



Research Activities



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Agency for Healthcare Research and Quality

Highlights

Departments

- 2 Outcomes/
Effectiveness
Research
- 8 Pharmaceutical
Research
- 9 Clinical
Decisionmaking
- 14 Elderly/Long-Term
Care
- 18 Minority Health
- 19 Primary Care
Research
- 22 HIV/AIDS
Research
- 22 Patient Safety/
Quality
- 25 Bioterrorism
Research
- 25 Health Care Costs
and Financing

Regular Features

- 28 Agency News and
Notes
- 30 Announcements
- 35 Research Briefs

Children in hospitals frequently experience medical injuries

Children in hospitals often experience adverse patient safety events—such as medical injuries or errors—in the course of their care. Those in vulnerable populations, including children under 1 year old are at highest risk for medical injuries related to hospitalization, according to a new study conducted by researchers at the Agency for Healthcare Research and Quality.

The study, which uses the recently developed Patient Safety Indicators (PSIs) to focus on children in hospitals, examined 5.7 million hospital discharge records for children under age 19 from 27 States. The data were drawn from the 2000 Healthcare Cost and Utilization Project State Inpatient Database. This is one of the first studies to quantify the impact of patient safety events on children in terms of excess hospital stays and charges, as well as the increased risk of death among children due to medical errors.

In total, the PSIs identified 51,615 patient safety events involving children in hospitals

during 2000. Children up to 1 year old were consistently and significantly more likely to experience many of the events identified by the PSIs than older children. Children whose primary insurance was Medicaid also were more likely to experience several of the PSI events.

The prevalence of patient safety events resulting in injuries among children also had an impact on the length of stay, charges, and the rate of in-hospital deaths. For example, infections resulting from medical care caused a 30-day increase in the average length of stay and resulted in increased charges of more than \$121,000, on average, per discharge. In total, the combined excess charges for all PSI events are estimated to have exceeded \$1 billion. Postoperative respiratory failure increased the rate of deaths in hospitals by as much as 76 percent. The researchers estimate that if all deaths among pediatric patients who experience a medical injury are attributed to those injuries, then

continued on page 2



Pediatric medical injuries

continued from page 1

the records in their analysis alone account for 4,483 deaths among hospitalized children in the year 2000 alone.

The study was conducted by Marlene R. Miller, M.D., formerly acting director of AHRQ's Center for Quality Improvement and Patient Safety and now with Johns Hopkins Children's Center, and Chunliu Zhan, M.D., Ph.D., also of AHRQ. They found that the likelihood of a child experiencing a patient safety event varied greatly depending on the type of event. Some types of events were very uncommon, like postoperative hip fractures and transfusion reactions, both of which occurred less than once for every

10,000 discharges. Others types of events, however, were very prevalent. The leading patient safety events were obstetric trauma among adolescent mothers, with or without forceps, vacuums, or other instruments, with rates of 2,152 and 1,072 events per 10,000 discharges, respectively.

For more information, see "Pediatric patient safety in hospitals: A national picture in 2000," by Drs. Miller and Zhan, in the June 2004 *Pediatrics* 113(6), pp. 1741-1746. Reprints (AHRQ Publication No. 04-R000) are available from AHRQ.**

Editor's Note: Another AHRQ-supported study (AHRQ grant HS11583) on a related topic appears in the same issue of *Pediatrics*. See "Voluntary anonymous reporting of medical errors for neonatal intensive care," by Gautham Suresh, M.D.,

Jeffrey D. Horbar, M.D., Paul Plsek, M.S., and others, of the University of Vermont's Center for Patient Safety in Neonatal Intensive Care. They found that when a specialty-based, voluntary, anonymous Internet reporting system for identifying medical errors in neonatal intensive care was implemented, a significant number of medical errors were identified. The researchers successfully implemented the reporting system in 54 neonatal intensive care units in the Vermont Oxford Network. This study demonstrated that health care providers will voluntarily report significant medical errors and adverse events to an external organization using a system like the one these researchers designed, when there is trust in that organization. ■

Outcomes/Effectiveness Research

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

Mary L. Grady, Managing Editor
Gail Makulowich, Contributing Editor
Joel Boches, Design and Production
Karen Migdail, Media Inquiries

Regular use of inhaled antiinflammatory medication improves outcomes for children with persistent asthma

Children with persistent asthma who use fewer inhaled antiinflammatory (AI) medications are more likely to end up in the emergency department (ED) or be hospitalized for asthma-related breathing problems than children who more regularly use these "controllers," according to a new study. The researchers, who were supported in part by the Agency for Healthcare Research and Quality (HS09935), found that children with persistent asthma who were dispensed AI medication one to three times during the study year had a greater risk of hospital-based events than those with six or more AI dispensings.

The researchers interviewed parents of children enrolled in five Medicaid managed care plans at baseline and 1-year later and determined their health care and medication use from health plan claims data. They stratified children into three groups

continued on page 3

Children with asthma

continued from page 2

according to asthma severity: intermittent asthma; persistent asthma with infrequent (three or fewer times a year) dispensing of beta-agonist (BA) “rescue” medication (adrenaline-like medication that quickly opens up the airways); and persistent asthma with frequent BA dispensing (four or more times per year).

Of the 1,504 children studied, 3 percent were hospitalized, and 9 percent visited the ED at least once for asthma during the baseline year. Of those 1,262 who remained in their health plans for 11 months or more during the followup year, 2 percent were hospitalized and 6 percent visited the ED at least once for asthma during the followup year.

In conclusion, the researchers note that more frequent dispensing of AI controller medication was associated with lower risk of having a hospital-based event for patients with the most severe persistent asthma, but it did not predict risk for these events during the followup year. The reasons for this negative finding are unclear. Further, there was no association

among any of the inhaled AI medication dispensing measures and the clinical outcome measures in the subgroup with less severe, persistent asthma, but there may have been too few children who regularly used AI medication to detect an effect.

See “Use of asthma medication dispensing patterns to predict risk of adverse health outcomes: A study of Medicaid-insured children in managed care programs,” by Harold J. Farber, M.D., Felicia W. Chi, M.P.H., Angela Capra, M.A., and others, in the March 2004 *Annals of Allergy Asthma and Immunology* 92, pp. 319-328. ■

Also in this issue:

Variation in outcomes for CABG surgery patients, see page 4

Medication costs and mental health care for diabetes patients, see page 5

Challenges in translating research into practice, see page 7

Risks associated with increased doses of antidepressants, see page 8

Effectiveness of screening sigmoidoscopy, see page 9

Prenatal diagnostic testing, see page 10

Prescribing of opioids for common, painful conditions, see page 12

Guidelines to distinguish anthrax from influenza, see page 14

Fewer deaths among hospitalized Medicare patients, see page 15

Medicare costs and use of hospice care, see page 16

Racial disparities in stroke outcomes, see page 18

Improving primary care for acid-related disorders, see page 19

Disclosure of medical errors, see page 22

Improving patient safety for children, see page 23

Value of educational Web sites on bioterrorism, see page 25

Growth in drug expenditures, see page 26

Determinants of Medicare costs for end-of-life care, see page 27

Shorter hospital length of stay not associated with worse outcomes for patients without DNR orders

Although the amount of time that patients spent in the hospital declined dramatically between 1991 and 1997, this decline did not seem to result in worse outcomes for patients after discharge, according to research funded by the Agency for Healthcare Research and Quality (AHRQ grant HS09969).

The researchers, led by David Baker, M.D., M.P.H., of Feinberg School of Medicine, Northwestern University, examined trends in the risk of death during the 30 days after discharge for 83,895 Medicare patients hospitalized between 1991 and 1997. They analyzed data for patients at all 30 non-Federal hospitals in greater metropolitan Cleveland discharged alive with a principal diagnosis of acute myocardial infarction, congestive heart failure, gastrointestinal

hemorrhage, chronic obstructive pulmonary disease, pneumonia, or stroke.

Overall, the researchers found no evidence that shorter length of stay was associated with higher rates of death or readmission after discharge. However, trends varied depending upon whether a DNR order was written. For patients who did not have a DNR order written, the risk of death during the 30 days after discharge generally remained stable over the study period. However, post-discharge mortality increased between 1991 and 1997 among patients with pneumonia, acute myocardial infarction, or stroke who had a DNR order written on the first or second hospital day.

The researchers believe the findings provide some reassurance

continued on page 4

Length of hospital stay

continued from page 3

that it is possible to reduce length of stay without jeopardizing patients' health. However, the findings for patients with early DNR orders raise concern. The increasing post-discharge mortality rate could reflect positive changes

in end-of-life care, such as more widespread use of hospice, or this could indicate a decline in the quality of care for patients who are terminally ill. The researchers caution that additional studies are needed to examine whether in-hospital quality of care for patients with DNR orders has declined.

Details are in "Trends in post-discharge mortality and readmissions: Has length of stay declined too far?" by Dr. Baker, Doug Einstadter, M.D., M.P.H., Scott S. Husak, B.S., and Randall D. Cebul, M.D., in the March 8, 2004 issue of *Archives of Internal Medicine* 164, pp. 538-544. ■

Variation in outcomes is small for CABG surgery patients treated at high-volume vs. lower volume hospitals

Many studies have shown that patients who undergo coronary artery bypass graft (CABG) surgery at high-volume hospitals that perform 500 or more such surgeries each year fare better than patients treated at lower volume hospitals. Nevertheless, patients or health plans looking for a hospital that performs high-quality CABG surgery should not equate CABG quality solely with the volume of CABG surgeries a hospital performs, cautions University of Pennsylvania investigator, Andrew J. Epstein, M.P.P.

In a study supported by the Agency for Healthcare Research and Quality (National Research Service Award training grant T32 HS00009), the researchers retrospectively analyzed the National Inpatient Sample database (national sample of hospitalizations in acute care hospitals) for 228,738 patients who underwent CABG surgery in 1998-2000 at low (12-249 cases/year), medium (250-499 cases/year), and high (500 or more cases/year) CABG volume hospitals.

Overall, 4.21 percent of CABG patients in low-volume hospitals died compared with 3.74 percent in

medium-volume hospitals and 3.54 percent in high-volume hospitals, a small difference in mortality. After adjusting for other factors, there was a significant 29 percent increased risk of death for patients of low-volume hospitals, but there was an 11 percent (borderline significant) increased risk at medium-volume hospitals. On the other hand, most low-volume (85 percent) and medium-volume (89 percent) hospitals achieved comparable or better outcomes than predicted given the severity of illness of their patients, while only 6 percent of high-volume hospitals accomplished this. These findings raise concerns about the adoption of a hospital CABG volume recommendation of 500 annual cases as an effective means of ensuring high-quality care.

See "Hospital coronary artery bypass graft surgery volume and patient mortality, 1998-2000," by Saif S. Rathore, M.P.H., Mr. Epstein, Kevin G. Volpp, M.D., Ph.D., and Harlan M. Krumholz, M.D., S.M., in the January 2004 *Annals of Surgery* 239(1), pp. 110-117. ■

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Researchers examine the impact of medication costs and mental health care for patients with diabetes

When a diabetic patient's blood sugar levels are not sufficiently lowered with diet, exercise, and medication, they are more likely to suffer long-term complications such as blindness, limb amputation, and kidney failure. Patients who underuse their diabetes medication because they can't afford it suffer from poorer health than those for whom medication cost is not a problem, according to a recent study. Another study describes how to integrate depression management with diabetes care for patients who suffer from both diabetes and depression. Both studies were supported in part by the Agency for Healthcare Research and Quality (HS10281) and led by John Piette, Ph.D., of the University of Michigan. They are described here.

Piette, J.D., Wagner, T.H., Potter, M.B., and Schillinger, D. (2004, February). "Health insurance status, cost-related medication underuse, and outcomes among diabetes patients in three systems of care." *Medical Care* 42(2), pp. 102-109.

Medication costs can prompt diabetes patients to underuse needed medications, which in turn is associated with worse health, concludes this study. The investigators studied medication compliance among 766 adult diabetes patients from three Veterans Affairs (VA), one county, and one university health care system. They examined whether diabetes patients insured by the VA's extensive prescription drug coverage program had fewer cost-related medication adherence problems than those insured by other public and private sources of health insurance. They also looked

at whether cost-related medication underuse was associated with worse health outcomes. The researchers linked results of a patient survey on ability to function and burden of diabetes symptoms to insurance information and hemoglobin A1C test results (higher A1C levels indicate poorer blood sugar control).

Fewer VA patients reported cost-related medication underuse (9 percent) than patients with private insurance (18 percent), Medicare (25 percent), Medicaid (31 percent), or no health insurance (40 percent). Medication underuse was much more common among patients with multiple chronic illnesses (who probably needed more types of medications), except those who used VA care. For example, the risk of cost-related medication underuse for patients with more than three coexisting illnesses was 2.8 times as high among privately insured patients as among VA patients and 4.3 to 8.3 times as high among patients with Medicare, Medicaid, or no insurance.

Medication underuse was linked to poorer health outcomes. Diabetes patients who reported cost-related medication underuse had A1C levels that were substantially higher than other patients, suffered more symptoms, and had poorer physical and mental functioning. The authors conclude that cost-related medication adherence problems could have serious health consequences that should be taken into account when employers, government agencies, and private health insurers define the limits of drug coverage for chronically ill patients.

Piette, J.D., Richardson, C., and Valenstein, M. (2004, February). "Addressing the needs of patients with multiple chronic illnesses: The case of diabetes and depression." *American Journal of Managed Care* 10 (part 2), pp. 152-162.

Depression is twice as common among diabetes patients as in the general population, with 15 to 30 percent of diabetes patients meeting criteria for depression. Patients who suffer from both diabetes mellitus and depression (DM/D) are more likely to have poor glycemic control (excessively high blood sugar levels) and higher rates of complications such as stroke and heart attack than diabetes patients without depression. These vulnerable patients may benefit from an approach that integrates depression management with diabetes care, suggests this study.

After reviewing research on coexisting depression and diabetes, the investigators present a conceptual framework for integrating depression management with diabetes care in a managed care environment. Their review revealed that depression tends to diminish diabetes patients' overall quality of life, reduce physical activity levels, limit adherence to self-care regimens, and impair their ability to communicate effectively with clinicians, all of which are factors affecting diabetes management. Small randomized trials suggest that both antidepressant medication and cognitive behavioral therapies (CBTs) or related approaches may improve not only DM/D patients' depressive symptoms, but their physical health as well.

continued on page 6

Diabetes care

continued from page 5

Based on these findings, the authors propose a potentially effective DM/D management strategy. DM/D management

should include systematic identification of DM/D patients and quality-of-care reviews, proactive patient monitoring between outpatient visits, and intensive efforts to coordinate treatment across providers. It should also include increased

patient access to CBT or related therapies that address depressive symptoms and diabetes self care, and there should be an emphasis on promoting physical activity to address both depressive symptoms and physiologic problems. ■

Both the nature of physician contact and visit frequency are important factors in hemodialysis patient outcomes

It is commonly thought that chronic disease patients fare better when they see their doctor more often. However, a new study of hemodialysis patients suggests that the nature of physician contact (for example, data gathering and partnership building) and behind-the-scenes care of doctors on behalf of their patients (for example, overseeing care plans and communicating with nurses, nutritionists, and technicians) may be just as important to patient outcomes.

In the study, which was supported in part by the Agency for Healthcare Research and Quality (HS08365), researchers examined the relationship between the frequency of patient-physician contact and several outcomes of patients with chronic kidney disease treated at 75 U.S. dialysis clinics. They used a clinic survey to determine the average frequency of patient-physician contact at each clinic (low, monthly or

less frequently; intermediate, between monthly and weekly; high, more than weekly).

Patients treated at low-frequency clinics were 61 percent less likely than patients at high-frequency clinics to rate the frequency at which they saw a nephrologist as excellent, and those at intermediate-frequency clinics were 43 percent less likely to do so. These patients were also 2.89 times and 1.58 times as likely, respectively, to not adhere to their hemodialysis treatment as patients at high-frequency clinics. However, patient survival did not vary by frequency of physician contact, nor did patients' overall ratings of care, hospitalization rates, or quality of life measures.

See "Frequency of patient-physician contact and patient outcomes in hemodialysis care," by Laura C. Plantinga, M.S., Nancy E. Fink, M.P.H., John H. Sadler, M.D., and others, in the *Journal of the American Society of Nephrology* 15, pp. 210-218, 2004. ■

Despite international treatment variations in cataract management, optimal vision is the usual patient outcome

The United States, Canada, Denmark, and Spain have different approaches to cataract management. The countries vary in their organization of care, preoperative testing, choice of anesthetic and surgical techniques, indications for surgery, and complication rates. Yet these treatment variations do not affect

the odds of achieving an optimal visual outcome, according to findings from the International Cataract Surgery Outcomes Study. These results indicate that high-quality cataract management is performed in all four countries.

The researchers, who were supported in part by the Agency for Healthcare Research

and Quality (HS07085), collected clinical data and patient interview data preoperatively and 4 months postoperatively from cataract surgery patients in the four countries. They assessed functional outcomes using the Visual Function Index (VF-14), with scores ranging from 0 (maximum impairment) to

continued on page 7

Note: Only items marked with a single (*) or double (**) asterisk are available from AHRQ. Items marked with a single asterisk (*) are available from AHRQ's clearinghouse. Items with a double asterisk (**) are also available through AHRQ InstantFAX. Three asterisks (***) indicate NTIS availability. 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.

Cataract management

continued from page 6

100 (no impairment). This index reflects the patient's reported ability to perform vision-related tasks such as sewing, reading, shopping, and driving. Of patients undergoing cataract surgery on one eye, the odds of achieving an optimal visual outcome (VF-14 score of 95 or more) were similar among sites, after controlling for differences in patients.

Among the 211 patients who had cataract surgery on both eyes,

155 patients reported an optimal postoperative visual acuity score of 0.50 or better in both eyes on the Snellen visual acuity test (the patient reads letters from a chart at a certain distance). However, 37 percent of these patients reported visual function impairment (VF-14 score less than 95). These results imply that a VF-14 score, which can be scored in 10 minutes, can identify patients who still have visual function impairments despite what might seem an optimal anatomic outcome. The

researchers suggest that changes in visual function as well as changes in visual acuity be reported in any study evaluating the benefits of cataract surgery.

See "Visual functional outcomes of cataract surgery in the United States, Canada, Denmark, and Spain," by Jens Christian Norregaard, M.D., Ph.D., Peter Bernth-Petersen, M.D., Ph.D., Jordi Alonso, M.D., Ph.D., and others, in the November 2003 *Journal of Cataract Refractive Surgery* 29, pp. 2135-2142. ■

Researchers describe challenges in translating research findings into clinical practice

Up to two decades may pass before the findings of original research become part of routine clinical practice, and often the findings are never implemented. A recent survey of principal investigators (PIs) of 13 Translating Research into Practice (TRIP) II projects supported by the Agency for Healthcare Research and Quality revealed several barriers to implementing TRIP projects as well as some successful solutions. The projects were designed to evaluate strategies to help accelerate the impact of health services research on direct patient care and to improve the outcomes, quality, effectiveness, efficiency, and/or cost-effectiveness of care through partnership arrangements.

The survey was conducted 6 months and 18 months into project implementation. Seven of the PIs responded during both survey periods, and all responded at least once. In the early months of TRIP implementation, challenges occurred often with the human subjects application process and with introducing new TRIP responsibilities at the study sites. A year later, the most prevalent barriers were process (such as blocked access to data), behavioral (target audience not participating), and structural (skill or system limitations at the study site).

For example, implementation of an intervention to improve asthma management met with resistance from

agency staff. The research team found that the staff appeared not to trust the intervention and were sometimes overwhelmed by the tasks required for asthma management. To address the problems, the researchers made several minor adjustments to the intervention and provided the staff with necessary training. Early evidence of the positive impact of the intervention on families was used to win staff acceptance. An incentive program, including small monetary rewards and social recognition, was implemented for "asthma champions."

See "From research to daily clinical practice: What are the challenges in "translation?" by Chris Feifer, Dr.P.H., Judith Fifield, Ph.D., Steven Ornstein, M.D., and others, in the May 2004 *Joint Commission Journal on Quality and Safety* 30(5), pp. 235-245.

Editor's Note: Another AHRQ-supported study on a related topic applies methods to evaluate performance from industrial engineering to aid clinicians' efforts to measure safety and quality in acute care. For more details, see: Pronovost, P.J., Nolan, T., Zeger, S., and others. (2004, March). "How can clinicians measure safety and quality in acute care?" (AHRQ grant HS11902). *Lancet* 363, pp. 1061-1067. ■

Physician prescribing preference plays a greater role than patient risk factors in prescribing COX-2 inhibitors

Patients with painful conditions, such as arthritis, often take nonselective nonsteroidal anti-inflammatory drugs (NSAIDs). These NSAIDs include ibuprofen and selective cyclooxygenase (COX)-2 inhibitors, such as celecoxib (Celebrex) and rofecoxib (Vioxx). Although nonselective and selective NSAIDs are equally effective, nonselective NSAIDs cause gastrointestinal (GI) toxicity in some individuals. Selective COX-2 inhibitors have an average wholesale price that is 10 to 20 times higher than that of generic ibuprofen.

Patients who are at risk for GI toxicity from NSAIDs (older age, history of GI hemorrhage or peptic ulcer disease, or concomitant warfarin or oral glucocorticoid use) should be considered for the more expensive selective COX-2 inhibitors. However, physician prescribing preference more than

patient risk factors for NSAID-associated GI toxicity seems to determine who will be prescribed selective COX-2 inhibitors, according to Daniel Solomon, M.D., M.P.H., and Sebastian Schneeweiss, M.D., Sc.D., of Brigham and Women's Hospital.

In a study supported in part by the Agency for Healthcare Research and Quality (HS10881), Dr. Schneeweiss and his colleagues examined factors influencing prescriptions for selective COX-2 inhibitors in a group of 28,190 Medicare beneficiaries enrolled in a pharmacy benefits program that reimbursed for both types of drugs without restrictions.

About one in six patients who filled a prescription for a selective COX-2 inhibitor had no recognized risk factor for NSAID-associated GI toxicity. Conversely, over three-quarters of nonselective NSAID users had at least one risk factor, and of this group, only 7 percent

were also receiving gastroprotection with a proton pump inhibitor or misoprostol. Five established risk factors for NSAID-related GI toxicity explained almost none of the variation in prescribing. Adding other patient clinical and demographic characteristics to the model somewhat improved the predictive power of the model. However, when physician prescribing preference was included, the model had excellent discriminatory power between the two treatment groups.

See "Determinants of selective cyclooxygenase-2 inhibitor prescribing: Are patient or physician characteristics more important?" by Daniel H. Solomon, M.D., M.P.H., Dr. Schneeweiss, Robert J. Glynn, Ph.D., Sc.D., and others, in the December 15, 2003 *American Journal of Medicine* 115, pp. 715-720. ■

Cyclic antidepressant doses higher than 100 mg should be used cautiously due to increased risk of sudden cardiac death

Newer selective serotonin reuptake inhibitor (SSRI) antidepressants, which have minimal known cardiovascular effects, are usually the first medication choice for depression. However, tricyclic and other cyclic antidepressants (TCAs) are frequently prescribed for patients in whom SSRIs are ineffective or are not well tolerated. Also, TCAs may be prescribed in lower doses to treat other disorders such as sleep problems, migraine, and chronic pain.

In low doses (less than 100 mg of amitriptyline or its equivalent), neither SSRIs nor TCAs increase the risk of sudden cardiac death. However, use of higher dose TCAs does increase the risk of sudden cardiac death. Thus, such TCA doses should be used cautiously, particularly in patients with pre-existing

cardiovascular disease or the elderly, concludes Wayne Ray, Ph.D., of the Vanderbilt University Center for Education and Research on Therapeutics (CERT). The study was supported in part by the Agency for Healthcare Research and Quality (HS10384). Dr. Ray and his colleagues used Tennessee Medicaid data and State death certificates to examine the association between antidepressant use and confirmed sudden cardiac deaths among Tennessee Medicaid patients aged 15 to 84 years. Overall, there were 1,487 confirmed sudden cardiac deaths.

Compared with nonusers of antidepressants, users of high- or low-dose SSRIs and current users of low-

continued on page 9

Cyclic antidepressants

continued from page 8

dose TCAs had similar rates of sudden cardiac death. However, patients currently taking TCA doses of 100 mg or greater had a 41 percent greater rate of sudden cardiac death, and those taking TCA doses of 300 mg or greater had a 2.5-fold greater rate than patients not taking antidepressants. There was no evidence that

TCA doses lower than 100 mg increased the risk of sudden cardiac death in subgroups who already had elevated risk, such as the elderly or those with pre-existing cardiovascular disease.

See "Cyclic antidepressants and the risk of sudden cardiac death," by Dr. Ray, Sarah Meredith, M.B.B.S., M.Sc., Purushottam B. Thapa, M.B.B.S., and others, in the March 2004 *Clinical Pharmacology & Therapeutics* 75, pp. 234-241. ■

Clinical Decisionmaking

Screening sigmoidoscopy may be less effective for detecting colorectal cancer in women and older people

Nearly 80 percent of colorectal cancer deaths occur in people older than 65 years. Some professional organizations recommend screening colonoscopy in people older than 50 because it permits an examination of the whole colon and has a sensitivity of 90 percent. Most guideline panels recommend screening asymptomatic people over 50 with flexible sigmoidoscopy every 5 years, annual fecal occult blood testing (examination of stool for blood), or both. However, screening for colorectal cancer with a 60-cm flexible sigmoidoscope may not be an effective screening tool for women and older individuals, according to findings from a study supported in part by the Agency for Healthcare Research and Quality (K02 HS00006). This is due to inadequate reach of the sigmoidoscope far enough past the

anus to sufficiently view the whole colon, explains Kenneth E. Covinsky, M.D., M.P.H.

Dr. Covinsky and his colleagues measured the maximum depth of insertion of the sigmoidoscope among 15,406 asymptomatic people who underwent the screening procedure between April 1997 and October 2001 at 71 sites in 27 States. The researchers defined 50 cm or more from the anus as adequate and less than 50 cm as inadequate. Overall, 18 percent of patients had an inadequate examination. In men, the percentage of inadequate exams increased progressively with age, from 10 percent in those aged 50 to 59 years to 22 percent in those aged 80 years or older.

Inadequate exams were more common in women at all ages, ranging from 19 percent in those aged 50 to 59 years to 32 percent in those aged 80 years or older. The

proportion of polyps and cancers located beyond 50 cm from the anus is increased in these groups. Women are more likely to experience pain during flexible sigmoidoscopy than men, and they have longer colons in a smaller abdominal cavity, resulting in more twists and turns that make endoscope passage difficult. Older adults tend to have poor bowel preparation before the procedure, more coexisting problems such as prior abdominal surgeries, and more severe diverticular disease.

See "Association of older age and female sex with inadequate reach of screening flexible sigmoidoscopy," by Louise C. Walter, M.D., Pat deGarmo, A.N.P., M.U.P., and Dr. Covinsky, in the *American Journal of Medicine* 116, pp. 174-178, 2004. ■

Review illuminates women's childbirth preferences following a previous cesarean delivery

For women who have previously had a cesarean delivery, evidence is conflicting about maternal and fetal safety for vaginal and cesarean childbirth for subsequent births. Thus, women and doctors are often uncertain about whether to pursue a trial of labor, hoping for a vaginal delivery, or simply schedule an elective repeat cesarean delivery.

A comprehensive review of studies conducted from 1980 to August 2002 on delivery preference for women with a previous cesarean delivery was carried out by the Oregon Evidence-based Practice Center (EPC). The review was supported by the Agency for Healthcare Research and Quality (contract 290-97-0018 and grant HS11338). It showed that a woman's choice for delivery was often based on family obligations, such as the need for a shorter recovery so that she could care for her infant and children at home, rather than the safety of herself or her infant.

Women with a previous vaginal delivery were more likely to select a trial of labor than women who did not have one. The most commonly cited reasons for selecting trial of labor was ease of recovery and desire to return quickly to caring for other children (reported in six of seven studies). Safety for the mother and/or infant was cited as an important reason for delivery choice in 4 of 11 studies.

Important ethnic differences were also reported. Minority women were more likely than white women to identify their provider as an important influence on their choice of delivery (39 vs. 19 percent), and they perceived labor as something to be avoided if another option resulted in a healthy baby. In contrast, white women perceived labor as a challenge and an experience not to be missed. Limitations in methodology and documentation of current studies make it difficult to ascertain how well-informed women are in making decisions for trial of labor or repeat cesarean delivery.

See "Childbirth preferences after cesarean birth: A review of the evidence," by Karen B. Eden, Ph.D., Jason N. Hashima, M.D., M.P.H., Patricia Osterweil, B.S., and others, in the March 2004 *Birth* 31(1), pp. 49-60.

Editor's note: An evidence report and summary on this topic prepared for AHRQ by the Oregon EPC are available. Request *Vaginal Birth After Cesarean Section (VBAC)*. Evidence Report/Techology Assessment No. 71 (AHRQ Publication No. 03-E018, report*; 03-E017, summary**). See the back cover of *Research Activities* for ordering information. ■

Study findings suggest that invasive prenatal diagnostic testing should be offered to all women

Limiting the use of invasive prenatal diagnostic testing (amniocentesis and chorionic villus sampling) to women aged 35 years and older was originally recommended because at 35 years the risk of a procedure-related miscarriage (0.5 to 1 percent) is about equal to the risk of giving birth to an infant affected by a chromosomal disorder such as Down syndrome. Current guidelines recommend offering noninvasive screening tests (maternal serum screening and/or ultrasound) to women younger than age 35 and reserving invasive diagnostic testing for women who are aged 35 or older (or have been found via screening to be at similarly elevated risk).

Findings from two recent studies, supported in part by the Agency for Healthcare Research and Quality (HS07373) and led by A. Eugene Washington, M.D., of the University of California, San Francisco, question this approach. The first study recommends that prenatal diagnostic testing be offered to all women, not just those deemed at increased risk. The second study concludes that prenatal diagnostic testing can be cost effective at any age or risk level. Both studies are discussed here.

Caughey, A.B., Washington, A.E., Gildengorin, V., and Kuppermann, M. (2004, March). "Assessment of demand for

prenatal diagnostic testing using willingness to pay." *Obstetrics & Gynecology* 103, pp. 539-545.

About one-third of women younger than 35 in this study indicated an interest in undergoing invasive prenatal diagnostic testing and a willingness to pay for at least a portion of the costs. Because the benefit of invasive prenatal testing is primarily to improve quality of life of patients, the patient herself is the best one to determine whether the benefits from such testing outweigh the risks, according to the investigators. They surveyed a racially, ethnically, and socioeconomically diverse group of

continued on page 11

Prenatal diagnostic testing

continued from page 10

447 women of varying ages to assess their desire to undergo and willingness to pay for invasive prenatal testing for fetal chromosomal disorders.

Overall, 49 percent of the women indicated an interest in undergoing invasive prenatal diagnostic testing. Women aged 35 years and older were more likely to desire testing than younger women (72 vs. 36 percent). Among women under 35 who desired testing, 31 percent indicated that they would be willing to pay the full price of \$1,300, whereas 73 percent were willing to pay a portion of the cost. Women who were 35 or older and women who were willing to have an elective abortion of a fetus with Down syndrome were 3.3 and 2.8 times more likely, respectively, to want to undergo prenatal diagnostic testing, after controlling for income, race/ethnicity, and education.

Women who were 35 or older and women who had an income

over \$35,000 were 3.5 and 2.3 times, respectively, more willing to pay the full price of testing. The researchers conclude that guidelines on use of prenatal genetic testing should be expanded to offer testing to all women, not just those deemed at high risk of having a child with chromosomal abnormalities.

Harris, R.A., Washington, A.E., Nease, Jr., R.F., and Kuppermann, M. (2004, January). "Cost utility of prenatal diagnosis and the risk-based threshold." *Lancet* 363, pp. 276-282.

Prenatal diagnostic testing can be cost effective at any age or risk level, according to this study. The investigators did a cost-utility analysis of chorionic villus sampling and amniocentesis vs. no invasive testing. They used data from randomized trials, case registries, and a utility assessment (a woman's preference for certain outcomes) of 534 pregnant women aged 16 to 47 years. They calculated that in the United States, amniocentesis costs less than

\$15,000 per quality-adjusted life year (QALY) gained for women of all ages and risk levels compared with no diagnostic testing. This cost is lower than the \$50,000 per QALY gained that is considered acceptable for health care interventions.

These results did not depend on maternal age or risk of Down syndrome-affected birth. The cost-utility ratio for any individual woman depended on her preferences for reassurance about the chromosomal status of her fetus and, to a lesser extent, for miscarriage. Thus, the researchers found no economic evidence to support the existing guidelines. In fact, they found no age threshold below which prenatal diagnosis would not be cost effective (greater than \$50,000 per QALY gained). They recommend that instead of focusing on age and risk thresholds for offering or denying testing, guidelines should take into consideration women's preferences and emphasize ways to support informed choice by women of all ages and risk levels. ■

Following a rigorous protocol for in-hospital and postdischarge management may lower rates of neonatal jaundice

Neonatal jaundice (hyperbilirubinemia) strikes an estimated 60 percent of term newborns in the first week of life, with about 2 percent developing severe jaundice (total serum bilirubin levels of 20 mg/dL or more). Severe jaundice can lead to kernicterus, a buildup of bilirubin in the brain, which can cause cerebral palsy, hearing loss, and other problems. Kernicterus was rarely seen in the decades after the introduction of exchange transfusion and phototherapy to treat jaundice. However, it is on the rise again, even in apparently healthy newborns, perhaps due to early hospital discharge without prompt medical followup.

Researchers led by R. Heather Palmer, M.B., B.Ch., S.M., F.A.A.P., of the Harvard School of Public Health, have developed a rigorous protocol of care to improve management of jaundice that is based on

neonatal risk factors for jaundice. It includes vigilant monitoring for jaundice in the hospital, with higher risk newborns tested more often, followup nurse care visits, and neonatal phototherapy if needed.

With support from the Agency for Healthcare Research and Quality (HS09782), the researchers conducted a 3-year prospective study in the Henry Ford Health System (HFHS) on 5,507 healthy, racially and ethnically diverse newborns of 35 or more weeks' gestational age. They compared rates of severe jaundice from HFHS to those of 11 other hospitals reported to have less rigorous jaundice management.

Severe jaundice was associated with exclusive or partial breastfeeding, younger gestational age, male sex, and older mothers. Babies with any of these risk factors had a lower risk for severe jaundice at HFHS

continued on page 12

Neonatal jaundice

continued from page 11

than at the comparison hospitals. Also, the HFHS group was 89 percent more likely to have jaundice detected than the non-HFHS group. These results suggest that better access to care and continuity of care lead to higher rates of jaundice detection.

See "Management of hyperbilirubinemia in newborns: Measuring performance by using a benchmarking model," by Shu-Chiung Chou, Ph.D., Dr. Palmer, Sudhakar Ezhuthachan, M.D., D.C.H., F.A.A.P., and others, in the December 2003 *Pediatrics* 112(6), pp. 1264-1273. ■

Routine assessment of asthma symptoms can predict the likelihood of related ER visits and hospitalizations

Asthma patients often use peak expiratory flow meters, a short tube they blow into to measure the force of expiration (peak expiratory flow rate, PEFR), to determine how well their lungs are functioning. The National Institutes of Health (NIH) guidelines for assessing and treating asthma suggest that clinicians routinely measure PEFR and inquire about symptoms such as wheezing or shortness of breath. However, a study of adults receiving asthma medications from 35 community drugstores found that a quality-of-life measure was a much better predictor of subsequent asthma exacerbations (breathing-related emergency department visits or hospitalizations) than an isolated measurement of PEFR.

This finding supports the NIH recommendations for assessing asthma symptoms and their impact

on patients, but it certainly does not mean that monitoring PEFR has no role in asthma care, explains William M. Tierney, M.D., of Indiana University School of Medicine, Regenstrief Institute for Health Care. Dr. Tierney and his colleagues administered the McMaster Asthma Quality of Life Questionnaire (AQLQ) and measured PEFR for each patient to determine their ability to predict breathing-related emergency department (ED) visits and hospitalizations within 4 and 12 months after study enrollment. Their work was supported in part by the Agency for Healthcare Research and Quality (HS09083).

A red zone PEFR (50 percent of predicted PEFR based on age and other factors) indicated nearly twice the likelihood of asthma-related ED visits and hospitalizations within 12 months. However, neither a red zone PEFR,

the raw PEFR, or percent of predicted maximal PEFR were significantly predictive when controlling for AQLQ scores, clinical characteristics, or demographic data. In contrast, the four subscales of the AQLQ (activities, symptoms, emotion, and environment) were each significant predictors of asthma exacerbations. A patient with an overall AQLQ score greater than 5 was almost three times as likely to have an asthma-related ED visit or hospitalization during the year as a patient with a score of less than 4.

See "Assessing symptoms and peak expiratory flow rate as predictors of asthma exacerbations," by Dr. Tierney, J. Franklin Roesner, M.D., Roopa Seshadri, Ph.D., and others, in the March 2004 *Journal of General Internal Medicine* 19, pp. 237-242. ■

Emergency physicians vary widely in their prescribing of opioid analgesics for common, painful conditions

Although the current trend in emergency medicine is to treat pain aggressively and err on the side of adequate pain control, less than half of emergency department (ED) patients rate their pain control as "very good." A new study offers insight into pain control decisions of emergency physicians. It shows that even when faced with identical case scenarios for three common, painful

conditions, there is considerable variation in physicians' decisions to prescribe opioid analgesics. Moreover, physicians often have different responses to the same piece of clinical information that may make opioids more or less appropriate.

For example, interviews with 634 emergency physicians revealed that at least 10 percent were

continued on page 13

Opioid analgesics

continued from page 12

unlikely and 10 percent were likely to prescribe an opioid for each of three conditions: migraine, back pain, and ankle fracture. Physician responses to a patient requesting “something strong” for the pain, were also highly variable. Ten percent said they would be negatively influenced by this request (perhaps suspecting potential for opioid abuse), and at least 10 percent said they would be positively influenced by it.

Each physician’s prescribing practices were remarkably consistent across the three conditions. No physician or practice characteristic was significantly associated with physician responses. This may indicate that pain control education is largely based on

idiosyncratic experiences with patients and senior physicians, independent of specialty or residency training.

Strategies for pain control in the ED should include consistent and formal physician education, according to the study’s lead investigator, Joshua H. Tamayo-Sarver, Ph.D., of Case Western Reserve University School of Medicine. The study was supported in part by the Agency for Healthcare Research and Quality (National Research Service Award training grant T32 HS00059).

See “Variability in emergency physician decisionmaking about prescribing opioid analgesics,” by Dr. Tamayo-Sarver, Neil V. Dawson, M.D., Rita K. Cydulka, M.D., M.S., and others, in the April 2004 *Annals of Emergency Medicine* 43, pp. 483-493. ■

Using a simple blood test to identify patients at risk for heart failure is cost effective

Hear failure (HF) is a major problem in the United States, with 550,000 new cases each year. Survival is very poor, with only 20 percent of men age 65 and older surviving to 5 years after development of symptoms. According to a recent study, a simple blood test is a cost-effective way to identify patients who are at risk of HF due to reduced left ventricular ejection fraction before they develop HF symptoms. The study was conducted by the Southern California-RAND Evidence-based Practice Center, which is supported by the Agency for Healthcare Research and Quality (contract 290-97-0001).

The left ventricle is the heart’s pumping chamber. It contracts and ejects 60 percent of blood into the aorta with each contraction (a

ventricular ejection fraction of 60 percent).

The research team led by Paul A. Heidenreich, M.D., M.S., used a decision model to estimate economic and health outcomes for different screening strategies using a \$30 B-type natriuretic peptide (BNP) blood test (BNP is released primarily by cardiac ventricles in response to abnormal loading conditions) and echocardiography (sonogram of the heart) to detect left ventricular ejection fraction (EF) less than 40 percent (weak ability to pump blood) for men and women aged 60 years.

The researchers calculated that screening 1,000 asymptomatic patients with BNP followed by echocardiography in those with an abnormal BNP test increased the lifetime cost of care (\$176,000 for men, \$101,000 for women) but

improved patient outcomes (7.9 quality-adjusted life years (QALYs) for men and 1.3 for women), resulting in a cost per QALY of \$22,300 for men and \$77,700 for women. Screening populations in which at least 1 percent have depressed EF with BNP followed by echocardiography cost less than \$50,000 per QALY gained. This cost is comparable to or less than other accepted health interventions.

See “Cost-effectiveness of screening with B-type natriuretic peptide to identify patients with reduced left ventricular ejection fraction,” by Dr. Heidenreich, Matthew A. Gubens, M.S., Gregg C. Fonarow, M.D., and others, in the March 17, 2004 *Journal of the American College of Cardiology* 43, pp. 1019-1026. ■

Guidelines can help to distinguish anthrax from influenza in patients with flu-like illness and possible exposure to anthrax

In the case of intentional release of anthrax over a metropolitan area, there may be a well-defined plume with estimable risk of exposure according to geographic location. Early symptoms of inhalational anthrax are similar to those of influenza, so it is important for clinicians to be able to distinguish between the two. A new study recommends that when anthrax exposure is a possibility in a patient with influenza symptoms during flu season, doctors should use rapid influenza testing. Patients who test negative for influenza should receive short-term antibiotics for anthrax pending anthrax blood culture results.

This recommendation is the result of a decision model developed to evaluate the risks and benefits of six testing and treatment strategies in an emergency department for a hypothetical group of 100,000 patients with influenza-like illnesses who had probabilities of inhalational anthrax of 0.01 percent, 0.1 percent, 1 percent, and 10 percent. Based on the decision model, for any probability of anthrax exposure, patient mortality was always lowest when all patients were treated with antibiotics for anthrax either for 60 days or for three days pending blood culture results. These strategies, however, were associated with

more morbidity (for example, adverse reactions to antibiotics) than were strategies without antibiotic treatment. The number of adverse events and antibiotic patient-days were reduced substantially with the two-test strategy, in which patients with influenza were identified early and not treated.

In general, for probabilities of anthrax equaling or exceeding 2 percent, treating all patients with antibiotics for 60 days was best, but for probabilities between 0.1 percent and 2 percent, the sensitivity of blood culture for anthrax determined the optimal strategy. When the sensitivity exceeded 95 percent, a short course of ciprofloxacin until blood culture results became available was best, but for sensitivities below 95 percent, more aggressive antibiotic use was warranted. The study was supported in part by the Agency for Healthcare Research and Quality (contract 290-00-0020).

See "Is it influenza or anthrax? A decision analytic approach to the treatment of patients with influenza-like illnesses," by Andrew M. Fine, M.D., M.P.H., John B. Wong, M.D., Hamisch S.F. Fraser, M.B., Ch.B., M.Sc., and others, in the March 2004 *Annals of Emergency Medicine* 43(3), pp. 318-328. ■

Elderly/Long-Term Care

Doctors can use proactive office systems and patient education to persuade more elderly patients to get flu shots

Influenza vaccination rates among elderly adults, at 63 percent in 2000-2001, were well below national goals of 90 percent. By using certain proactive office systems—such as express vaccine clinics, immunization prompting systems, and patient education—doctors can influence more elderly patients to get flu shots. That's the conclusion of a study supported by the Agency for Healthcare Research and Quality (HS09874) and led by Richard K. Zimmerman, M.D., M.P.H., of the University of Pittsburgh School of Medicine.

Dr. Zimmerman and his colleagues used questionnaire responses and interviews with 60 randomly selected clinicians from inner-city, rural, suburban, and Veterans Affairs (VA) practices and a random sample of 925 of their patients aged 65 years or older to assess physician, patient, and practice factors related to vaccination among older people. Patients at practices with express vaccination clinics had higher vaccination rates than those at clinics without such immunization programs (87 vs. 76 percent). Influenza vaccination status was

also related to several patient factors, including plans to receive a flu shot next year; belief that those who are not vaccinated will contract influenza; and history of being screened for colon cancers.

Influenza vaccination status was also related to several physician factors, including awareness of the recommendation to vaccinate asthma patients, agreement with these recommendations, and practice type and setting. VA clinics had the highest vaccination rate at 91 percent. These clinics used patient reminders, standing

continued on page 15

Flu shots for elderly patients

continued from page 14

orders (that authorize nurses and pharmacists to administer vaccinations according to an institution- or physician-approved

protocol without an individual order for each patient), free-standing vaccination clinics, and assessment of vaccination rates with feedback and incentives to clinicians.

See “Physician and practice factors related to influenza

vaccination among the elderly,” by Dr. Zimmerman, Mary Patricia Nowalk, Ph.D., R.D., Inis J. Bardella, M.D., and others, in the *American Journal of Preventive Medicine* 26(1), pp. 1-10, 2004. ■

Fewer Medicare patients die in the hospital than in the past, but those who do receive more intensive and expensive treatment

Due to greater attention to palliative or comfort care and use of hospice services, fewer Medicare patients die in an acute care hospital than in the past. However, those who do die while in the hospital are being treated more intensively and expensively, according to a study supported by the Agency for Healthcare Research and Quality (National Research Service Award training grant T32 HS00028).

Between 1985 and 1999, the proportion of Medicare fee-for-service (FFS) patients dying in a hospital decreased from 44.4 percent to 39.3 percent. Yet the likelihood of being admitted to an intensive care unit (ICU) or undergoing an intensive procedure such as cardiopulmonary resuscitation (CPR) during the terminal hospitalization increased from 38 to 39.8 percent and from 17.8 to 30.3 percent, respectively.

Amber E. Barnato, M.D., M.P.H., of the University of Pittsburgh, and her colleagues used Medicare MedPAR files from 1985-1999 for 20 percent of all elderly FFS Medicare patients who died in the hospital and 5 percent of all survivors to calculate rates of ICU and intensive procedure use. Real inpatient expenditures for the Medicare FFS population increased by 60 percent, from \$58 billion in 1985 to \$90 billion in 1999. One-fourth of these expenditures were for people who died in the hospital. Net hospital expenditures for the dying might have been even higher if the shift toward hospice care had not occurred.

During this period, the proportion of Medicare patients with at least one ICU admission increased from 30.5 percent to 35 percent among decedents and from 5 to 7.1 percent among survivors; those undergoing one or more intensive procedures increased from 20.9 percent to 31 percent among decedents and from 5.8 to 8.5 percent among survivors. Most intensive procedures were performed in the more numerous survivors. Nevertheless, in 1999, 50 percent of feeding tube placements, 60 percent of intubations/tracheostomies, and 75 percent of CPRs were in decedents.

See “Trends in inpatient treatment intensity among Medicare beneficiaries at the end of life,” by Dr. Barnato, Mark B. McClellan, M.D., Ph.D., Christopher R. Kagay, and Alan M. Garber, M.D., Ph.D., in the April 2004 *Health Services Research* 39(2), pp. 363-375.

Editor’s Note: Another AHRQ-supported study on a related topic found that only 2 percent of elderly community-dwelling patients arrived at the hospital both terminally ill and cognitively impaired, suggesting the limited usefulness of advance care directives for this population compared with nursing home residents. For more details, see Dexter, P.R., Wolinsky, F.D., Gramelspacher, G.P., and others. (2003, Fall). “Opportunities for advance directives to influence acute medical care.” (AHRQ grant HS07632). *Journal of Clinical Ethics* 14(3), pp. 173-182. ■

Nursing homes generally respect residents’ do-not-hospitalize orders, but not always

Ado-not-hospitalize (DNH) order is a type of advance directive which indicates that the resident or responsible party (e.g., relative or legal guardian) does not wish the resident

to be hospitalized. Nursing homes generally respect do-not hospitalize (DNH) orders of residents, but this is not always the case.

A study involving a national sample of nursing home residents

found that residents with DNH orders were half as likely to be hospitalized as residents without such orders. This finding suggests

continued on page 16

Do-no-hospitalize orders

continued from page 15

that nursing home compliance with residents' preferences for care is superior to that found in hospital inpatient settings, yet 13 percent of residents in this study who had DNH orders were hospitalized directly from their sampled nursing home.

Nursing homes should implement more consistent and rigorous policies to ensure that patient preferences for medical care are honored, suggests Aram Dobalian, Ph.D., J.D., of the University of Florida. Dr. Dobalian analyzed data from the nationally representative 1996 Nursing Home Component of the Medical Expenditure Panel Survey to

determine whether nursing homes comply with residents' DNH orders prohibiting inpatient hospitalization. The study was supported by the Agency for Healthcare Research and Quality (National Research Service Award training grant T32 HS00046).

The analysis showed that only 3 percent of nursing home residents had DNH orders. These residents were half as likely to be hospitalized. Residents in not-for-profit or public facilities were less likely to be hospitalized than those in for-profit homes.

Hospitalization was more likely among men, racial or ethnic minorities, those with more diagnosed health conditions, and those in facilities in the South compared with those in the Midwest. Hospitalized residents

with DNH orders had no limitations in daily living activities, were not located in hospital-based nursing homes, were less likely to be in a for-profit facility, and were sicker than nonhospitalized residents with DNH orders.

The study findings were limited by the mere 3 percent of residents with DNH orders. The low prevalence of DNH orders suggests the possibility that these orders are being underused. It's also possible that some residents with DNH orders chose to permit hospitalization despite their previous preference to forego it, notes Dr. Dobalian.

See "Nursing facility compliance with do-not-hospitalize orders," by Dr. Dobalian, in the April 2004 *Gerontologist* 44(2), pp. 159-165. ■

Researchers examine Medicare costs and use of hospice care

Enrollment in the Medicare hospice benefit increased from 9 percent in 1992 to 23 percent in 2000. Medicare's hospice benefit provides patients with a life expectancy of 6 months or less with the option of less aggressive end-of-life medical care and for death at home by providing services that otherwise are not covered (for example, outpatient drugs, homemaker services, and bereavement counseling).

A new study supported by the Agency for Healthcare Research and Quality (HS10561) calculated that use of hospice care can be cost-saving to Medicare for people who die of cancer (60 percent of hospice patients), but it is more costly when hospice users die of other causes. A second AHRQ-supported study (HS11618) found that hospice care has entered the care mainstream, with less variation in use by elderly cancer patients. Both studies are described here.

Campbell, D.E., Lynn, J., Louis, T.A., and Shugarman, L.R. (2004, February). "Medicare program expenditures associated with hospice use." *Annals of Internal Medicine* 140, pp. 269-277.

When elderly people who are dying of cancer use hospice care, it is generally cost-neutral or cost-saving to Medicare, but when those dying of noncancer causes use hospice care (the fastest growing group of hospice users), such care generally adds to Medicare costs. Yet, even if hospice care costs somewhat more than conventional care, its comprehensiveness and continuity may merit these additional costs, according to the researchers. They studied Medicare program expenditures for fee-for-service beneficiaries aged 67 or older who received 36 months of continuous hospitalization and outpatient coverage before death during 1996 to 1999. Adjusted mean expenditures were 4 percent

higher overall among hospice users than among nonusers, but they were 1 percent lower among cancer patients who used hospice care compared with cancer patients who did not use hospice.

Savings were highest (7 to 17 percent) among hospice users with lung cancer and other very aggressive types of cancer diagnosed in the last year of life. Expenditures for hospice users without cancer were 11 percent higher than for nonusers, ranging from 20 to 44 percent higher for patients with dementia and from 0 to 16 percent higher for those with chronic heart failure or failure of most other organ systems. Hospice-related savings decreased and relative costs increased with patient age.

This expenditure pattern probably reflects differences in service needs and certainty of prognosis. A short period of

continued on page 17

Hospice care

continued from page 16

obvious decline at the end of life is typical of cancer. Long-term disability with worsening and unpredictable timing of death is typical of chronic organ system failure, and persistent decline and deficits in self-care are associated with frailty or dementia.

Lackan, N.A., Ostir, G.V., Freeman, J.L., and others. (2004, February). "Decreasing variation in the use of hospice among older adults with breast, colorectal, lung, and prostate cancer." *Medical Care* 42(2), p. 116-122.

The decreased variation in use of hospice care by cancer patients in this study suggests that use of

hospice care has gone from being an innovation to a mainstream practice. The investigators used the Medicare database to study hospice use in patients aged 67 and older diagnosed with breast, colorectal, lung, or prostate cancer from 1991 to 1996 who died between 1991 and 1999. Of the 170,135 individuals who died during this period, 30 percent were enrolled in hospice care before they died.

Hospice use varied significantly by patient characteristics and type of cancer. However, this variation decreased over time for certain subgroups. For example, hospice use was higher among Medicare managed care than Medicare fee-for-service patients, but the ratio of hospice use between the two groups decreased substantially over

time. Hospice use for both urban and rural patients increased over time, but the ratio of hospice use between the two groups diminished over time. The same trend was found for comparisons across groups according to marital status, neighborhood income, and type of cancer.

This trend can be attributed to increased availability and awareness of hospice care. For instance, the number of Medicare-certified hospices in the country almost doubled over the study period from about 1,200 in 1992 to 2,200 in 1999. This increase in availability was coupled with a two-fold increase in the number of Medicare patients using hospice care before death. ■

Nursing home staffing and quality improved after passage of the Nursing Home Reform Act

Any nursing home that admits Medicare and Medicaid residents must be certified yearly by means of a Centers for Medicare & Medicaid Services (CMS) survey. The CMS imposes penalties, including fines, on homes with a high number of deficiencies. Despite this government involvement, nursing home quality has been considered substandard over the past three decades. The good news is that the quality of nursing home care improved following passage of the 1987 Nursing Home Reform Act (NHRA), according to a study by University of Alabama researchers, Xinzhi Zhang, M.D., Ph.D., and David C. Grabowski, Ph.D.

The NHRA mandated a reduction in the use of unnecessary drugs, unnecessary physical restraints, any significant medication errors, pressure ulcers, and incontinence. It also required that certified nursing homes have licensed practical nurses (LPNs) on duty 24 hours a day; a registered nurse (RN) on duty at least 8 hours a day, 7 days a week; and an RN director of nursing in place, as well as 75 hours of training for nurses aides (NAs) and "sufficient" staff and services.

Nursing home staffing levels jumped substantially following passage of the NHRA. Per resident day, RN hours increased 18 percent from 0.26 in 1987 to 0.30 in 1993, LPN hours rose 30 percent from 0.46 to 0.60, and NA hours increased 24 percent from 1.61 to 1.99. Also, the proportion of residents with urinary catheters decreased from 10 percent to 8 percent, and the proportion of those with physical restraints declined from 39 percent to 23 percent. However, the proportion of nursing home residents with pressure ulcers increased 8 percent, perhaps due to a more chronically ill nursing home population in 1993 relative to 1987. The researchers, who were supported by the Agency for Healthcare Research and Quality (HS13503), based their findings on analysis of data files before and after implementation of the NHRA for nursing homes from 22 States.

See "Nursing home staffing and quality under the Nursing Home Reform Act," by Drs. Zhang and Grabowski, in the *Gerontologist* 44(1), pp. 13-23, 2004. ■

Poorer outcomes from stroke are more common among minorities than whites

A new study found that black, Hispanic, and Asian/Pacific-Islander patients all had greater neurologic impairment than whites from stroke due to cerebral artery occlusion. On the other hand, Asians, but not blacks or Hispanics, suffered greater neurologic impairment than whites from stroke due to carotid artery occlusion. Overall, Asian patients (more of whom were older and female) suffered the highest rate of deaths and most severe neurologic impairment for both types of arterial disease, although the reasons for this disparity are unclear.

Higher rates of stroke-related neurologic impairment in blacks and Hispanics suggested an association related to high cholesterol and type 1 diabetes.

Thus, initiatives to treat and prevent diabetes and high cholesterol in these groups should be undertaken to reduce health disparities, suggests Jay J. Shen, Ph.D., of Governors State University. In the study, which was supported by the Agency for Healthcare Research and Quality (HS13056), Dr. Shen and his colleagues used national data from the 2000 National Inpatient Sample of the Healthcare Cost and Utilization Project to examine the patterns of disparities in acute care outcomes of ischemic stroke among white, black, Hispanic, and Asian/Pacific-Islander patients (13,316 patients with carotid artery-related stroke and 33,149 patients with cerebral artery-related stroke).

Among stroke patients with carotid artery occlusion, 62.5

percent of whites had paralysis compared with 71.2 percent of blacks, 69.1 percent of Hispanics, and 74 percent of Asians. Among patients with cerebral artery occlusion, 69.9 percent of whites had paralysis compared with 76.6 percent, 70.7 percent, and 77.8 percent for black, Hispanic, and Asian patients, respectively; the corresponding percentages of patients in coma were 1.8 percent, 1.6 percent, 2.3 percent, and 2.7 percent.

More details are in "Racial disparities in the pathogenesis and outcomes for patients with ischemic stroke," by Dr. Shen, Elmer L. Washington, M.D., M.P.H., and Lisa Aponte-Soto, in the March 2004 *Managed Care Interface*, pp. 28-34. ■

Enhancing Hispanics' access to medications through increased Medicaid eligibility may improve their use of antihypertensives

Previous studies have shown that young Hispanic adults with high blood pressure (hypertension) are less likely to take antihypertensive medication than their white or black peers. A recent study has found the same pattern among elderly Hispanics with hypertension. Among hypertensive adults in Texas who were 77 years of age or older, Hispanic ethnicity, unlike black ethnicity, was associated with 59 percent lower use of antihypertensive drugs, even after adjustment for age, sex, household income, and other factors.

Characteristics associated with lower use of antihypertensive drugs included older age and low income in whites, poor cognition and infrequent doctor visits in blacks, and lack of Medicaid insurance in Hispanics. Enhancing Hispanics' access to prescription medications through increased Medicaid eligibility may be one way to improve their use of antihypertensive

medication, suggest the University of Texas researchers who conducted the study. Their work was supported in part by the Agency for Healthcare Research and Quality (HS11618).

The researchers conducted in-home interviews in 1997 and 1998 in which they assessed blood pressure and antihypertensive medication use in 281 patients who reported having hypertension or had a systolic blood pressure of 140 mm Hg or higher and/or diastolic blood pressure of 90 mm Hg or higher. Of the population evaluated, 63 percent of whites, 60 percent of blacks, and 45 percent of Hispanics with hypertension were on antihypertensive medications.

More details are in "Ethnic differences in antihypertensive medication use in the elderly," by Mukaila A. Raji, M.D., M.Sc., Yong-Fang Kuo, Ph.D., Joel A. Salazar, M.D., and others, in the February 2004 *Annals of Pharmacotherapy* 38, pp. 209-214. ■

Many different subgroups make up the Hispanic population, and they have diverse health needs and barriers to care

Considerable disparities exist between the health of Hispanics and non-Hispanic whites in the United States. For example, Hispanics have a higher incidence of illnesses such as diabetes, human immunodeficiency virus infection, and cervical cancer than whites, yet they use fewer health care services. However, it would be a mistake to consider that the health needs and barriers to care are similar for all subgroups of Hispanics, according to Robin M. Weinick, Ph.D., of the Agency for Healthcare Research and Quality.

In a recent study, Dr. Weinick and her colleagues found considerable variation in use of health care services among Hispanic subgroups after analyzing data from the 1997 Medical Expenditure Panel Survey, a nationally representative survey of health care use and expenditures. For example, Mexicans and Cubans

are less likely and Puerto Ricans are more likely to have any emergency department (ED) visits than non-Hispanic whites.

Mexicans, Central American/Caribbeans, and South Americans are less likely to have received any prescription medications.

Puerto Ricans (68.3 percent) are more likely than Mexican Americans and Central Americans/Caribbeans to have any outpatient care visits and are the most likely (18.1 percent) to have any ED visits. In addition, Puerto Ricans and Cubans (54.8 and 57.5 percent, respectively) are more likely than other groups to have any prescription medications. Puerto Ricans and Mexicans are more likely than Central American/Caribbeans to have any inpatient hospital admissions.

Hispanics with English-only language interviews are more likely than those interviewed partially or

wholly in Spanish to have any outpatient care visits (63.2 vs. 52.4 percent), ED visits (13 vs. 8.9 percent), and prescription medications (53.6 vs. 43.4 percent). More recent immigrants are less likely to have any outpatient care or ED visits, whereas all Hispanics born outside the United States are less likely to have any prescription medications.

See "Hispanic healthcare disparities: Challenging the myth of a monolithic Hispanic population," by Dr. Weinick, Elizabeth A. Jacobs, M.D., M.P.P., Lisa Cacari Stone, M.S., M.A., and others, in the April 2004 *Medical Care* 42(4), pp. 313-320. Reprints (AHRQ Publication No. 04-R043) are available from AHRQ.** ■

Primary Care Research

Primary care of adults with chronic acid-related disorders could be improved if more doctors followed treatment guidelines

Individuals with acid-related disorders, including gastroesophageal reflux disease (GERD), peptic ulcer disease (PUD), and dyspepsia, account for 2-5 percent of all primary care visits. They also consume substantial health care resources, particularly for acid suppressing medication such as histamine-2 blockers (H2Bs) and proton pump inhibitors (PPIs). Primary care of older adults with chronic acid-related disorders could be improved if more physicians followed current treatment guidelines, according to findings from a study supported in part by the Agency for Healthcare Research and Quality (HS10391).

Because of the increased risk of gastric cancer in patients older than 45 or 50 years of age with upper

gastrointestinal (GI) symptoms, current guidelines recommend that these patients be examined, preferably with endoscopy (a thin flexible tube is placed down the patient's esophagus, and a tiny camera is used to visualize the stomach and duodenum). Other guidelines recommend that PUD patients be tested and treated for infection with a type of bacteria, *Helicobacter pylori* (*H. pylori*), to prevent ulcer recurrence and complications. Yet about 80 percent of the 5,064 adults in a Massachusetts managed care organization (MCO) who were dispensed H2Bs, PPIs, or both for 1 year or more (chronic users) were not managed according to these guidelines.

continued on page 20

Acid-related disorders

continued from page 19

Part of the reason these patients may have been under-investigated is because H2Bs and PPIs are so effective at relieving or at least controlling symptoms, suggest the Massachusetts researchers. They found that the prevalence of chronic acid-related disorders in the primary care MCO was 2.3 percent. GERD (59 percent) was the most common condition, followed by dyspepsia (35 percent) and PUD (6 percent). However,

81 percent of dyspepsia patients 50 years or older had not been investigated by endoscopy. Also, 34 percent of patients with chronic PUD did not have a documented test for *H. pylori*.

More details are in "Chronic acid-related disorders are common and underinvestigated," by Sumit R. Majumdar, M.D., M.P.H., Stephen B. Soumerai, Sc.D., Francis A. Farraye, M.D., M.Sc., and others, in the *American Journal of Gastroenterology* 98(11), pp. 2409-2414, 2003. ■

Relief of symptoms from proton-pump inhibitor treatment does not necessarily confirm diagnosis of GERD

Proton-pump inhibitors (PPIs), acid suppressive medications, are often selected as first-line therapy for patients with symptoms that suggest uncomplicated gastroesophageal reflux disease (GERD). Indeed, a positive response to PPIs is commonly thought to support the diagnosis of GERD. However, relief of symptoms from PPIs does not confidently confirm a diagnosis of GERD, according to a recent review of studies on the topic that was supported in part by the Agency for Healthcare Research and Quality (HS13328).

The cardinal features of GERD (heartburn and regurgitation) are not always present in all patients who ultimately are diagnosed with GERD. Also, the ability to discriminate GERD from other

acid-related disorders is not always straightforward because symptoms may overlap, leading to many false-positive and false-negative diagnoses. Furthermore, 20 to 40 percent of patients who have GERD may not exhibit a response to a short course of treatment with a PPI, possibly because they need a higher dose or longer duration of treatment. Thus, testing for GERD with PPI treatment demonstrates only a weak correlation with objective measures, conclude the researchers.

They reviewed studies that compared patients' clinical response to a short course (1 to 4 weeks) of normal- or high-dose PPI therapy with objective measures of GERD (24-hour pH monitoring, endoscopy findings, and symptom questionnaires). Based on the 15

studies that met inclusion criteria, the positive likelihood of a symptomatic response to PPIs detecting GERD ranged from 1.63 to 1.87. Sensitivity was a mere 0.78 and specificity was only 0.54. Until better methods are available to establish a confident diagnosis, selection of the dose and type of acid-suppressing agents should be individualized on the basis of clinical setting, the response to therapy, and judicious diagnostic testing, suggest the researchers.

See "Short-term treatment with proton-pump inhibitors as a test for gastroesophageal reflux disease," by Mattijs E. Numans, M.D. Ph.D., Joseph Lau, M.D., Niek J. DeWit, M.D., Ph.D., and Peter A. Bonis, M.D., in the April 6, 2004 *Annals of Internal Medicine* 140(7), pp. 518-527. ■

Patients are more likely to stop smoking if they are advised by their doctors to do so

Cigarette smoking is responsible for one of five deaths in the United States, yet nearly one-quarter of adult Americans still smoke. The good news is that simple advice to quit from their doctors encourages many smokers to do just that. A new study found that 12 percent of patients who smoked had quit smoking 8 to 10 months after they completed a questionnaire about their smoking habit

and readiness to quit and were counseled by their physicians to stop smoking.

In the study, which was supported in part by the Agency for Healthcare Research and Quality (National Research Service Award training grant T32 HS00060), researchers from Tufts New England Medical Center and Blue Cross Blue Shield of Massachusetts compared alternative strategies for smoking cessation

continued on page 21

Stop smoking advice

continued from page 20

at a hospital-based adult primary care practice. A separate practice team implemented each strategy. The minimal intervention consisted of a smoking status “vital sign” stamp, which documented patient smoking status on each patient’s chart. The enhanced intervention consisted of cessation counseling prompts for clinicians and a five-question form to be filled out by patients while in the physicians’ offices.

The researchers collected medical record documentation of screening for smoking and cessation advice and self-reported patient smoking cessation rates 8-10 months after implementation. Smoking

status was documented at 86 percent, 91 percent, and 49 percent of visits on the minimal, enhanced, and control groups, respectively, and cessation advice was given at 38 percent, 47 percent, and 30 percent, respectively. Self-reported smoking cessation was higher in the enhanced group (12 percent) compared with the minimal (2 percent) and control (4 percent) groups.

See “Smoking cessation in primary care: A clinical effectiveness trial of two simple interventions,” by Catherine E. Milch, M.D., Janet M. Edmunson, M.Ed., Joni R. Beshansky, R.N., M.P.H., and others, in the March 2004 *Preventive Medicine* 38, pp. 284-294. ■

Radical new approaches to taking a thorough family history will be needed to meet the challenges of genetic testing

More than 540 genetic tests are presently available to clinicians, and an additional 350 are currently under development. A thorough family history is a critical first step in deciding who might be a candidate for genetic testing. Yet, evidence from practice suggests that a thorough exploration of the family history may be more the exception than the rule in adult primary care.

Radical new resources and approaches to the application of family history will be required in the coming years to ensure that patients derive the full benefits from advances in human genetics, according to the authors of a recent article. Their work was cofunded by the Agency for Healthcare Research and Quality, the Maternal and Child Health Bureau of the

Health Resources and Services Administration, and others.

Risks of genetic testing demand that candidates for such testing be selected carefully. Risks include costly and unnecessary testing, needless anxiety, and inappropriate and possibly hazardous therapy. Also, genetic testing can significantly affect family relationships, lifestyle choice, and reproductive decisions.

Primary care physicians face many barriers to obtaining thorough family histories. Time is a barrier to family history taking and genetic counseling in primary care. For example, a complete three-generation genogram takes about half an hour. Other barriers include reimbursement policies, current modes of organizing adult primary care practices, varying patient expectations, and physicians’

knowledge and skills. Short of radical changes in reimbursement of primary care practice, new tools will be required to aid primary care physicians in the efficient collection and application of patient family history in the era of genetic testing, such as computer-based tools for obtaining family history information from patients. New resources will also be needed to support the appropriate application of genetic advances in primary care practice.

See “Reconsidering the family history in primary care,” by Eugene C. Rich, M.D., Wylie Burke, M.D., Ph.D., Caryl J. Heaton, D.O, and others, in the March 2004 *Journal of General Internal Medicine* 19, pp. 273-280. ■

Referral of ED patients to outpatient HIV testing is not an effective way to identify unrecognized HIV infection

Estimated rates of HIV infection among emergency department (ED) patients range from 0 to 14 percent, with inner-city EDs most likely to treat patients with unrecognized HIV infection. The Centers for Disease Control and Prevention recommends testing all individuals in settings where the HIV prevalence is 1 percent or more. CDC also recommends that HIV counseling be part of the testing, which is often impractical in the ED setting.

As a result, emergency physicians usually refer patients suspected of being infected with, or at risk for HIV to an outpatient HIV counseling and testing center. However, since few ED patients show up at the clinics, this referral system is ineffective at identifying unrecognized HIV infection, according to a study supported in part by the Agency for Healthcare Research and Quality (National Research Service Award fellowship F32 HS11509).

Jason S. Haukoos, M.D., M.S., of the University of California, Los Angeles, and his colleagues examined the ED records and HIV clinic records, if applicable, of patients referred for outpatient HIV testing from an urban hospital ED. Of the 494 patients referred from the ED, only 11 percent arrived at the HIV clinic and completed pretest counseling. Of these, 91 percent tested negative for HIV, 7 percent tested positive for HIV, and 2 percent refused the test. The researchers suggest that changes in the structure of the referral system or the use of point-of-care testing in the ED may improve the ability to detect HIV infection among ED patients.

See "Evaluation of an emergency department referral system for outpatient HIV testing," by Clinton J. Coil, M.D., M.P.H., Dr. Haukoos, Mallory D. Witt, M.D., and others, in the January 1, 2004 *Journal of Acquired Immune Deficiency Syndrome* 35(1), pp. 52-55. ■

Patient Safety/Quality

Doctors' disclosure of medical errors improves patient satisfaction but may not prevent legal action

Although guidelines recommend that doctors disclose medical errors that have resulted in patient injury, they often do not. Full disclosure reduces the likelihood that patients will change doctors and generates greater patient satisfaction and trust. However, it doesn't always dissuade patients from taking legal action, concludes a study supported in part by the Agency for Healthcare Research and Quality through the Centers for Education and Research on Therapeutics (CERTs) program (HS10391 and HS11843).

Investigators at the HMO Research Network CERT used a mailed questionnaire to examine how the type of medical error, clinical severity of the error, and

level of disclosure affected responses of 958 members of one health maintenance organization. Each questionnaire included a vignette describing a medical error (failure to check for penicillin allergy or inadequate monitoring of antiepileptic medication); an associated clinical outcome (life-threatening or less serious); and a physician-patient dialogue, with either full disclosure (acceptance of responsibility and an apology) or nondisclosure (expression of regret without acceptance of responsibility or an apology).

Full disclosure reduced the reported likelihood of seeking legal advice in only one vignette (missed allergy error and serious clinical outcome). In other vignettes, a high percentage of patients said that they

would seek legal advice, even with full disclosure. Overall, nondisclosure, life-threatening outcome, and the inadequate monitoring error were all associated with a higher likelihood of seeking legal advice. Almost all respondents (99 percent) wanted to be told of errors, most (83 percent) favored financial compensation if harm occurred, and few (13 percent) favored compensation if no harm occurred.

See "Health plan members' views about disclosure of medical errors," by Kathleen M. Mazor, Ed.D., Steven R. Simon, M.D., Robert A. Yood, M.D., and others, in the March 16, 2004 *Annals of Internal Medicine* 140(6), pp. 409-418. ■

Hospital workers worry about patient safety at their hospitals and look to hospital leaders for a commitment to safety

Hospital workers embrace patient safety as an essential part of their job, according to a study led by Saul N. Weingart, M.D., Ph.D., of Beth Israel Deaconess Medical Center, and supported by the Agency for Healthcare Research and Quality (HS11644).

Two-thirds of workers surveyed at four hospitals worried at least once a day about making a mistake that could injure a patient. This worry was likely driven, in part, by their heavy work load. About 43 percent said that their work load hindered their ability to keep patients safe. Overall, workers who considered their hospital leaders committed to patient safety were three times more likely to view their hospital as safer than other local hospitals.

Nearly one-third (32 percent) of the 455 hospital workers surveyed expressed concern about their ability to provide safe care, 11 percent were concerned about the commitment of senior leaders to patient safety goals, and 33 percent were concerned about the likelihood of being disciplined for making mistakes. A majority (64 percent) agreed that senior managers regarded patient safety as a high priority. Nevertheless, leaders did not meet workers' expectations for sharing information about adverse events. Nearly half (48 percent) disagreed that the hospital regularly provided staff with information about errors and injuries.

Ninety-six percent of workers agreed that ensuring patient safety was an essential part of their job. Forty-six percent rated the quality of care at their hospital

better than at other local hospitals, 33 percent rated patient safety better, and 81 percent agreed that reasonable precautions were in place to create a safe workplace. The findings were based on a written survey of front-line hospital workers in 1998 at three community hospitals and an academic medical center that were members of a Massachusetts health care delivery system.

See "Using a multihospital survey to examine the safety culture," by Dr. Weingart, Ken Farbstein, M.P.P., Roger B. Davis, Sc.D., and Russell S. Phillips, M.D., in the March 2004 *Joint Commission Journal on Quality and Safety* 30(3), pp. 125-132.

Editor's Note: Another AHRQ-supported study on a related topic examined the benefits of appointing a hospital medication safety manager. For more details, see Kowiatek, J.G., Weber, R.J., Skledar, S.J., and Sirio, C.A. (2004, January). "Medication safety manager in an academic medical center." (AHRQ grant HS11926). *American Journal of Health-System Pharmacies* 61, pp. 58-64.

In addition, an AHRQ-supported study on hospital quality of care found that well-publicized report cards have a modest, transient impact on consumer use of individual hospitals for the procedures for which outcomes are publicized. For more details, see Romano, P.S., and Zhou, H. (2004, April). "Do well-publicized risk-adjusted outcomes reports affect hospital volume?" (AHRQ grant HS08574). *Archives of Internal Medicine* 164, pp. 538-544. ■

Researchers identify five information technologies that have great potential to improve patient safety for children

Five information technologies have great potential to improve child safety, according to the results of an extensive review of research studies on the topic. The review was supported by the Agency for Healthcare Research and Quality (HS11868). Some of these technologies will be adopted widely in the next 10 years, according to authors Kevin B. Johnson, M.D., M.S., of Vanderbilt University Medical Center, and Coda L. Davison, F.A.C.H.E.,

M.P.A., of the Johns Hopkins University School of Medicine.

First, use of care provider order entry (CPOE), which has been studied primarily with adult patients, has dramatically decreased the incidence of medication errors. One study showed that use of CPOE reduced by 75 percent the incidence of allergic reactions and excessive drug dosages in intensive care patients. Since children are even more sensitive to medication than adults, they should benefit more from CPOE.

Second, outpatient studies have found that guideline-based documentation was associated with increased guideline compliance in the areas of pediatric oncology, pediatric health maintenance, and emergency medicine. Third, Internet-based disease management resources, ranging from sophisticated online support groups to e-mail and Web pages, can enhance provider decisionmaking, improve disease management communication, and educate

continued on page 24

Patient safety for children

continued from page 23

adolescents and older youths about their illnesses.

Fourth, teleconsultation can improve access to care and has been found to be useful in pediatric surgery, evaluations of suspected abuse or neglect, psychiatry, pediatric dental screening, pediatric ophthalmology, and neonatology.

Fifth and finally, electronic health records (EHR) have the potential to improve the safety of pediatric care. For example, evidence shows that inclusion of preventive services tracking software in the EHR improves rates of preventive services.

See “Information technology: Its importance to child safety,” by Dr. Johnson and Mr. Davison, in the January/February 2004 *Ambulatory Pediatrics* 4(1), pp. 64-72.

Editor’s Note: Another AHRQ-supported study on a related topic highlights the role of informatics in promoting patient safety and enabling evidence-based practice. For more details, see Bakken, S., Cimino, J.J., and Hripcsak, G. (2004, February). “Promoting patient safety and enabling evidence-based practice through informatics.” (AHRQ grant HS11806). *Medical Care* 42(2 Suppl.), pp. II49-II56. ■

Conference participants focus on the role of nursing in health care quality improvement

A conference held in April, 2002, focused on the strengths of and gaps in contributions of nursing to health care quality. Interdisciplinary experts from nursing, health services research, policy, and communications addressed methods, tools, technology, data resources, and policies that could further clarify nursing as a major player in national quality improvement initiatives. A supplement to the February 2004 issue of the journal *Medical Care* 42(2), contains several papers from the conference, which was supported in part by the Agency for Healthcare Research and Quality (HS12058).

In a foreword to the supplement, Norma M. Lang, Ph.D., R.N., of the University of Pennsylvania School of Nursing, and her colleagues note that nurse scientists have gained considerable experience in using large State and national datasets for quality research in acute care, home care, and long-term care settings; hospital safety outcomes; workforce issues; and the relationships between nurse staffing and quality outcomes. However, these datasets rarely include the data elements considered sensitive to nursing care and interventions.

Several speakers noted that categories of data elements such as organizational and practice structure, including staffing of health professionals, are absent from large datasets. They point out, however, that there is a growing body of research in key areas—including working conditions, staffing, and safety—and that findings from these studies are being disseminated to the field and to the public. The challenge remains to capitalize on the current momentum. For more details on the supplement, foreword, and papers, see:

- Lang, N.M., Mitchell, P.H., Hinshaw, A.S., and others, “Measuring and improving healthcare quality,” pp. II-1-II-3.
- Mitchell, P.H., and Lang, N.M., “Framing the problem of measuring and improving healthcare quality: Has the quality health outcomes model been useful?” pp. II-4-II-11.
- Swan, B.A., and Boruch, R.F., “Quality of evidence: Usefulness in measuring quality of health care,” pp. II-12-II-20.
- Mattke, S., Needleman, J., Buerhaus, P., and others, “Evaluating the role of patient sample definitions for quality indicators sensitive to nurse staffing patterns,” pp. II-21-II-33.
- Weiner, M.W., and Long, J., “Cross-sectional versus longitudinal performance assessments in the management of diabetes,” pp. II-34-II-39.
- Maas, M.L., and Delaney, C., “Nursing process outcome linkage research: Issues, current status, and health policy implications,” pp. II-40-II-48.
- Bakken, S., Cimino, J.J., and Hripcsak, G., “Promoting patient safety and enabling evidence-based practice through informatics,” pp. II-49-II-56.
- Vahey, D.C., Aiken, L.H., Sloane, D.M., and others, “Nurse burnout and patient satisfaction,” pp. II-57-II-66.
- Sochalski, J., “Is more better? The relationship between nurse staffing and the quality of nursing care in hospitals,” pp. II-67-II-73. ■

Value to clinicians of educational Web sites on bioterrorism is unproven

A study begun in November 2001, after the anthrax mailings that followed the September attack on the World Trade Center, found that doctors were more likely to use media reports than an educational Web site to learn about bioterrorism preparedness. During this period, information about biological agents deluged both the general public and health care professionals via newspaper and magazine articles, television, radio, lectures, and medical Web sites. Even doctors who participated in a Web-based educational session did not know more about bioterrorism preparedness than before the session, according to the study supported by the Agency for Healthcare Research and Quality (contract 290-00-0020).

Investigators at Boston Children's Hospital Center for

Biopreparedness pretested the bioterrorism knowledge of general and pediatric emergency medicine attending physicians, fellows, and 4th-year emergency medicine residents. These clinicians then attended a lecture on bioterrorism. Sixty-three physicians, including 20 female physicians, were enrolled in the study from November 2001 to April 2002. Participants were randomized to a Web group that received continuous access to a bioterrorism educational Web site with weekly exposure to case scenarios of diseases due to biological agents or to a control group. Participants were retested after 1 and 6 months to identify their source of information and assess their knowledge.

The researchers found no difference in pretest scores between the Web intervention and control groups (45 vs. 44 percent) and no

significant difference between pre- and post-test scores between the two groups at 1 month (48 vs. 45 percent) and 6 months (51 vs. 47 percent). More than 60 percent of physicians cited media reports as their primary source of information on bioterrorism and believed that their knowledge about bioterrorism was limited after 1 month. Given that about 30 percent of the Web group did not use the site (many felt it had limited applicability to their practice), the data may not accurately reflect the effectiveness of the Web site.

See "Efficacy of an educational Web site for educating physicians about bioterrorism," by Sarita Chung, M.D., Kenneth D. Mandl, M.D., M.P.H., Michael Shannon, M.D., M.P.H., and Gary R. Fleisher, M.D., in the February 2004 *Academic Emergency Medicine* 11(2), pp. 143-148. ■

Health Care Costs and Financing

People with diabetes do a better job of managing their disease when HMOs cover diabetes self-monitoring devices

A new study provides preliminary support for efforts by health maintenance organizations (HMOs) and State legislators to cover home testing equipment such as blood glucose monitors and test strips for type 1 (insulin-dependent) and type 2 diabetes (typically treated with insulin and/or sulfonylureas). According to the study findings, when an HMO provided free blood glucose monitors (at a cost of up to \$100 each) to people with diabetes, more patients self-monitored their blood glucose (SMBG) which, in turn, increased regular use of diabetes medications and reduced high blood glucose levels.

In the study, which was supported by the Agency for Healthcare Research and Quality (HS10063),

Stephen B. Soumerai, Sc.D., of Harvard Medical School, and his colleagues evaluated whether an HMO policy providing free blood glucose monitors increased SMBG. They also examined whether initiating SMBG was associated with increased regularity of diabetes medication use and improved glucose control (lower hemoglobin A1c, HbA1c) among 3,219 people with diabetes in the HMO.

Compared with rates 2 years before policy initiation, SMBG rates 2 years afterwards showed a significant increase in SMBG among insulin-treated patients. Among sulfonylurea-treated patients, the monthly initiation rate of SMBG increased by 14 new

continued on page 26

Managing diabetes

continued from page 25

patients per 1,000, a doubling of the expected initiation rate.

Test strip use increased 75 percent during the first 6 months after the policy began. Compared with noninitiators of SMBG, initiators showed sudden and significant improvements in regularity of medication use by 6 months after initiation (19.5 fewer mean days between medication dispensing among those with low refill regularity; 9.7 fewer mean days among those

with moderate regularity) and in glucose control (0.63 percent lower mean HbA1c level) among those with poor baseline glycemic control (HbA1c greater than 10 percent; 7 percent is considered good glycemic control).

See "Effects of health maintenance organization coverage of self-monitoring devices on diabetes self-care and glycemic control," by Dr. Soumerai, Connie Mah, M.S., Fang Zhang, M.S., and others, in the March 22, 2004 *Archives of Internal Medicine* 164, pp. 645-652. ■

Despite some slowing, the growth in drug expenditures continues to outpace growth in overall health care expenditures

The growth in drug expenditures will continue to outpace the growth in overall health care expenditures and the growth in the U.S. economy, according to the authors of a recent study. They calculated that U.S. drug expenditures increased by 12.3 percent between 2001 and 2002, from \$173 billion to \$194 billion. This trend continued in the first half of 2003, but it slowed somewhat, with expenditures increasing by only 10 percent compared with 2002.

This moderation in drug expenditure growth, which will continue for the next few years, can be attributed to many factors. These include drug patent expirations (35 major brand-name drug patents will expire by 2008), conversion of prescription to over-the-counter drugs, and decreases in

new drug approvals (the average cost to develop one approved drug rose from \$138 million in the 1970s to nearly \$2 billion today).

Higher cost-sharing for consumers and a general economic slowdown in the United States, which have affected employment and insurance coverage, have also resulted in a smaller increase in drug use, explains Nilay D. Shah, M.S., of the University of Wisconsin. She and fellow researchers project that in 2004, there should be a 10-12 percent increase in drug expenditures for outpatient settings, a 19-21 percent increase for clinics, and a 6-8 percent increase for hospitals, a trend that is expected to continue.

Thus, the researchers suggest that drug cost management initiatives in 2004 focus on clinic-administered medications, along

with careful monitoring of Medicare drug reimbursement reform. Their findings are based on analysis of Express Scripts claims data, Medco Health claims data on prescription drug expenditures by managed care populations in the outpatient setting, and IMS Health data on prescription drug sales to retail and non-retail settings. The study was supported in part by the Agency for Healthcare Research and Quality (National Research Service Award training grant T32 HS00083).

Details are in "Projecting future drug expenditures – 2004," by James M. Hoffman, Pharm.D., Ms. Shah, Lee C. Vermeulen, M.S., and others, in the January 15, 2004 *American Journal of Health-System Pharmacy* 61, pp. 145-158. ■

Most appeals to two of the Nation's largest HMOs to cover emergency care are resolved in favor of patients

A new study of appeals of coverage denials lodged by privately insured enrollees of two of the Nation's largest health maintenance organizations between 1998 and 2000 found that disputes over emergency department (ED) services accounted for about half (52 percent) of post-service appeals at plan 1 and one-third (34 percent) at plan 2. Furthermore, enrollees won more than 90 percent of these appeals.

Nearly half (46 percent) of ED appeals involved weekend, night, or holiday visits to the ED, and 22 percent were children's visits. The average cost for services in dispute was \$1,107. The most common general reasons for the ED visits in dispute were symptoms of illness (64 percent), injuries (22 percent), and services related to disease (8 percent). The most

continued on page 27

Appeals of coverage denials

continued from page 26

common presenting symptoms were abdominal pain, cramps, or spasms (7.6 percent); earaches or ear infections (3.4 percent); and lacerations/cuts (2.9 percent).

In at least 31 percent of appeals at plan 1 and 87 percent of appeals at plan 2, plans reversed the medical group's utilization review denial on its merits. This signals explicit disagreement between plans and medical groups about the appropriateness of ED use.

Consumer protection laws in many States now require managed care organizations to inform enrollees about their rights to internal and external appeals.

Nevertheless, rates of appeal are relatively low, and patients almost certainly underestimate the odds that an appeal will yield an overturn, note Carole Roan Gresenz, Ph.D., of RAND, and David M. Studdert, L.L.B., Sc.D., M.P.H., of the Harvard School of Public Health. Their study was supported in part by the Agency for Healthcare Research and Quality (HS11285).

See "Disputes over coverage of emergency department services: A study of two health maintenance organizations," by Drs. Gresenz and Studdert, in the February 2004 *Annals of Emergency Medicine* 43(2), pp. 155-162. ■

Patient age has more influence on Medicare costs for end-of-life care than race, income, or sex

Medicare is the major payer for end-of-life health care. For two decades, care in the last year of life has represented over one-fourth of Medicare's budget. A new study supported by the Agency for Healthcare Research and Quality (HS10561) explored Medicare patient characteristics that influence expenditures in the 3 years prior to death and found age to be the major determinant of costs during this time.

For the study, the researchers analyzed Medicare data on a random sample of 241,047 Medicare patients who died during 1996 to 1999. They estimated differences in mean Medicare expenditures by year before death and by age, sex, race, and area income, after adjustment for coexisting illnesses and Medicaid enrollment.

Overall mean Medicare expenditures in years 2 and 3 before death were less than \$10,000, but they rose to \$24,700 in the last year of life (LYOL). Older Medicare patients had higher expenditures in the second and third years before death but lower expenditures in the LYOL. On average, expenditures for the youngest group were \$8,017 more in the LYOL relative to the oldest group, whereas in the third year before death, expenditures for the oldest group were \$5,270 more than those for the youngest group. Expenditure patterns for women versus men varied by age. Among the younger groups (68 to 74 years and 75 to 79 years), expenditures were higher for women than men in all 3 years before death. This difference was weaker among older groups; in the oldest group (90+ years), expenditures for men

exceeded those for women by 11 percent in the LYOL.

The biggest differences in expenditures by sex, race, and area income occurred during the second and third years before death, and they became small or disappeared in the last year of life. For example, total annual Medicare expenditures for blacks were lower in the second and third years before death but were not significantly different from whites in the LYOL. Expenditure differences between decedents with area incomes over \$35,000 compared with under \$20,000 also weakened by the LYOL.

See "Differences in Medicare expenditures during the last 3 years of life," by Lisa R. Shugarman, Ph.D., Diane E. Campbell, Ph.D., Chloe E. Bird, Ph.D., and others, in the February 2004 *Journal of General Internal Medicine* 19, pp. 127-135. ■

AHRQ's Senior Advisor on Women's Health discusses current efforts to eliminate inequalities in care

Although women use more health care services and spend more on medications than men, inequalities in care still limit women's access to effective diagnostic procedures and therapies. Much still needs to be done to improve care access, receipt, and quality for this priority population, asserts Rosaly Correa-de-Araujo, M.D., M.Sc., Ph.D., Senior Advisor on Women's Health, Agency for Healthcare Research and Quality, in a recent editorial. She cites several groups that are working to eliminate inequalities in care and improve health care and quality of life for women of all ages.

For example, the goal of the Women's Health Interest Group created at AcademyHealth is to further health services research focused on women. Dr. Correa-de-Araujo notes five key areas for advancing women's health: research, clinical practice, policy, curriculum development, and research training. Currently, an expanded research agenda includes identifying health care disparities between the sexes and among female subpopulations, as well as understanding differences between men and women in disease manifestations and response to therapy.

As we move toward an approach that focuses separately on women and men, opportunities will

emerge to develop targeted quality measures, which if implemented as best practices may lead to decreases in health care costs and elimination of inequalities in care, according to Dr. Correa-de-Araujo. The Women's Health Measurement Advisory Panel of the National Council on Quality Assurance is developing quality measures on health conditions particularly relevant to women, such as cardiovascular disease, diabetes, and osteoporosis.

Improving care of women also calls for studies of health literacy of patients and cultural competency of health care professionals to better care for minority women. Policies targeting the basic needs of women are in place. However, newer policies and standards of care may be needed as women age and their risk of developing chronic disease increases. Fortunately, U.S. medical schools have improved their women's health curriculum. Also, the National Institutes of Health, Office of Research on Women's Health, has a unique program to tackle career development and building of research skills in women's health.

See "A wake-up call to advance women's health," by Dr. Correa-de-Araujo, in *Women's Health Issues* 14, pp. 31-34, 2004. Reprints (AHRQ Publication No. 04-R044) are available from AHRQ.** ■

Task Force recommends vision screening for children younger than age 5

Children who are younger than 5 years of age should be screened in the primary care setting for vision problems, including lazy eye, crossed eyes, and near- and far-sightedness, according to a new recommendation from the U.S. Preventive Services Task Force. The finding is published in the May/June issue of the *Annals of Family Medicine*.

The Task Force, an independent panel of experts sponsored by the Agency for Healthcare Research and Quality, found fair evidence

that screening tests can lead to detection of lazy eye (known by the clinical term "amblyopia"), crossed eyes (known as "strabismus"), and near- and far-sightedness. Children found to have one of these conditions should be referred to a specialized eye care professional for further testing. Left untreated, amblyopia may lead to visual impairment and may harm a child's ability to learn or affect his or her performance in school.

Visual impairment is a common condition that affects 5 percent to 10 percent of preschool age

children. Between 1 percent and 4 percent of preschool age children have amblyopia, and an estimated 5 percent to 7 percent have refractive errors.

Typically, children who are 3 or older are tested in the primary care setting using wall charts that ask the child to identify specific letters or symbols. For younger children who may have difficulty communicating verbally, new methods of photoscreening using specially equipped cameras to capture a picture of the child's

continued on page 29

Vision screening

continued from page 28

pupil have been developed for use by trained eye care professionals. Because photoscreening requires only minimal cooperation from the child, this method has the potential to increase vision screening rates among children.

Other methods used by primary care physicians for screening children under age 1 include the cover test and the Hirschberg light reflex test. The cover test is performed by covering one eye and observing the other eye for movement. The Hirschberg light reflex test is performed by shining a

light and observing the reflection of light from the patient's cornea.

The Task Force is the leading independent panel of private-sector experts in prevention and primary care and conducts rigorous, impartial assessments of the scientific evidence for a broad range of preventive services. Its recommendations are considered the gold standard for clinical preventive services. The Task Force based its conclusions on reports from research teams led by AHRQ's Evidence-based Practice Centers at RTI-International-University of North Carolina at Chapel Hill and the Oregon Evidence-based Practice Center in Portland.

The screening for visual impairment in children younger than 5 years of age recommendations and materials for clinicians are available on the AHRQ Web site, along with previous Task Force recommendations on other topics. Summaries of the evidence, easy-to-read fact sheets explaining the recommendations, and related materials are available from the AHRQ Publications Clearinghouse. See the back cover of *Research Activities* for ordering information. Clinical information also is available from AHRQ's National Guideline Clearinghouse at www.guideline.gov. ■

AHRQ makes access to hospital data easier

The Agency for Healthcare Research and Quality has redesigned its interactive HCUPnet software tool, which is available on the Web at www.ahrq.gov/hcupnet. The redesign makes it easier for users to obtain hospital care trend data for the Nation and for individual States. The data, which are drawn from 36 States, represent 90 percent of all hospital stays in the Nation.

HCUPnet's databases include statistics on the conditions for which patients were hospitalized, the diagnostic and surgical procedures they underwent, patient death rates, hospital charges, hospital costs, length of stay, and other aspects of inpatient care. The data are for all patients, regardless of type of insurance or whether they were insured. For example, using HCUPnet to research the impact of the obesity epidemic on hospital care and costs shows that more than 58,000 surgical procedures related to obesity were performed in 2001.

In addition, the data show that between 1993 and 2001:

- The number of patients admitted for treatment of diabetes with complications—a condition often linked to obesity—rose 23 percent, from 373,666 to 461,161.
- The number of lower extremity amputations, a complication of diabetes, increased 14 percent from 99,522 to 113,379. The average hospital charge for this procedure increased 38 percent, from \$24,332 to \$33,562.
- Admissions for heart attack—people who are obese are at increased risk for heart attack—rose 13 percent, from 682,763 to 773,871, and charges increased 61 percent—from an average of \$19,178 per hospital stay to \$30,875 per stay.
- Knee replacements, also more common among obese patients, increased roughly 29 percent, from 282,177 to 363,536, and the average hospital charge rose 38 percent, from \$18,352 to \$25,309. ■

New AHRQ tool can help hospitals better prepare for a disaster

The Agency for Health Care Research and Quality has developed a new resource to help hospitals assess their readiness in the event of a disaster. This first-ever evidence-based tool, which can help hospitals evaluate their disaster training drills, is now available from AHRQ. The new resource, *Evaluation of Hospital Disaster Drills: A Module-Based Approach*, is designed to help hospitals identify strengths and weaknesses in their responses during a disaster drill and improve their ability to fulfill required emergency management plans. It is available from AHRQ as a spiral-bound, color-coded notebook with accompanying CD-ROM.

Developed by the AHRQ-sponsored Evidence-based Practice Center at the Johns Hopkins

University, Baltimore, the new tool is based on several key principles, including the need to plan drill objectives, train observers, document drill activities, and debrief all participants. The tool's evaluation modules are designed to capture all phases of drill activities, such as pre-drill planning and recording activities in each area of the hospital including incident command, decontamination, triage, and treatment. The tool also includes four supplemental forms to help institutions customize their drills to practice response to specific health threats such as a bioterrorism incident.

The CD version of the modules includes a spreadsheet designed to help hospitals compile responses from the modules and compare data on topics such as how the

hospital performs on repeated exercises, how different parts of the hospital perform on the same factors, or how different hospitals perform when participating in the same drill. The tool also includes detailed instructions on how to use the modules when planning and carrying out an evaluation of hospital disaster drills.

Copies of *Evaluation of Hospital Disaster Drills: A Module-Based Approach* (AHRQ Publication No. 04-0032) are available from AHRQ.* The new training resource is one of over 50 studies, workshops, conferences and other activities funded under the Agency's bioterrorism research portfolio. To find out more, visit the AHRQ Web site at www.ahrq.gov. ■

New publications now available from AHRQ

The Agency for Healthcare Research and Quality recently published a newly revised guide to staying healthy for older adults and a report on the Health Care Safety Net Monitoring Initiative, a joint undertaking of AHRQ and the Health Resources and Services Administration. Both publications are available from AHRQ. See the back cover of *Research Activities* for ordering information.

Pocket Guide to Staying Healthy at 50+. AHRQ Publication No. 04-IP001-A. This guide incorporates new research-based recommendations from the U.S. Preventive Services Task Force. It was developed in partnership with AARP and updates the original *Staying Healthy at 50+* published in 2000. The Pocket Guide, available in English and Spanish, includes tips and recommendations on good health habits, screening tests, and immunizations. It provides easy-to-use charts to help track personal health information and includes questions to ask health care providers, as well as resources to contact for additional information.

This publication is part of the Put Prevention Into Practice program, which is designed to increase the appropriate use of clinical preventive services. PPIP tools, such as this booklet, enable physicians and other health care providers to determine which services their patients should receive and how best to deliver them. A complete listing of Task Force recommendations and PPIP resources can be found online. Go to the AHRQ Web site at www.ahrq.gov and select "preventive services."

Monitoring the Health Care Safety Net. *Developing Data-Driven Capabilities to Support Policymaking.* Weinick, R.M., and Shin, P.W. AHRQ Publication No. 04-0037. In September 2003, AHRQ published two data books in cooperation with HRSA. The two data books provide 118 measures to help policymakers, planners, and analysts monitor the safety net in 90 metropolitan areas and all 1,818 metropolitan and nonmetropolitan counties in 30

continued on page 31

New publications

continued from page 30

States and the District of Columbia. Together with a third volume to be published in the near future, these books form the core of the joint AHRQ-HRSA Safety Net Monitoring Initiative.

This report discusses the initiative and presents a data-driven policy framework that involves an explicit

statement of priorities and policy questions to be answered by new and existing data. It provides general guidance for using data to support the process of developing policy options for the health care safety net.

For more information, go to www.ahrq.gov/data/safetynet to download the books or request free copies. ■

AHRQ's third annual patient safety conference set for September

The third annual patient safety conference, *Making the Health Care System Safer*, will be held September 26-28, 2004, at the Crystal Gateway Marriott in Arlington, VA. The conference, which is sponsored by the Agency for Healthcare Research and Quality, will feature more than 30 patient safety breakout sessions. The goals of the conference are to:

- Showcase the products, tools, and findings of AHRQ's patient safety grantees.

- Illustrate how clinicians, administrators, patients, managers, purchasers, and providers could put these practical and innovative ideas into practice to make the health care system safer.

Participants will learn about practical and innovative ideas for safety improvements across the health care system. The conference will feature 30 breakout panel discussions in the areas of systems improvement, knowledge transfer and dissemination, settings of care,

culture and surveys, and reporting. A "product cafe" will include more than 50 exhibits related to patient safety.

Online registration is available. For more information, or to register, go to www.cvent.com, select "RSVP for event," and enter the event code MEEHOH5UFA. The registration fee of \$125 is payable online by credit card. ■

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. See the back cover of *Research Activities* for ordering information.***

Records of all 750,000 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 Web site. Go to 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 the AHRQ Web site at

www.ahrq.gov and click on "Research Activities Online Newsletter" and then "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.

Accelerating Quality Improvement in Health Care: Strategies to Speed the Diffusion of Evidence-Based Innovations. Steven Findlay, M.P.H., National Institute for Health Care Management Research and

continued on page 32

Grant final reports

continued from page 31

Education Foundation, Washington, DC. AHRQ grant HS12069, project period 4/1/02-3/31/03.

The project provided support for a conference held in January 2003 to explore the diffusion of innovations in health care. (Abstract, executive summary, and final report, NTIS accession no. PB2004-103328; 38 pp, \$29.50 paper \$14.00 microfiche)***

Administrative Data and General Comorbidity Models. George Stukenborg, Ph.D., University of Virginia, Charlottesville. AHRQ grant HS10134, project period 5/1/01-4/30/03.

The researchers evaluated the utility of using diagnoses reported as present on admission in California hospital discharge abstract data to measure the effects of comorbid disease and other patient characteristics on the risk of hospital death. (Abstract, executive summary, and final report, NTIS accession no. PB2004-103337; 106 pp, \$38.00 paper, \$20.00 microfiche)***

Angina in Primary Care. Alvin I. Mushlin, M.D., University of Rochester, Rochester, NY. AHRQ grant HS06901, project period 9/30/92-9/29/99.

The goal of the project was to determine the accuracy of noninvasive diagnostic testing—exercise tolerance testing (ETT), exercise echocardiography (ECHO), and exercise sestamibi imaging (MIBI)—in primary care patients presenting with symptoms suggestive of coronary artery disease. (Abstract, executive summary, and final report, NTIS accession no. PB2004-103396; 224

pp, \$54.50 paper, \$26.50 microfiche)***

Applying Bayesian Network Approaches to Study Health Outcomes. Sun-Mi Lee, M.P.H., M.S.N., University of Maryland, Baltimore. AHRQ grant HS13867 project period 7/1/03-12/31/03.

The purpose of this study was to explore the feasibility of using Bayesian networks, which are powerful data mining algorithms, in studying health outcomes using the HIV Cost and Services Utilization Study (HCSUS) dataset consisting of 2,864 HIV-infected adults. (Abstract, executive summary, final report, and dissertation, NTIS accession no. PB2004-103393; 220 pp, \$54.50 paper, \$26.50 microfiche)***

APRNet: NAMC Data and Privacy/Confidentiality Issues. Margaret Grey, Dr.P.H., Yale University, New Haven, CT. AHRQ grant HS11196, project period 9/30/00-9/29/03.

APRNet is a new regional practice-based research network for advance practice nurses in primary care in southern New England. This report summarizes two projects undertaken by the network: one, a network-defining survey and two, a multi-method study of patients and clinicians who are members of APRNet to determine their attitudes and knowledge of privacy and confidentiality issues. (Abstract, executive summary, and final report, NTIS accession no. PB2004-103326; 26 pp, \$26.50 paper, \$14.00 microfiche)***

Assisted Living and Health System Use. Charles D. Phillips, Ph.D., Texas A&M University, College Station, TX. AHRQ grant HS10606, project period 6/1/00-5/31-02.

For this project, researchers used a nationally representative sample from 1998 to focus on the use of Medicare-covered services while residing in an assisted living facility and residents' transition out of such facilities. (Abstract, executive summary, final report, and appendixes, NTIS accession no. PB1004-103335; 132 pp, \$41.50 paper, \$20.00 microfiche)***

Asthma School Initiative: Evaluating Three Models of Care. Mayris P. Webber, Dr.P.H., Montefiore Medical Center, Bronx, NY. AHRQ grant HS10136, project period 9/1/99-8/31/03.

The goals of this project were to evaluate whether access to on-site school health services was associated with better outcomes for children with asthma, including whether an outreach program could improve their health and well-being, improve their school attendance, and reduce their use of more costly forms of care. (Abstract, executive summary, and final report, NTIS accession no. PB2004-103394; 30 pp, \$26.50 paper, \$14.00 microfiche)***

Best Practice: Basics and Beyond. Kathleen R. Stevens, Ed.D., R.N., University of Texas Health Science Center, San Antonio, TX. AHRQ grant HS12079, project period 5/1/02-4/30/03.

This project provided support for a conference held in July 2002. The goal was to prepare nurses for an increasingly active role in evidence-based practice to improve patient care and outcomes through translation of research into practice. (Abstract and final conference report, NTIS accession no. PB2004-104526; 40 pp, \$29.50 paper, \$14.00 microfiche)***

continued on page 33

Grant final reports

continued from page 32

Comparing Hospital and Office-Based Primary Care. David Blumenthal, M.D., Massachusetts General Hospital, Boston. AHRQ grant HS09369, project period 6/1/97-5/31/98.

This study addressed how the primary care provided by residents differed from that provided by staff physicians, the differences in care between visits to residents and/or interns and staff physicians compared with just residents/interns, and other influences on primary care in outpatient departments. (Abstract, executive summary, and final report, NTIS accession no. PB2004-103392; 12 pp, \$26.50 paper, \$12.00 microfiche)***

Evidence-Based Medicine Workshops for the Practicing Clinician. Martha S. Gerrity, M.D., Ph.D., Society of General Internal Medicine, Washington, DC. AHRQ grant HS12085, project period 5/1/02-4/30/03.

This project provided support for three 1-day workshops and two abbreviated workshops held in conjunction with the annual meeting of the American College of Physicians. The goal was to improve the use of evidence-based medicine among practicing clinicians in both urban and rural areas. (Abstract, executive summary, and final report, NTIS accession no. PB2004-103330; 124 pp, \$38.00 paper, \$20.00 microfiche)***

Exploratory Data Analysis to Detect Preterm Risk Factors. Jonathan C. Prather, B.S., Duke University, Durham, NC. AHRQ grant HS09331, project period 9/1/96-8/31/97.

This study tested whether data-mining techniques applied to a comprehensive clinical practice

database would detect previously unrecognized factors predictive of preterm birth. (Abstract and executive summary of dissertation, NTIS accession no. PB2004-103391; 16 pp, \$26.50 paper, \$14.00 microfiche)***

Factors Affecting Choice of Types of Hemodialysis Access. Kristen L. Johansen, M.D., Northern California Institute, San Francisco. AHRQ grant HS11471, project period 6/11/01-5/31/03.

These researchers examined the association of hospital, surgeon, and patient variables with the choice of type of initial vascular access—autogenous fistulas or artificial grafts—for patients receiving kidney dialysis in Veterans Health Administration facilities. (Abstract, executive summary, and final report, NTIS accession no. PB2004-102820; 24 pp, \$26.50 paper, \$14.00 microfiche)***

Hispanic/White Differences in Self-Reported Health Status. Joseph J. Sudano, Ph.D., MetroHealth Medical Center, Cleveland, OH. AHRQ grant HS11462, project period 7/1/01-6/30/03.

These researchers used demographic, socioeconomic, health behavior, physical functioning, and psychosocial factors to examine factors affecting self-reported health status. The goals were to determine how these factors contribute to differences between Hispanics and whites in self-examination of health status and whether observed relationships differ by sex, vary using different techniques, or predict either physician visits or hospitalization across the groups. (Abstract, executive summary, and final report, NTIS accession no. PB2004-104529; 46 pp, \$29.50 paper, \$14.00 microfiche)***

Information Interpretation in Patient Decision Support. Margaret M. Holmes-Rovner, Ph.D., Michigan State University, East Lansing, MI. AHRQ grant HS10608, project period 8/1/00-7/31/03.

These researchers examined information types commonly used to communicate risks and benefits of medical treatments to patients, including statistical information, graphic lists, graphic drawings and diagrams, and patient interviews. (Abstract, executive summary, final report, and appendixes, NTIS accession no. PB2004-103336; 104 pp, \$38.00 paper, \$14.00 microfiche)***

Management of Peripheral Arterial Disease. Vivian H. Ho, Ph.D., University of Alabama, Birmingham. AHRQ grant HS11501, project period 7/1/01-6/30/03.

This project involved analysis of Medicare claims data for patients with peripheral arterial disease in 1995 and followup over the subsequent 5 years to examine rates of revascularization and/or amputation and patient outcomes. (Abstract, executive summary, and final report, NTIS accession no. PB2004-102819; 16 pp, \$26.50 paper, \$14.00 microfiche)***

Measurement of Women's Satisfaction with Primary Care. Carol S. Weisman, Ph.D., University of Michigan, Ann Arbor. AHRQ grant HS10237, project period 7/1/00-12/31/02.

This project provided support for development and validation of the Primary Care Satisfaction Survey for Women, the first survey tool designed to measure adult women's satisfaction with their primary care experiences, including communication, office procedures

continued on page 34

Grant final reports

continued from page 33

and administration, and coordination and comprehensiveness of care. (Abstract, executive summary, and final report, NTIS accession no. PB2004-103331; 76 pp, \$34.00 paper, \$14.00 microfiche)***

National EMS Research Agenda Implementation Symposium. Lynn J. White, M.S., National Association of EMS Physicians. AHRQ grant HS12086, project period 6/1/02-5/31/03.

This project provided support for a 2-day symposium in June 2003, where attendees developed an emergency medicine research agenda, including eight recommendations to improve the conduct of emergency medicine research in the United States. (Abstract, executive summary, and proceedings of symposium, NTIS accession no. PB2004-104523; 20 pp, \$26.50 paper, \$14.00 microfiche)***

National Network for Family Practice/Primary Care Research Continuation. John M. Hickner, M.D., M.S., American Academy of Family Physicians, Leawood, KS. AHRQ grant HS11182, project period 9/30/00-9/29/03.

This project supported the design and implementation of the Primary Care Network Survey among clinicians within the national practice-based research network, including testing of two methods of data collection: paper vs. hand-held computers (PDAs) among selected practices. (Abstract and final report, NTIS accession no. PB2004-104524; 26 pp, \$26.50 paper, \$14.00 microfiche)***

Oral Health Intervention Trial in Older Adults. Ralph Saunders,

D.D.S., M.S., University of Rochester, Rochester, NY. AHRQ grant HS10120, project period 9/1/99-8/31/03.

The goals of this project were to establish baseline oral health status for a population of older Medicare recipients, carry out a randomized controlled trial to test the effectiveness of a consumer-directed care model for oral health improvement, explore the hypothesis that improvements in oral health lead to improvements in general health, and serve as a vehicle for training of a minority junior investigator. (Abstract and final report, NTIS accession no. PB2004-104528; 26 pp, \$23.50 paper, \$14.00 microfiche)***

Patterns of Rehabilitation Use Following Stroke. Nancy D. Harada, Ph.D., Regents University of California, Los Angeles. AHRQ grant HS11482, project period 8/1/01-7/31/03.

The objective of this study was to compare the characteristics of stroke patients who receive five different patterns of rehabilitation use, as well as acute hospital and total episode length of stay by rehabilitation use pattern. (Abstract and final report, NTIS accession no. PB2004-104525; 36 pp, \$29.50 paper, \$14.00 microfiche)***

Postpartum Matters: Women's Experiences of Medical Surveillance, Time, and Support After Birth. Christa M. Kelleher, Brandeis University, Waltham, MA. AHRQ grant HS10790, project period 9/30/00-12/31/02.

This study explored the historical development of postpartum medical surveillance and women's contemporary experiences of postpartum care during the month after vaginal delivery in Canada and the United States. (Abstract and executive

summary, NTIS accession no. PB2004-104521; 16 pp, \$26.50 paper, \$14.00 microfiche)***

PPRG: Retooling for the 21st Century, Phase 2. Helen J. Binns, M.D., M.P.H., Children's Memorial Hospital, Chicago, IL. AHRQ grant HS11248, project period 9/30/00-9/29/03.

This project involved primary data collection using the Primary Care Network Survey at pediatric offices for inclusion in a national dataset that will be used to describe care provided to children, adolescents, and adults. (Abstract and final report, NTIS accession no. PB2004-104521; 16 pp, \$26.50 paper, \$14.00 microfiche)***

Quality of Care and Service Use for People with Disabilities. Lisa I. Iezzoni, M.D., Beth Israel Deaconess Medical Center, Boston, MA. AHRQ grant HS10223, project period 9/30/99-3/29/03.

The purpose of this study was to examine the effects of disability on people's experiences with care, including service use, access to care, and perceptions of quality. (Abstract, executive summary, and final report, NTIS accession no. PB2004-1033229; 72 pp, \$31.50 paper, \$14.00 microfiche)***

Racial/Ethnic Differences in CAHPS® Ratings and Reports. Robert Weech-Maldonado, Pennsylvania State University, University Park. AHRQ grant HS11386, project period 5/1/01-4/30/03.

This study addressed three research questions: (1) Do the psychometric properties of CAHPS® reports and ratings of care differ by survey language (English or Spanish)? (2) Do the CAHPS® reports and ratings of

continued on page 35

Grant final reports

continued from page 34

Medicaid managed care vary by race/ethnicity and primary language? and (3) To what extent are the observed differences in Medicaid managed care ratings and reports of care a result of within and between plan effects? (Abstract, executive summary, and final report, NTIS accession no. PB2004-103333; 98 pp, \$34.00 paper, \$20.00 microfiche)***

SES Differences in HMO Utilization by Older Americans. Jose J. Escarce, M.D., Ph.D., RAND, Santa Monica, CA. AHRQ grant HS09630, project period 4/1/99-3/31/03.

This project used administrative data from two Medicare+Choice

plans and surveys of enrollees and recent disenrollees to evaluate the impact of socioeconomic status on provider visits; use of preventive care, home care, and durable medical equipment; and medical care expenditures. (Abstract, executive summary, and final report, NTIS accession no. PB2004-103334; 116 pp, \$38.00 paper, \$20.00 microfiche)***

Strategies for Management of Dental Caries in Children. Richard G. Rozier, D.D.S., M.P.H., University of North Carolina, Chapel Hill. AHRQ grant HS06993, project period 7/1/92-6/30/95.

The goal of this project was to evaluate the effects of initiating a dental sealant benefit in the North Carolina Medicaid program on

service provision, treatment outcomes, and cost-effectiveness. (Abstract, executive summary, and final report, NTIS accession no. PB2004-103390; 32 pp, \$29.50 paper, \$14.00 microfiche)***

Women and Heart Disease: Putting Prevention into Primary Care. Robyn Lipner, Jacobs Institute of Women's Health, Washington, DC. AHRQ grant HS13856, project period 9/30/02-9/29/03.

This project provided support for a 2-day conference involving experts and stakeholders in the field to discuss issues related to women and heart disease. (Abstract and executive summary, NTIS accession no. PB2004-104062; 22 pp, \$26.50 paper, \$14.00 microfiche)*** ■

Research Briefs

Adams, J.R., Eltin, L.S., Lyman, G.H., and others. (2004, January). "Use of erythropoietin in cancer patients: Assessment of oncologists' practice patterns in the United States and other countries." (AHRQ grant HS10370). *American Journal of Medicine* 116, pp. 28-34.

Erythropoietin, a hormone that acts on bone marrow stem cells to stimulate red blood cell production, improves hemoglobin levels and reduces transfusion requirements among patients who become anemic due to cancer or its treatment. The goal of this study was to assess physician use of erythropoietin in the United States and in 19 other countries. Questionnaires about erythropoietin use in practice with cancer patients were mailed to 2,000 oncologists/hematologists.

Response rates were 30 percent in the United States and 25 percent internationally. Frequent erythropoietin use (defined as at least 10 percent of cancer patients) was higher in the United States than elsewhere. Among U.S. physicians, those who said they used erythropoietin frequently were more likely to be in fee-for-service than managed care settings. Those who reported never using it practiced in countries that had lower annual per capita health care expenditures, lower proportions of privately funded health care, and a national health service. Financial considerations and a hemoglobin level lower than 10 g/dL appear to influence erythropoietin use in the United States, whereas financial considerations alone determined its use abroad.

Arcury, T.A., Preisser, J.S., Gesler, W.M., and Sherman, J.E. (2003). "Complementary and alternative medicine use among rural residents in western North Carolina." (AHRQ grant HS09624). *Complementary Health Practice Review* 8, pp. 1-10.

These authors examine the use of complementary and alternative medicine (CAM) by adults living in rural Appalachian North Carolina based on a survey of 1,059 adults residing in 12 counties in the area. The most widely used CAM is "home remedies," with 46 percent of those surveyed using a home remedy, and 26 percent using the home remedy, "honey-lemon-vinegar-whisky." Herbs, teas, and traditional remedies are also used. The use of specific home remedies is associated with age, sex, and

continued on page 36

Research briefs

continued from page 35

education. Chiropractors are the only widely used alternative therapists, with an estimated 7 percent using them. Traditional remedies are used most often for infections or allergies. Respiratory, throat, and mouth conditions, as well as general well-being are most often treated with home remedies.

Bravata, D.M., McDonald, K.M., Szeto, H., and others. (2004, March). "A conceptual framework for evaluating information technologies and decision support systems for bioterrorism preparedness and response." (AHRQ contract 290-97-0013). *Medical Decision Making* 24, pp. 192-206.

These authors sought to develop a conceptual framework for evaluating whether existing information technologies and decision support systems (IT/DSSs) would assist decisionmaking by clinicians and public health officials preparing for and responding to bioterrorism. They reviewed reports of natural and bioterrorism-related infectious outbreaks, bioterrorism preparedness exercises, and advice from experts to identify key decisions (they identified eight), tasks, and information needs of clinicians and public health officials while responding to bioterrorism. When evaluating 217 currently available IT/DSSs that could potentially support bioterrorism-related decisions, the authors found little evidence on the accuracy of IT/DSSs.

Day, F.C., Schriger, D.L., and La, M. (2004, March). "Automated linking of free-text complaints to reason-for-visit categories and International Classification of Diseases diagnoses in emergency department patient record

databases. (AHRQ fellowship F32 HS00141). *Annals of Emergency Medicine* 43(3), pp. 401-409.

Current methods for assigning a standardized reason-for-visit category to an emergency department (ED) visit, such as those using International Classification of Diseases, Ninth Edition (ICD-9) codes, are generally not usable until after the visit has been completed and coded. This makes identification of symptom patterns and real-time intervention impossible. This study addressed whether information captured earlier in the ED visit, such as the plain-text chief complaint, could be processed quickly to assign a reason-for-visit category. The researchers developed a text-parsing algorithm that assigned 77 percent of all complaints from one dataset and 67 percent from a second dataset to 1 of 20 standardized reason-for-visit categories. On review, the automated assignments were reasonably reliable.

Forrest, C.B., Riley, A.W., Vivier, P.M., and others, "Predictors of children's healthcare use: The value of child versus parental perspectives on health care needs;" Riley, A.W., Forrest, C.B., Starfield, B., and others, "The parent report form of the CHIP-Child Edition: Reliability and validity;" and Riley, A.W., Forrest, C.B., Rebok, G.W., and others, "The child report form of the CHIP-Child Edition: Reliability and validity." (2004, March). (AHRQ grant HS00003). *Medical Care* 42(3), pp. 232-238, 210-220, and 221-231.

The first study examined the relationship between health care use and children's health care needs as assessed from the perspectives of children themselves and their parents (based on the child and parent report forms of the CHIP-

Child Edition, CE), and health care practitioners. The investigators studied 384 parents and their children aged 6 to 11 years enrolled in a California health maintenance organization or a Medicaid managed care program in Rhode Island. For both child- and parent responders, low satisfaction and comfort scale scores from the CHIP-CE were significant predictors of number of physician visits. CHIP-CE information collected from children explained more variation in total physician visits than models using parent-respondent data, and it was a better predictor of children's care use than needs as assessed by physician-diagnosed disorders. The second and third studies confirm the reliability and validity of the parent report form and child report form of the CHIP-CE, respectively.

Gardiner, J.C., Sirbu, C.M., and Rahbar, M.H. (2004). "Update on statistical power and sample size assessments for cost-effectiveness studies." (AHRQ grant HS09514). *Expert Review of Pharmacoeconomics Outcomes Research* 4(1), pp. 89-98.

With rising health care costs and constrained budgets, economic evaluation studies are increasingly being performed to ascertain which medical interventions can deliver additional health benefits at a reasonable cost. The design of a cost-effectiveness study for two competing treatments requires assessments of statistical power and sample size in demonstrating both effectiveness and/or cost-effectiveness. This article reviews some statistical approaches to formulating tests of hypotheses on the cost-effectiveness ratio or net health cost and assessing power and sample size for cost-effectiveness studies.

continued on page 37

Research briefs

continued from page 36

Guller, U., and DeLong, E.R. (2004, March). "Interpreting statistics in medical literature: A vade mecum for surgeons." (AHRQ grant HS09940). *Journal of the American College of Surgeons* 198(3), pp. 441-458.

Current trends toward evidence-based medicine can only flourish in a culture of statistical literacy. Unfortunately, there is ample evidence that many physicians are ill prepared to accurately interpret statistical computations in medical literature. Furthermore, a significant association between the number of years out of medical training and loss of statistical knowledge has been reported. This article provides a series of nontechnical explanations of basic statistical operations in medicine, coupled with intuitive examples drawn from the field of surgery. The goal is to facilitate the surgeon's critical appraisal of medical literature and its implementation in clinical practice.

Haley, S.M., Andres, P.L., Coster, W.J., and others, "Short-form activity measure for post-acute care;" and Haley, S.M., Coster, W.J., Andres, P.L., and others, "Score comparability of short forms and computerized adaptive testing: Simulation study with the activity measure for post-acute care." (2004, April). (cofunded by AHRQ and others). *Archives of Physical Medicine and Rehabilitation* 85, pp. 649-660, 661-666.

As patients recover from illness or injury, a system is needed to assess their functional skills throughout the continuum of postacute care services. The first paper describes the development of a set of short forms, the short-form Activity Measure for Post-Acute Care (AM-PAC), that measure

activity in order to monitor functional recovery. The AM-PAC measures three types of activity: physical and movement, applied cognition, and personal care and instrumental activities such as shopping. The second study compares the simulated short-form and computerized adaptive testing (CAT) scores with scores obtained from complete item sets for each of the three activity domains of AM-PAC in 485 adult volunteers who were receiving skilled rehabilitation services in six postacute health care networks in the Boston area. Results showed that accurate scoring estimates for AM-PAC domains can be obtained with either the setting-specific short forms or the CATs. The CAT may have additional advantages over short forms in practicality, efficiency, and the potential for providing more precise scoring estimates for individuals.

Kennedy, M.J., Scripture, C.D., Kashuba, A.D., and others. (2004, March). "Activities of cytochrome P450 1A2, N-acetyltransferase 2, xanthine oxidase, and cytochrome P450 2D6 are unaltered in children with cystic fibrosis." (AHRQ grant HS10397). *Clinical Pharmacology & Therapeutics* 75, pp. 163-171.

Patients with cystic fibrosis (CF) tend to clear drugs more quickly from their body than others, which necessitates higher doses to achieve a level of medication exposure equal to that observed in healthy individuals. This study examined the activities of several enzymes: hepatic cytochrome P450 (CYP) 1A2, N-acetyltransferase 2 (NAT-2), xanthine oxidase (XO), and CYP2D6 in 12 young children with mild CF and 12 age-matched healthy controls to determine if CF altered their metabolism. The researchers used standard caffeine

and dextromethorphan phenotyping methods and collected urine for 8 hours to assess enzyme activity. There were no significant differences in the urinary molar ratios for any of the enzyme systems evaluated. These data suggest that CF does not alter the activities of CYP1A2, NAT-2, XO, and CYP2D6. The researchers conclude that altered biotransformation of drugs among children with CF is likely enzyme- and isoform-specific and thus is apparent for only selected compounds that are substrates for enzymes other than those evaluated in this study.

Lautenbach, E., Strom, B.L., Nachamkin, I., and others. (2004, March). "Longitudinal trends in fluoroquinolone resistance among enterobacteriaceae isolates from inpatients and outpatients, 1989-2000: Differences in the emergence and epidemiology of resistance across organisms." (AHRQ grant HS10399). *Clinical Infectious Diseases* 38, pp. 655-662.

These investigators conducted a 12-year study to identify and compare trends in annual prevalence of enterobacteria resistance to the fluoroquinolone (FQ) class of antibiotics among inpatients and outpatients in a health care system. A total of 46,070 clinical Enterobacteriaceae isolates underwent antibiotic susceptibility testing. Although hospital-wide use of certain antibiotics correlated significantly with inpatient FQ resistance, these correlations differed substantially across types of bacteria. Efforts to elucidate the epidemiology of FQ resistance and identify targets for intervention must recognize and account for the variability of FQ resistance across organisms and clinical settings.

continued on page 38

Research briefs

continued from page 37

Lawrence, W.F., and Fleishman, J.A. (2004, March). "Predicting EuroQoL EQ-5D preference scores from the SF-12 health survey in a nationally representative sample." *Medical Decision Making* 24, pp. 160-169.

Several utility indexes have been developed, that is, systems for classifying patient preferences for certain health states, including the EuroQoL EQ-5D. The authors of this study used data from the 2000 Medical Expenditure Panel Survey to predict EQ-5D preference scores from the Physical Component Summary (PCS) and Mental Component Summary (MCS) scores of the SF-12 health status questionnaire. The two-variable model predicted 61 percent of the variance in EQ-5D scores and provided reasonable ability to predict mean EQ-5D scores from mean PCS and MCS scores. This model allows researchers to estimate utility data for use in decision and cost-utility analyses. Reprints (AHRQ Publication No. 04-R040) are available from AHRQ.**

McDonald, C.J., Overhage, M., Mamlin, B.W., and others. (2004, March). "Physicians, information technology, and health care systems: A journey, not a destination." (AHRQ grant HS11889). *Journal of the American Medical Informatics Association* 11(2), pp. 121-124.

These authors, who developed the first PC-based computerized physician order entry (CPOE) system, discuss the benefits and limitations of CPOE. For example, CPOE eliminates illegible orders and provides opportunities for better ordering, but computer systems also introduce errors of their own. A slip of the mouse on a computer menu can lead to an order for the right medication for

the wrong patient. Another issue is decision support overload. Too many nonspecific and repetitive reminders are the moral equivalent of e-mail "spam," perhaps warranting strict constraints on what reminder rules are adopted. CPOE systems also can have large and important benefits on institutional efficiency and costs, for example, by advising doctors about the least costly medication and by helping avoid unnecessary repeat testing.

Mikuls, T.R., MacLean, C.H., Olivieri, J., and others. (2004, March). "Quality of care indicators for gout management." (AHRQ grant HS10389). *Arthritis & Rheumatism* 50(3), pp. 937-943.

Preliminary evidence suggests that medical errors in the treatment of gout are common, and there is no consensus on management standards. To guide physician practice, these authors developed 11 preliminary quality of care indicators for gout management based on a review of studies on gout therapy. They refined the indicators using a panel of community and academic rheumatologists, who added a 12th indicator. A second expert panel rated 10 of the quality indicators as valid. These pertained to the use of urate-lowering medications in chronic gout, the use of antiinflammatory drugs, and counseling on lifestyle modifications. These 10 indicators are an important initial step in quality improvement initiatives for gout care.

Patwardhan, M.B., McCrory, D.C., Matchar, D.B., and others. (2004, April). "Alzheimer disease: Operating characteristics of PET - A meta-analysis." (AHRQ Contract No. 290-97-0014). *Radiology* 231, pp. 73-80.

Although not currently recommended in the routine

evaluation of dementia, functional neuroimaging tests such as positron emission tomography (PET) and single photon emission computerized tomography (SPECT) have been proposed for the evaluation of individuals who may have Alzheimer disease. These researchers performed a meta-analysis of studies on use of PET using fluorine 18 fluorodeoxyglucose (FDG) to assess its sensitivity and specificity. The 15 studies that met inclusion criteria showed heterogeneity in sensitivity and specificity estimates. The summary sensitivity of FDH PET was 86 percent, and the summary specificity was 86 percent, but these were limited by both study design and patient characteristics. Therefore, the clinical value of these parameters is uncertain, and more research is needed.

Rosenthal, M.B., Fernandopulle, R., Song, H.R., and Landon, B. (2004, March). "Paying for quality: Providers' incentives for quality improvement." (AHRQ grant HS10803). *Health Affairs* 23(2), pp. 127-141.

Delivering high-quality care in the current U.S. health care system does not always pay. For example, an effective chronic care management program may lead to lower revenue for providers, since quality improvement (QI) activities are not billable, and acute care visits are reduced as a result. However, a growing number of health plans and other purchasers have implemented pay-for-performance systems to reward providers for delivering high-quality care and to motivate quality improvement. This article describes the prevalence and structure of these initiatives as they are now being adopted in the U.S. health care system.

continued on page 39

Research briefs

continued from page 38

Stryer, D.B., Siegel, J.E., and Rodgers, A.B. (2004, April). "Outcomes research: Priorities for an evolving field." *Medical Care* 42(4S), pp. III-1-III-5.

This article outlines priorities for the evolving field of outcomes research as developed at a workshop that was held June 10-11, 2002. The goal was to identify priorities that will support health professionals and administrators in the practical decisions that confront them. Priorities range from addressing the needs of priority populations such as the disabled and elderly and research and resources to support emerging strategies in health care delivery, to partnering effectively with patients to achieve the best care at the best value. The authors point out that users of outcomes research demand information across the range of factors that must be considered in

decisionmaking. These include whether an effort will work in a particular health care system with its unique set of characteristics, what its impact will be on patients as well as on the organization, and how it can be implemented. The ultimate goal is to improve the effectiveness and efficiency of health care services to patients. Reprints (AHRQ Publication No. 04-R045) are available from AHRQ.**

Tanabe, P., Gimbel, R., Yarnold, P.R., and Adams, J.G. (2004, February). "The emergency severity index (version 3) 5-level triage system scores predict ED resource consumption." (AHRQ training grant T32 HS00078). *Journal of Emergency Nursing* 30(1), pp. 22-29.

U.S. emergency departments (EDs) typically have used 3-level triage systems. However, nurses frequently do not agree on the

triage acuity level of the same patient. The Emergency Severity Index (ESI) version 3 is a valid and reliable 5-level triage instrument that is gaining in popularity. A unique component of the ESI algorithm is prediction of resource consumption. This study retrospectively studied 403 ED patients at a large medical center to validate the ESI version 3 triage algorithm in a clinical setting for actual resource consumption and patient length of stay in the ED and hospital. The ESI algorithm accurately predicted ED resource intensity and gives administrators the opportunity to benchmark ED length of stay according to triage acuity level. ■

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