such as poverty, lack of insurance, and community neglect, contribute to health disparities for poor and minority children and adults across the United States. The author concludes with examples of AHRQ’s efforts to translate evidence on care disparities into action to close the gap in health care disparities. Reprints (AHRQ Publication no. 07-R039) are available from AHRQ.\*

**Clancy, C.M. (2007, January). “Emergency departments in crisis: Implications for accessibility, quality, and safety.” *American Journal of Medical Quality* 22(1), pp. 59-62.**

In 2003, 501,000 ambulances were diverted to other hospitals due to emergency department (ED) overcrowding—an average of 1 every minute. There is reason to question the capacity of U.S. EDs to handle a mass casualty event such as Hurricane Katrina or bioterrorism, notes the author of this commentary. She examines the role hospital EDs play in emergency care and more routine treatment, and discusses some of the Agency for Healthcare Research and Quality’s (AHRQ’s) activity in this area. Examples of AHRQ-supported projects include the multi-institutional Center for Safety in Emergency Care; the development of the Emergency Severity Index, a five-level ED triage algorithm; studies of ED

crowding causes and consequences; and significant investments in information technology to improve ED safety and quality of care. Reprints (AHRQ Publication no. 07-R041) are available from AHRQ.\*

**Classen, D.C., Avery, A.J., and Bates, D.W. (2007). “Evaluation and certification of computerized provider order entry systems.” (AHRQ contract 290-04-0016). *Journal of the American Medical Association* 14, pp. 48-55.**

The increasing implementation of commercial computerized physician order entry (CPOE) systems in various settings of care has revealed that they may actually cause new errors or even harm. This paper describes initial attempts at evaluation and certification of CPOEs. For example, new initiatives to evaluate CPOE systems have been undertaken by both vendors and other groups who evaluate vendors. In addition, an electronic health record vendor certification process is ongoing under the province of the Certification Commission for Health Information Technology, which will affect the purchase and use of these applications by hospitals and clinics and their participation in public and private health insurance programs. Finally, some large employers have linked evaluation of CPOE systems to reimbursement through pay-for-performance programs.

**Cohen, S.B., Ezzati-Rice, T., and Yu, W. (2006). “The impact of survey attrition on health insurance coverage estimates in a national longitudinal health care survey.” (AHRQ grant HS10904). *Health Services Outcomes and Research Methods* 6, pp. 111-125.**

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Criteria that have been used to produce annual estimates of the uninsured include: those uninsured for a full year, those ever uninsured during a year, and those uninsured at a specific point in time. The Medical Expenditure Panel Survey (MEPS), one of the core health care surveys in the United States, supports all three types of estimates. The authors of this paper summarize the survey operations, informational materials, the interviewer training and experience of the field force, and the refusal conversion techniques employed in the MEPS to maintain respondent cooperation for five rounds of interviewing in order to minimize sample attrition. They also assess the impact of nonresponse attributable to survey attrition with respect to national health insurance coverage estimates derived from the MEPS.

**Dayton, E. and Henriksen, K. (2007, January).** “Communication failure: Basic components, contributing factors, and the call for structure.” *Journal on Quality and Patient Safety* 33(1), pp. 34-47.

An intricate web of individual, group, and organizational factors—more specifically, cognitive workload, implicit assumptions, authority gradients, diffusion of responsibility, and transitions of care—complicate communication, note the authors of this paper. They suggest that when a patient’s safety is at risk, providers should speak up to draw attention to the situation before harm is caused. They should clearly explain and understand each other’s diagnosis and recommendations to ensure well coordinated delivery of care. The authors suggest more structured

and explicitly designed forms of communication such as read-backs, situation-background-assessment-recommendation, critical assertions, briefs, and debriefings, which are increasingly being used in health care.

**Deb, P., Munkin, M.K., and Trivedi, P.K. (2006).** “Bayesian analysis of the two-part model with endogeneity: Application to health care expenditure.” (AHRQ grant HS10904). *Journal of Applied Econometrics* 21, pp. 1081-1099.

This paper studies the effect of managed care insurance plans on medical expenditures using a model in which the insurance status is assumed to be endogenous. The authors model insurance plan choice through the multinomial probit model. The medical expenditure variable, the outcome of interest, has a significant proportion of zeros that are handled using the two-part model, extended to handle endogenous insurance. The estimation approach is Bayesian, based on the Gibbs Sampler. The model is applied to a sample of 20,460 individuals obtained from the Medical Expenditure Panel Survey. The results provide substantial evidence of selectivity.

**Elder, N.C., Graham, D., Brandt, E., and others. (2006, March).** “The testing process in family medicine: Problems, solutions, and barriers as seen by physicians and their staff.” (AHRQ grant HS13554). *Journal of Patient Safety* 2(1), pp. 25-32.

Researchers evaluated discussions about the laboratory, imaging, and diagnostic testing process from 18 focus groups involving 139 physicians and staff at 8 geographically diverse family

practices. Participants said that filing, charting, and other problems existed in most steps in the testing process. Examples of problems cited were the wrong test being ordered or the order not transmitted fully; test results were delayed or not returned from laboratories; results went to the wrong provider; unclear test results; delayed or no patient notification or the wrong results given to the patient. Underlying contributing factors included not following procedures, inadequate tracking systems, lack of standardization (for example, who gives results to the patients) and communication problems. Perceived barriers to improvements were both cultural (leadership and staff support) and process-related (costs, staff and work environment, external support). Desired improvements included technology (such as electronic medical records, new or better equipment, or onsite lab or x-ray), more staffing, and improved systems (for charting, filing, tracking, and communication).

**Horn, K., Hamilton, C., and Noerachmanto, N. (2007, January).** “Efficacy of an emergency department-based motivational teenage smoking intervention.” (AHRQ grant HS10736). *Preventing Chronic Disease* 4(1), pp. 1-12.

These researchers randomized teenagers visiting the emergency department (ED) to receive brief advice to quit smoking (a motivational tobacco intervention, MTI) or to usual care. Six-month followup smoking cessation rates were nonsignificant—two teenagers quit smoking. Nevertheless, motivational interviewing may be a clinically relevant counseling model for use in teenage smoking

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interventions, suggest the study authors. However, many questions remain, and the current literature lacks studies on trials with significant outcomes using motivational interviewing in smoking cessation. Finally, more studies are needed to examine the suitability of the ED for MTI-type interventions.

**Lautenbach, E., Fishman, N.O., Metlay, J.P., and others. (2006, July). "Phenotypic and genotypic characterization of fecal *Escherichia coli* isolates with decreased susceptibility to fluoroquinolones: Results from a large hospital-based surveillance initiative." (AHRQ grant HS10399). *Journal of Infectious Diseases* 194, pp. 79-85.**

The fluoroquinolone antibiotics have established themselves as a vital component of the present antibiotic arsenal. Yet this study of fecal surveillance at two hospitals for 3 years found that colonization by *Escherichia coli* bacteria with reduced fluoroquinolone susceptibility is common. In addition, fluoroquinolone-resistance characteristics differ significantly over time. Of 789 fecal samples, 149 isolates (19 percent) revealed *E. coli* with reduced susceptibility to fluoroquinolones. Of 149 isolates, 144 demonstrated resistance to nalidixic acid. Resistance to nalidixic acid may be useful in the identification of *E. coli* with early resistance mutations, suggest the authors.

**Linder, J.A., Rose, A.F., Palchuk, M.B., and others. (2006). "Decision support for acute problems: The role of the standardized patient in usability testing." (AHRQ grants HS15169,**

**HS14563, and HS14420). *Journal of Biomedical Informatics* 39, pp. 648-655.**

One reason for poor use of electronic health records (EHRs) is lack of usability and integration into the clinical workflow. Standardized patients (SPs) should be considered in EHR usability testing, especially if an application is to be used during the patient interview, concludes this study. The authors used hypothetical scenarios and SPs to collect quantitative and qualitative results in testing an early prototype of a new application, the Acute Respiratory Infection (ARI) Smart Form. The SP fit well into the usability testing sessions. Clinicians responded positively to the SPs and behaved as they normally would during a clinical encounter. Users of the Smart Form thought it had impressive functionality and the potential to save time but that it could have better visual design and navigation. The authors are modifying the ARI Smart Form for use in actual patient care.

**Linkin, D.R., Paris, S., Fishman, N.O., and others. (2006, July). "Inaccurate communications in telephone calls to an antimicrobial stewardship program." (AHRQ grants HS10399 and HS13982). *Infection Control and Hospital Epidemiology* 27(7), pp. 688-694.**

Antimicrobial stewardship programs (ASPs) for physicians decrease unnecessary antibiotic use, decrease antibiotic resistance, and improve outcomes of hospitalized patients. To determine the incidence of inaccurate communication of patient data during ASP interactions at one medical center, these authors retrospectively evaluated the communicated patient data for clinically important inaccuracies

using the patients' medical records as the gold standard. Of telephone calls requesting prior approval from ASP practitioners, 39 percent contained at least one inaccuracy in patient data (for example, the wrong current antibiotic therapy) with the potential to affect the prescribing of antibiotics. The authors conclude that inaccurate communications may compromise the utility of ASPs that use a prior approval system for optimizing antibiotic use.

**Menezes, N.M., Ay, H., Zhu, M.W., and others. (2007). "The real estate factor: Quantifying the impact of infarct location on stroke severity." (AHRQ grant HS11392). *Stroke* 38, pp. 194-197.**

The severity of neurological problems after ischemic stroke is moderately correlated with infarct volume. To quantify the impact of infarct location on neurological deficit severity, these authors developed atlases of location-weighted values indicating the relative importance in terms of neurological deficit severity for every voxel of the brain. They applied these atlases to 80 first-ever stroke patients. Each patient had a magnetic resonance image and National Institutes of Health Stroke Scale (NIHSS) examination around the time of hospital discharge. Volume-based estimates of neurological deficit severity were only moderately correlated with measured NIHSS scores. The combination of infarct volume and location resulted in significantly better correlation with clinical deficit severity.

**Modak, I., Sexton, J.B., Lux, T.R., and others. (2007, January). "Measuring safety culture in the ambulatory setting: The safety attitudes questionnaire—**

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**ambulatory version.” (AHRQ grant HS11544). *Journal of General Internal Medicine* 22(1), pp. 1-5.**

These researchers adapted the Safety Attitudes Questionnaire (SAQ), designed to measure the safety attitudes of hospital providers, to the outpatient setting. They modified the SAQ to create a 62-item SAQ-ambulatory version (SAQ-A). They tested the survey with 409 outpatient staff, of whom 282 returned the survey. Physicians had the least favorable attitudes about perceptions of management, while managers had the most favorable attitudes. Nurses had the most positive stress recognition scores. All providers had similar attitudes toward teamwork climate, safety climate, job satisfaction, and working conditions. The authors conclude that the SAQ-A is a reliable tool for eliciting provider attitudes about the outpatient work setting.

**Raab, S.S., Stone, C.H., Wojcik, E.M., and others. (2006). “Use of a new method in reaching consensus on the cause of cytologic-histologic correlation discrepancy.” (AHRQ grant HS13321). *American Journal of Clinical Pathology* 126, pp. 836-842.**

When diagnosing cancer, pathologists differ widely in their assessment of error in cases of discrepancies in cytologic and histologic pathology results. This contributes to problems in designing ways to reduce these discrepancies. The authors of this observational study developed a visual method of adjudicating discrepancy cause, termed the No-Blame Box method. It consists of initially assessing specimen interpretability by separately

evaluating specimen quality and the presence of tumor. Five pathologists blindly adjudicated the cause of discrepancy in pulmonary specimens from 40 patients. The K statistics of all pathologist pairs using the No-Blame Box method ranged from 0.400 to 0.796, indicating acceptable to excellent agreement. Most discrepancies resulted from pathologists diagnosing noninterpretable samples.

**Rogers, S.O., Wolf, R.E., Zaslavsky, A.M., and others. (2006, December). “Relation of surgeon and hospital volume to processes and outcomes of colorectal cancer surgery.” (AHRQ grant HS09869). *Annals of Surgery* 244(6), pp. 1003-1011.**

This study found that 16 percent more colorectal patients died after undergoing surgery for colorectal cancer performed by surgeons who performed 1-12 surgeries over a 4-year period than those who were operated on by surgeons performing greater than 40 surgeries over 4 years. Also, 11 percent more patients died after undergoing surgery at hospitals that performed 83 or fewer such surgeries over a 4-year period than those who had the procedure at a hospital that performed over 219 such surgeries in that time. Colorectal cancer patients with low-volume surgeons had higher rates of colostomy than those with high-volume surgeons, and patients in low-volume hospitals had significantly lower rates of adjuvant radiation therapy than those in high-volume hospitals. The effects of hospital and surgeon volume on 30-day mortality may be mediated by preoperative, intraoperative, and postoperative decision making by the surgeons and by the hospitals' resources such as radiation facilities, explain the researchers. Their findings were based on a

study of 28,644 patients who underwent surgery for stage I to III colorectal cancer from 1996 to 1999, who were listed in the California Cancer Registry. They were followed up to 6 years after surgery.

**Scharpf, T.P., Colabianchi, N., Madigan, E.A., and others. (2006). “Functional status decline as a measure of adverse events in home health care: An observational study.” (HS11962). *BMC Health Services Research* 6, pp. 162-171.**

The authors of this study used data from a large urban home health care agency to develop models to predict functional decline for three indices of functional status as a way to measure adverse events during home health care. They defined these indices as substantial decline in three or more, two or more, and one or more activities of daily living (ADLs). The index of two or more ADLs yielded the best models with exceptional consistency. The researchers conclude that measuring substantial decline in two or more ADLs may be preferable in defining adverse events in the context of home health care.

**Srinivasan, M., Franks, P., Meredith, L.S., and others. (2006, December). “Connoisseurs of care? Unannounced standardized patients' ratings of physicians.” (AHRQ grant HS01610 and HS09963). *Medical Care* 44(12), pp. 1092-1098.**

Using unannounced standardized patients (SPs) may overcome some of the limitations of patient satisfaction surveys, note the authors of this study. They analyzed data from two studies of unannounced SPs in rating primary care physicians, when covertly

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presenting as real patients. Each SP rated 16 to 38 physicians on interpersonal skills, technical skills, and overall satisfaction. SPs varied significantly in overall satisfaction levels, but not other dimensions. These analyses provide some evidence that medical connoisseurship can be learned. When adequately sampled by trained SPs, some physician skills can be reliably measured in community practice settings, conclude the researchers.

**Stockwell, D.C. and Slonim, A.D. (2006).** “Quality and safety in the intensive care unit.” (AHRQ grant HS14009). *Journal of Intensive Care Medicine* 21, pp. 199-210.

The hospital intensive care unit (ICU) is particularly prone to medical errors, because of the complexity of the patients, interdependence of the practitioners, and dependence on team functioning. This review provides a starting point for understanding the context of patient safety in the ICU. It provides historical perspectives, research foundations, and a practical “how to” guide to improving care in the ICU. It also considers the organizational structure, the processes of care, and the occurrence of adverse outcomes

in this setting. The authors assert that effective ICU quality and safety programs capitalize on institutional resources. These programs also have multidisciplinary input with clear leadership, input from quality improvement initiatives, a responsible yet nonpunitive culture, and data-driven assessment and monitoring to reduce medical errors.

**Wakefield, D.B. and Cloutier, M.M. (2006).** “Modifications of HEDIS and CSTE algorithms improve case recognition of pediatric asthma.” (AHRQ grant HS11147). *Pediatric Pulmonology* 41, pp. 962-971.

These researchers applied Council of State and Territorial Epidemiologists (CSTE) and Health Plan Employer Data and Information Set (HEDIS) criteria to a study of 3,905 Medicaid-insured children with a confirmed diagnosis of asthma or no asthma using a validated survey instrument. They applied modified criteria to another group of 1,458 non-Medicaid-insured children from a managed care organization. CSTE identified 61 percent of children with “probable” asthma; HEDIS identified 44 percent of children with persistent asthma. However, a modified CSTE increased sensitivity from 0.61 to 0.90, while maintaining high specificity. Three new HEDIS

algorithms increased sensitivity from 0.44 to more than 0.84, with specificity greater than 0.89. The authors conclude that studies using current CSTE or HEDIS algorithms for case recognition underestimate asthma prevalence and overestimate asthma severity in children. Modified algorithms improved the identification of “probable” and persistent asthma.

**Zapka, J.G., Carter, R., Carter, C.L., and others. (2006, December).** “Care at the end of life: Focus on communication and race.” (AHRQ grant HS10871). *Journal of Aging and Health* 18, pp. 791-813.

This pilot study included interviews with 90 patients (39 white and 51 black adults) with terminal illness about issues of communication with care providers at the end of life. Discussion of end-of-life topics was low. For example, only 30 percent reported discussion of advance directives, and 22 percent reported that their physician inquired about spiritual support. Patients with cancer were significantly more likely to be receiving pain and/or symptom management at home, aware of prognosis, and participating in hospice. Black patients who were under the care of black physicians were less likely to report pain and/or symptom management than other patient-physician racial matches. ■

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