Research Activities

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Highlights

Departments

Regular Features

Medical errors affect 2 to 3 percent of hospitalized children and are more common in those with special medical needs

Medical errors affect 2 to 3 of every 100 children discharged from the hospital. Errors are more common among children with special medical needs and those who are dependent on a medical technology, according to a study supported in part by the Agency for Healthcare Research and Quality (HS11022). These more seriously ill children are usually hospitalized longer and undergo more medical procedures, both of which increase their likelihood of being affected by errors, suggests Anthony Slonim, M.D., of Children's National Medical Center.

Dr. Slonim and his colleagues used data from the Healthcare Cost and Utilization Project for the years 1988, 1991, 1994, and 1997, which profiled discharges from a sample of community hospitals in over 20 States. They calculated hospital-reported medical errors among nonnewborn pediatric inpatients up to 18 years of age.

The national rate of hospital-reported medical errors (ranging from procedural complications from implanting of grafts or devices to drug errors) in hospitalized children ranged from 1.81 to 2.96 per 100 discharges. The error rate increased from 1988 to 1991 but remained stable from 1991 to 1997. Procedural complications were more common in 1991 and 1997 than in 1988, but drug-related errors showed a significant decreasing trend over the 4 years studied.

Children who remained hospitalized for more than 5 days had a higher rate of errors in all of the years studied. The mean length of hospital stay was two to three times higher and death rates were four to five times higher for medical error patients than for those patients who did not experience medical errors across all years studied. Hospital size did not seem to be related to the rate of medical errors. However, private for-

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Medical errors

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profit hospitals consistently reported lower error rates, while urban teaching hospitals in all years but 1997 reported higher medical error rates than other hospitals.

See "Hospital-reported medical errors in children," by Dr. Slonim, Bonnie J. LaFleur, Ph.D., Wendy Ahmed, B.S., and Jill G. Joseph, M.D., Ph.D., in the March 2003 *Pediatrics* 111(3), p. 617-621. ■

Heart Disease

Both low- and high-risk patients fare better when they undergo cardiovascular procedures at high-volume hospitals

Some argue for referring only high-risk cardiovascular patients to high-volume hospitals, which often have more experience and better patient outcomes, in order to transfer fewer patients and put less strain on financially less viable small-volume hospitals. However, a recent study of over 800,000 elderly Medicare patients treated at all U.S. hospitals performing cardiovascular surgery casts doubt on this approach. In this study, both low- and high-risk patients fared better when treated in high-volume hospitals.

In the study, which was supported by the Agency for Healthcare Research and Quality (HS10141), John D. Birkmeyer, M.D., of Dartmouth Medical School, and his colleagues used the national Medicare database (from 1994 to 1999) to study operative mortality in elderly patients undergoing four cardiovascular procedures: coronary artery bypass graft (CABG) surgery, aortic valve replacement (AVR), mitral valve replacement (MVR), and abdominal aortic aneurysm repair (AAAR). They defined high-risk patients as those in the highest 25th percentile of predicted risk of death based on other coexisting illnesses, previous heart attack, and other risk indicators. They defined low-risk patients as those in the lowest 75th percentile of predicted risk of death.

The researchers compared operative deaths among patients undergoing surgery at very-high volume hospitals (VHVH, highest 20th percentile of procedure volume) and very-low volume hospitals (VLVH, lowest 20th percentile of procedure volume). Operative mortality rates for both low- and high-risk patients were 25 to 50 percent lower at high-volume hospitals. For example, 4.8 percent of low-risk CABG patients died at VLVH versus 3.8 percent at VHVH, while 9.1 percent of high-risk CABG patients died at VLVH versus 7.3 percent at VHVH. The relative risk (RR) of death between VHVH and VLVH was nearly equal for high-risk patients and low-risk patients for all procedures (CABG, 0.78 vs. 0.77; AVR, 0.73 vs. 0.76; MVR, 0.73 vs. 0.74; and AAAR, 0.51 vs. 0.54).

See "Should volume standards for cardiovascular surgery focus only on high-risk patients?" by Philip P. Goodney, M.D., F.L. Lucas, Ph.D., and Dr. Birkmeyer, in the January 28, 2003 *Circulation* 107, pp. 384-387. ■

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Heart attack patients who develop non-Q-wave vs. Q-wave infarctions after thrombolysis fare better in the short term and at 1 year

Some patients who suffer acute myocardial infarction (AMI, heart attack) show irregular waves, such as ST-segment elevation, on their electrocardiogram (ECG). These waves reflect the electrical activity of the heart, and larger than normal Q waves reflect damage to the left ventricle. Among heart attack patients who have ST-segment elevation on their ECG, those who receive thrombolytic or clot-busting medications are more likely to develop non-Q-wave MI. This signals a better prognosis than Q-wave MI, according to a meta-analysis of five randomized controlled trials on thrombolysis, which was supported in part by the Agency for Healthcare Research and Quality (HS06208).

The meta-analysis revealed that among this group of patients, those who developed a non-Q MI as compared with a Q-wave MI had 3.8 percent lower rates of in-hospital death and 6.4 percent lower rates of 1-year death, as well as 2.9 percent and 3.5 percent lower in-hospital and 1-year reinfarction rates, respectively. In-hospital and 1-year mortality were also significantly lower for non-Q-MI patients who received thrombolysis compared with placebo/control patients who developed a non-Q MI.

The subgroup of patients who develop non-Q as compared with Q-wave infarction after thrombolytic therapy may fare better because thrombolysis provides early and sustained opening of the infarct-related artery. This, in turn, limits left ventricular infarction and dysfunction. The five studies analyzed in this study were restricted to patients with AMI who had ST-segment elevation on the ECG. However, the majority of patients in whom non-Q-wave infarction develops do not show ECG changes such as ST-segment elevation or left bundle branch block that would lead the doctor at the bedside to administer thrombolytic therapy.

See "Development and prognosis of non-Q-wave myocardial infarction in the thrombolytic era," by Shaun G. Goodman, M.D., M.Sc., Aiala Barr, Ph.D., Anatoly Langer, M.D., M.Sc., and others, in the August 2002 *American Heart Journal* 144, pp. 243-250. ■

Studies focus on use of cardiac procedures and post-hospital rehab services among elderly heart attack patients

A growing number of hospitals have sophisticated cardiac services such as coronary angiography, coronary angioplasty, and coronary artery bypass graft (CABG) surgery to diagnose and treat heart attack patients. At the same time, cost and insurance pressures have resulted in shorter hospital stays for heart attack victims, resulting in the need for more post-discharge rehabilitative services. Two recent studies that were supported in part by the Agency for Healthcare Research and Quality (HS08071, principal investigator Barbara J. McNeil, M.D., Ph.D., of Harvard Medical

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School) examined these issues as they relate to elderly heart attack patients.

The first study found that the availability of sophisticated cardiac procedures at hospitals may increase their use but not necessarily patient survival. The second study revealed that over one-third (37 percent) of elderly heart attack patients received post-acute services within 30 days of discharge, with three-fourths of them using home health care. The studies are described here.

Dendukuri, N., Normand S.T., and McNeil, B.J. (2003, February). "Impact of cardiac service availability on case-selection for angiography and survival associated with angiography." ***Health Services Research*** **38(1), pp. 21-40.**

According to this study, elderly heart attack patients for whom angiography was deemed of uncertain benefit were far more likely to undergo angiography at hospitals that offered it. They were even more likely to undergo the procedure at hospitals that offered both angiography and revascularization (coronary angioplasty or bypass surgery). But surprisingly, patients treated at hospitals with angiography and/or revascularization, even those deemed to need angiography, had no better survival than those treated at hospitals that offered no cardiac services, according to Dr. Dendukuri and her colleagues.

The investigators analyzed data from the Cooperative Cardiovascular Project database on 37,788 elderly Medicare heart attack patients discharged from hospitals in seven U.S. States in 1994 and 1995, as well as Medicare claims files and provider files. They compared the relative risk of receiving angiography for various patients, hospital characteristics, and 1-year survival rates among patients at hospitals with no cardiac services, angiography services only, or angiography and revascularization services.

Angiography permits x-ray visualization of the heart and blood vessels following injection of a contrast dye to diagnose heart damage. Coronary angioplasty involves threading of a catheter into a heart vessel and inflating the tip of the catheter to flatten one or more plaques against coronary arterial walls to open up cardiac blood flow. In CABG surgery, a prosthesis or a section of a blood vessel is grafted onto one of the coronary arteries to bypass a blockage in a coronary artery.

Compared with patients for whom angiography was deemed necessary, the relative risk of receiving angiography among those for whom it was deemed of uncertain benefit was 0.58, 0.79, and 0.92 at hospitals offering no cardiac services, angiography only, and angiography and revascularization, respectively. However, there was no significant difference in survival following angiography across hospital types, both overall as well as within clinical need categories.

These findings indicate that while there is a beneficial effect of receipt of angiography on 1-year survival, the size of this benefit is the same regardless of hospital availability of cardiac services. Because of the consistent improved survival associated with angiography and the increased use of angiography at hopsitals with on-site cardiac facilities, the findings from this study suggest that patients should be triaged to hospitals with these capabilities.

Bronskill, S.E., Normand, S.T., and McNeil, B.J. (2002, Winter). "Post-acute service use following acute myocardial infarction in the elderly." ***Health Care Financing Review*** **24(2), p. 77-93.**

Pressures for shortened hospital stays for heart attack patients have increased the need for post-acute services (PAS) to aid patients' recuperation and rehabilitation after hospital discharge. For instance, this study found that 37 percent of elderly Medicare heart attack patients received PAS within 30 days of discharge, with three-fourths of them using home health care. In addition, 11.6 percent used a skilled nursing facility, 11.9 percent used multiple facilities, 1.5

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Elderly heart attack patients

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percent used a rehabilitation facility, and 0.4 percent used a long-term care hospital.

Compared with other heart attack patients, patients whose illness was more severe were nearly three times as likely (odds ratio, OR 2.85) to receive PAS. Those discharged from for-profit hospitals were 23 percent more likely (OR 1.23) to receive PAS, and patients discharged from hospitals that provided home health services through the hospital or a subsidiary were 15 percent more likely (OR 1.15) to receive PAS. For-profit hospitals may be more effective at discharge planning and implementing appropriate rehabilitative strategies. Alternatively, they may be more likely to respond to financial pressures to reduce hospital stays than not-for-profit hospitals, resulting in premature discharges that necessitate more PAS use, conclude the researchers.

The differences in PAS use between States persisted, even after accounting for many patient and hospital characteristics. Patients from Ohio and Texas were less likely to receive PAS than patients from Pennsylvania, Florida, New York, and Massachusetts.

These findings are based on analysis of the Cooperative Cardiovascular Project database, Medicare administrative data, and American Hospital Association data. The researchers examined the impact of patient, hospital, and State factors on PAS use among 39,837 elderly Medicare patients who were discharged following a heart attack from 1,500 hospitals in seven States. ■

Outcomes/Effectiveness Research

People who have more disability prior to hip replacement surgery have worse functioning and more pain after surgery

Individuals who need help with walking, housework, and grocery shopping or have other difficulties in functioning prior to hip replacement surgery are more likely to have poor functioning and pain up to a year after the surgery than those with better preoperative functioning. Patients and their doctors should consider these findings when discussing the timing of total hip replacement, suggest the University of Minnesota researchers who conducted the study. Their research was supported in part by the Agency for Healthcare Research and Quality (HS09735) and led by Jeremy Holtzman, M.D., M.S.

The researchers reviewed the medical records of 1,120 Medicare patients from 12 States who underwent total hip replacement for osteoarthritis during 1994 or 1995. They also surveyed the patients within 2 months and again 1 year after the procedure about their level of activity, presence and severity of pain with walking, need for help walking, distance they could walk, and whether they could perform daily activities such as housework and shopping. Almost all (95 percent) of the patients had moderate or severe pain with walking before surgery, and 81 percent could only walk less than 10 blocks. Almost half of the patients needed help with walking, housework, or shopping.

Patients who had pain when they walked prior to surgery were more likely to have pain 1 year after surgery than those who had no pain at baseline (21 vs. 9 percent). Patients who needed help with walking at baseline were more likely to need help 1 year after surgery than those who did not need assistance at baseline (38 vs. 15 percent). Similar results were seen with regard to the need for help with housework (39 vs. 18 percent) and grocery shopping (37 vs. 14 percent) and, to a lesser extent, for participation in moderate activity (17 vs. 10 percent). These results persisted, even after controlling for other medical problems such as heart or lung disease.

See "Effect of baseline functional status and pain on outcomes of total hip arthroplasty," by Dr. Holtzman, Khal Saleh, M.D., and Robert Kane, M.D., in the November 2002 *Journal of Bone and Joint Surgery* 84A(11), pp. 1942-1948. ■

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Researchers find little evidence to explain the enthusiasm for aggressive screening and treatment for prostate cancer

No one doubts that screening reduces death from breast and colon cancer. However, the effectiveness of prostate cancer screening is still being debated. The degree of enthusiasm for prostate cancer screening and treatment seems high given the limited evidence of benefit and well-documented harms of treatment, according to the Patient Outcomes Research Team (PORT) for Prostatic Diseases.

Two recent PORT studies, supported by the Agency for Healthcare Research and Quality (HS08397), examine the benefits of prostate cancer screening and treatment. The first study concluded that steps should be considered to temper possible overenthusiasm for screening and treatment. The second study found that more intensive screening and treatment among Medicare patients in one State compared with another was not associated with lower prostate cancer-related deaths over 11 years.

Ransohoff, D.F., Collins, M.M., and Fowler, F.J. (2002, December). "Why is prostate cancer screening so common when the evidence is so uncertain? A system without negative feedback." ***American Journal of Medicine*** **113, pp. 663-667.**

It may be time to take steps to temper possible overenthusiasm for prostate cancer screening and treatment, according to Prostate PORT investigators. In this study, they reviewed research studies to understand the reasons for the enthusiasm and positive reinforcement perceived in clinical decisions about whether to screen for prostate cancer, whether to choose aggressive therapy for cancer, and how to view adverse effects following therapy. They discuss the case of a man who must decide about screening and treatment to illustrate the kinds of reinforcement that may occur for each decision. They point out that strong positive reinforcement for each decision makes screening and aggressive therapy appear to be successful and the correct decision, even if prostate cancer screening and therapy are not beneficial.

Prostate-specific antigen (PSA) screening tests that yield false-positive results (indicate cancer when there is no cancer) can lead to anxiety and repeated biopsies. About 60 percent of men who undergo radical prostatectomy (surgical removal of the prostate) cannot have an erection, and 30 percent need to wear pads to deal with leaking urine. These relatively common and dramatic personal harms of screening and treatment are readily discounted or explained away. The physician is positively reinforced for recommending screening, regardless of the test result. A negative result makes a patient grateful for reassurance, and a positive result makes a patient grateful for early detection. A patient who is impotent and incontinent after a decision for curative treatment may attribute his survival to surgery and be grateful for having his cancer cured.

Whether or not early detection and aggressive treatment of prostate cancer reduces prostate cancer mortality is still not known, stress the researchers. They suggest several ways to curb possible overenthusiasm for aggressive screening and treatment for prostate cancer. One approach is to require that patients complete detailed written informed consent before screening, indicating an understanding that evidence of efficacy is weak or lacking and that adverse effects may occur. By ensuring that patients are informed about the pros and cons of testing and its consequences before they are tested, the chances are much improved that doctors and their patients will make decisions that are not tipped, possibly quite unfairly, toward intervention.

Lu-Yao, G., Albertsen, P.C., Stanford, J.L., and others. (2002, October). "Natural experiment examining impact of aggressive screening and treatment on prostate cancer mortality in two fixed cohorts from Seattle area and Connecticut." ***British Medical Journal*** **325, online at bmj.com**

This study reinforces the uncertain value of aggressive screening and treatment of prostate cancer. The researchers found that the more intensive screening and treatment for prostate cancer in one area over another was not associated with lower prostate cancer-related deaths over 11 years of followup. The researchers examined the rates of screening for prostate cancer, treatment with radical prostatectomy and radiation, and prostate cancer-related deaths from 1987 to 1997 among Medicare beneficiaries aged 65-79 drawn from the Seattle-Puget Sound area and Connecticut.

The prostate-specific antigen (PSA) testing rate in the Seattle area was 5.39 times that of Connecticut, and the prostate biopsy rate was 2.20 times that of Connecticut during 1987-1990. The 10-year cumulative incidences

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Prostate cancer screening

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of radical prostatectomy and external beam radiotherapy up to 1996 were 2.7 percent and 3.9 percent for Seattle men compared with 0.5 percent and 3.1 percent for Connecticut men. Yet, the adjusted rate of prostate cancer-related deaths up to 1997 was similar for Seattle and Connecticut.

Moreover, the overall drop in prostate cancer mortality seemed similar in the two regions. The researchers point out, however, that only elderly men were included in this study, and screening and treatment for prostate cancer may have a larger impact on younger men. However, prostate cancer death is rare before age 70. If recent decreases in prostate cancer mortality in the United States are attributable to screening and treatment with surgery and radiation, this impact would almost certainly be seen among Medicare age men. The researchers suggest continuing clinical trials to establish the value of aggressive screening and treatment for this condition. ■

Women's Health

Reading a large volume of mammograms is only one factor influencing radiologists' accuracy

Radiologists who examine more than 5,000 mammograms a year are more likely to accurately interpret them than radiologists who read a low volume of mammograms. However, experience is a multidimensional factor not adequately described by a single measure of annual mammograms read, says Joann G. Elmore, M.D., at the University of Washington School of Medicine. Her project to study variability in community mammography is supported by the Agency for Healthcare Research and Quality (HS10591).

In a recent editorial, Dr. Elmore and her colleagues question whether the recent volume of mammograms read, number of years of experience reading mammograms, or even lifetime number of mammograms interpreted should be used to determine the experience of a radiologist in this area. They also question whether having radiologists read the same mammogram during an experiment on mammogram interpretative accuracy reflects real-world community practice. For example, two to six cases of breast cancer are typically detected per 1,000 mammograms in a screened population compared with 64 of 148 mammograms used to test radiologists' accuracy in one recent study (less than 1 percent vs. 43 percent).

Other factors also influence radiologists' mammogram interpretation accuracy. For instance, fear of medical malpractice may prompt a radiologist to overinterpret a mammogram. The population of women screened also influences accuracy. For instance, women who take hormone replacement therapy, which may increase breast density that could reduce mammogram accuracy, may need additional imaging or breast ultrasound. Also, accuracy is more likely if menstruating women have a mammogram during the first or second week of the menstrual cycle, when breast tissue is less dense. Finally, women are more likely to get accurate mammograms if they go to the same facility and/or ensure that prior films are available for the radiologist to compare.

More details are in "Does practice make perfect when interpreting mammography? Part II," by Dr. Elmore, Diana L. Miglioretti, Ph.D., and Patricia A. Carney, Ph.D., in the February 19, 2003 *Journal of the National Cancer Institute* 95(4), pp. 250-252. ■

With outpatient breastfeeding support and a home visitor program, early postpartum discharge doesn't reduce breastfeeding

Breastfeeding of newborns confers partial protection against infections and possibly against later chronic illnesses such as diabetes and asthma, and it enhances bonding between mother and infant. Yet only 64 percent of U.S. infants were breastfed at all in 1998, and just 45 percent of infants who began breastfeeding continued until 6 months of age.

Critics of 24-hour postpartum hospital stays have raised concerns that fewer hours of interaction with maternity ward professionals would lead to a decline in breastfeeding. However, a recent study found that hospital stays of 24 hours or less after normal vaginal deliveries did not adversely affect breastfeeding when combined with outpatient breastfeeding support and a home visitor program. The study was supported in part by the Agency for Healthcare Research and Quality (HS10060), and led by Stephen B. Soumerai, Sc.D., of Harvard Medical School.

The researchers examined the impact on breastfeeding of an HMO early discharge protocol of one postpartum overnight stay (preceded by increased prenatal preparation) followed by a nurse specialist home visit 48 hours after discharge for normal vaginal deliveries compared with a State-mandated minimum stay of 48 hours for such deliveries. The researchers retrospectively examined medical record data from a large HMO in eastern Massachusetts on 20,366 mother-infant pairs with normal vaginal deliveries between October 1990 and March 1998.

Postpartum stays of less than 2 nights rose from 29 to 65 percent when the early discharge program was implemented in fall 1994, then fell to 15 percent after implementation of the 48-hour State mandate in February 1996. Yet, the proportion of women who initiated breastfeeding rose gradually from 71 percent in the fourth quarter of 1990 to 82 percent in the first quarter of 1998. Continued breastfeeding for 3 months among those who began it remained constant at 73 percent. Even among minority, poor, and other vulnerable groups of women who are less inclined to breastfeed, there was no decline in breastfeeding associated with the shorter hospital stay.

More details are in "Effects on breastfeeding of changes in maternity length-of-stay policy in a large health maintenance organization," by Jeanne M. Madden, Ph.D., Dr. Soumerai, Tracy A. Lieu, M.D., M.P.H., and others, in the March 2003 *Pediatrics* 111(3), pp. 519-524. ■

First trimester ultrasound identifies more cases of Down syndrome than second trimester maternal serum screening and is more cost effective

If a fetus has a greater-than-normal amount of swelling at the back of the neck (nuchal translucency), there is a higher likelihood that the baby will have Down Syndrome. The current screening recommendation involves sampling maternal serum and studying three or four analytes to determine risk for neural tube defects, other trisomies (usually trisomy 18), and Down syndrome. An abnormal screening result is an indication for invasive testing by amniocentesis or chorionic villus sampling to confirm the diagnosis. This testing involves a low risk for loss of the pregnancy. The detection rate for Down syndrome using this method is 50 to 60 percent, with a 3 to 5 percent false positive rate.

First trimester ultrasound screening for nuchal translucency (NT), either alone or in combination with maternal serum markers, can identify more Down syndrome fetuses and is more cost effective than the currently used second trimester screening. That is the conclusion of a study supported in part by the Agency for Healthcare Research and Quality (National Research Service Award training grant T32 HS00086).

However, if the combined first trimester ultrasound and blood screening strategy was recommended today, there would neither be enough laboratory capacity for the blood screening nor ultrasonologists who are trained to perform NT, caution the researchers who conducted the study. They calculated that the benefit of NT ultrasound alone to identify each additional Down syndrome case would outweigh the cost by nearly five to one. The benefit of adding to the ultrasound a first-trimester serum screen (for pregnancy-associated plasma protein A [PAPP-A] and free beta-human chorionic gonadotropin [β-hCG] fragments) would still outweigh the cost by nearly two to one for each additional Down syndrome fetus identified.

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Screening for Down syndrome

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These calculations are based on a screening decision model the researchers developed to apply to the entire population of the United States and the 4 million infants born here each year. They designed a decision tree to compare four possible screens for Down syndrome: current second-trimester expanded AFP test during amniocentesis (low AFP and estriol and high β-hCG correlate with Down syndrome); first trimester NT screen; first trimester serum screen; and combined first trimester NT and serum screen. The combined screen identified 3,833 Down syndrome fetuses, the NT screen alone 3,413, and the first-trimester serum screen, 2,993 compared with 2,446 identified by the currently used expanded AFP screen.

No comparison was made with second trimester maternal serum screening using four analytes (where inhibin-A is added to the other three currently used). Data on detection rates and false positives were obtained from currently available literature. The authors acknowledge that there are limited data on NT and first trimester screening detection rates and false positives which could alter the magnitude of the effect. Prospective studies are recommended to test the currently published sensitivity and specificity of the new tests in a larger, more diverse group of pregnant women.

More details are in "Nuchal translucency and first trimester biochemical markers for Down syndrome screening: A cost-effectiveness analysis," by Aaron B. Caughey, M.D., M.P.P., M.P.H., Miriam Kuppermann, Ph.D., M.P.H., Mary E. Norton, M.D., and A. Eugene Washington, M.D., M.Sc., in the November 2002 *American Journal of Obstetrics and Gynecology* 187, pp. 1239-1245.

Editor's note: This summary originally appeared in the March 2003 issue of *Research Activities* (page 6). The original summary contained some inaccuracies; it has been corrected and is being reprinted here to correct any misrepresentation of the study findings. We apologize for any confusion this may have caused. ■

Children's Health

Better communication with parents of hospitalized children may be the best way to improve parental ratings of hospital care

A new survey of over 6,000 parents of children cared for in 38 hospitals reveals that although parents on average rated the hospital care that their child received as very good to excellent, they still had problems with certain hospital processes. All dimensions of hospital care, with the exception of the child's physical comfort, had problem scores above 20 percent, indicating significant room for improvement in most aspects of care.

Overall parental ratings of care were associated most closely with communication about their child's condition and involvement in the care of their child. Thus, improving the quality of communication with the parent of a hospitalized child may have the most positive impact on a hospital's pediatric care rating, concludes lead author, John Patrick T. Co, M.D., M.P.H., of Harvard Medical School.

In a study supported in part by the Agency for Healthcare Research and Quality (National Research Service Award training grant T32 HS00063), the researchers surveyed 6,030 parents of children treated for a medical condition at 38 hospitals. The Pediatric Inpatient Survey measured seven dimensions of inpatient care quality: partnership, coordination, information to parent, information to child, child's physical comfort, confidence and trust, and continuity and transition of care. The researchers asked parents to give an overall quality of care rating from 1 to 5, with five being excellent, and specific process problem scores (from 0 to 100, with 0 representing no problems).

Parents on average rated their child's care as very good (mean of 4.2). However, they reported problems with 27 percent of the survey's hospital process measures. They had the most problems with poor information to the child (33 percent) and coordination of care (30 percent). Parent communication problems correlated most strongly with overall quality of care ratings. Parents whose children were hospitalized at academic health centers or in more competitive markets reported more problems. Yet, patient and hospital characteristics explained only 6 percent of the variation in problem scores.

See "Are hospital characteristics associated with parental views of pediatric inpatient care quality?" by Dr. Co, Timothy G. Ferris, M.D., M.P.H., Barbara L. Marino, Ph.D., R.N., and others, in the February 2003 *Pediatrics* 111(2), pp. 308-314. ■

Parents may not always want antibiotics for their child's illness, sometimes they may just want reassurance

Doctors are more likely to prescribe an antibiotic for a child's condition if they believe the parent expects an antibiotic. They usually believe a parent wants an antibiotic for their child if the parent suggests a candidate diagnosis, such as a strep infection that would warrant an antibiotic, or resists the doctor's diagnosis of a viral infection that is not treatable by antibiotics. However, a new study found that these parental communication behaviors were not associated with parental reports of their expectation for antibiotics. Doctors may be too quick to perceive pressure for antibiotics when parents may simply want reassurance that their child is not seriously ill or that they were correct to obtain medical care, concludes the study supported by the Agency for Healthcare Research and Quality (HS10577).

Tanya Stivers, Ph.D., of the University of California, Los Angeles, and her colleagues surveyed 306 parents prior to an audiotaped visit to one of ten physicians in two private pediatric practices for their child's symptoms of upper respiratory tract infection (e.g., sore throat, ear pain) about their expectations of the visit. They then asked doctors after the visits what they believed the parents expected. Finally, they analyzed communication behaviors used by parents and physicians' perceptions of parents' expectations.

When parents simply discussed symptoms, such as a runny nose and sore throat, it did not affect the doctor's perception that they wanted antibiotics. However parents' use of candidate diagnoses when they discussed their child's problem or parents' resistance to a viral diagnosis—for example, of a simple cold—increased by five and nearly three times, respectively, the odds that a doctor would perceive a parental expectation of antibiotics. Yet, there was no association between these communication behaviors and parent's reports of expectations for antibiotics.

See "Why do physicians think parents expect antibiotics? What parents report vs. what physicians believe," by Dr. Stivers, Rita Mangione-Smith, M.D., M.P.H., Marc N. Elliott, Ph.D., and others, in the February 2003 *Journal of Family Practice* 52(2), pp. 140-148. ■

Elderly/Long-Term Care

Performing a geriatric assessment of elderly patients in the ER can reduce later nursing home admissions

Up to 18 percent of patients seen in hospital emergency departments (EDs) are aged 65 or older. When elderly patients arrive at the ED, they usually have complex medical needs and limited social support. In fact, these emergency visits typically signal increased frailty, decline, and likelihood of institutionalization.

Providing elderly ED patients with a comprehensive geriatric assessment by a nurse specially trained in geriatrics and subsequent referral to a community or social agency, primary care provider, and/or geriatric clinic, can reduce subsequent nursing home admissions. This is especially true for high-risk elderly patients, according to a recent study that was supported in part by the Agency for Healthcare Research and Quality (HS09725).

A research team led by Robert M. Palmer, M.D., M.P.H., and Lorraine Mion, R.N., Ph.D., randomized 326 elderly ED patients to geriatric assessment and 324 to usual care at one of two urban hospital EDs that served predominantly indigent and minority patients. The geriatric nurse who conducted the geriatric assessment was also in charge of discharge planning and referrals to the appropriate medical or social agency. The researchers assessed ED use, hospitalization, and nursing home admission at 30 and 120 days after an ED visit.

Overall hospital use was similar between the two groups at 30 and 120 days after the index ED visit. However, geriatric assessment patients were less likely to have gone to a nursing home than usual care patients (0.7 vs. 3 percent) a month later, and they were far more likely to have been referred to a community agency (56 vs. 1 percent). Among the high-risk elderly, the geriatric assessment group had fewer hospital days than the usual care group (0.6 vs. 1.6)

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Geriatric assessments

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and fewer nursing home admissions (2 vs. 7 percent) at 30 days and 120 days (3 vs. 10 percent). The researchers caution that the lack of nurse followup of referrals might have weakened the effect of geriatric assessment in this study.

More details are in "Case finding and referral model for emergency department elders: A randomized clinical trial," by Lorraine C. Mion, Ph.D., R.N., Dr. Palmer, Stephen W. Meldon, M.D., and others, in the January 2003 *Annals of Emergency Medicine* 41(1), pp. 57-68. ■

Health Care Quality/Patient Safety

Quality of the primary care doctor-patient relationship has eroded, even for a doctor's long-time patients

More than three-fourths of U.S. adults have one physician whom they consider to be their primary physician, despite recent changes in the nation's health care delivery systems. Unfortunately, surveys of primary care patients over the past 15 years reveal that despite long-term primary care relationships, the ideals of whole-person, integrated care are largely unmet in their experiences. Furthermore, the quality of the primary care doctor-patient relationship has eroded over the past several years. These findings are from two longitudinal studies in which researchers administered the Primary Care Assessment Survey (PCAS). The studies were supported in part by the Agency for Healthcare Research and Quality (HS08841 and HS09622).

In one study, researchers administered the PCAS in 1996 and 1999 to a panel of adults sampled from 12 Massachusetts commercial health plans. In the other study, researchers administered the survey annually from 1998 to 2000 to Medicare HMO and fee-for-service beneficiaries in 13 States.

The PCAS measures seven features of primary care through 11 summary scales: access, continuity, comprehensiveness, integration of care, quality of the clinician-patient interaction, interpersonal treatment, and patient trust. Whole-person care was a weak link in primary care performance, according to Dana Gelb Safran, Sc.D., of Tufts-New England Medical Center. It ranked lowest among five PCAS measures of interpersonal care.

Despite the fact that three-quarters of adults surveyed had gone to their PCPs for 3 years or more, the majority rated their doctor's knowledge about them and their life circumstances as less than excellent. Three-fourths of patients in practices that relied on teams of clinicians rated the other clinicians' whole-person knowledge about them unfavorably, nearly two-thirds rated their knowledge of their medical history unfavorably, and half rated their communication skills unfavorably. Finally, there was a decline in the quality of physician-patient interaction (communication quality, interpersonal treatment, and thoroughness of physical examinations).

See "Defining the future of primary care: What can we learn from patients?" by Dr. Safran, in the February 4, 2003 *Annals of Internal Medicine* 138, pp. 248-255. ■

Better access to quality outpatient care for sickle cell disease could reduce patients' heavy reliance on expensive ER care

Sickle cell disease (SCD) affects one of every 375 black babies born in the United States. The sickle shaped red blood cells of these patients increase blood viscosity, block blood vessels, and destroy tissue. SCD patients suffer from pain when their blood vessels are blocked, and they are susceptible to infection and serious complications such as stroke. Disease severity plays a primary role in determining the cost and duration of hospitalizations for SCD patients, according to a recent study supported by the Agency for Healthcare Research and Quality (HS09553 and National Research Service Award training grant T32 HS00032).

A research team led by Thomas R. Konrad, Ph.D., of the University of North Carolina at Chapel Hill, used a 1995 national sample of

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6,249 SCD discharges from 183 not-for-profit hospitals to identify determinants of hospital resource use among patients with SCD. They linked clinical and cost discharge data with 1994 hospital survey data on hospital characteristics. The average total cost of hospital admission in this sample was $6,755, and Medicaid was the primary payer for the majority of admissions.

About 21 percent of patients had another major illness in addition to SCD, and the majority were admitted from emergency departments (EDs). Expected charges for a base-case individual without major existing illnesses in addition to SCD (comorbidities) totaled $4,029. Each additional comorbidity increased expected total charges by $1,000 or more, increased average daily charges by $100, and added three-quarters of a day to the expected hospital stay. Perhaps due to costs to stabilize them prior to admission, the expected total and average daily charges for patients admitted from the ED exceeded those of patients admitted from other settings by $446 and $1,081, respectively, but lengths of stay were comparable. Few hospital characteristics were associated with the three measures of hospital use examined. SCD management programs should maximize access to quality outpatient services to reduce reliance of SCD patients on expensive ED care, suggest the researchers.

See "Hospital resource utilization among patients with sickle cell disease," by Michelle L. Mayer, R.N., M.P.H., Ph.D., Dr. Konrad, and Christopher C. Dvorak, M.D., in the February 2003 *Journal of Health Care for the Poor and Underserved* 14(1), pp. 122-135. ■

Fear of lawsuits may make physicians reluctant to disclose medical errors to patients

Ethicists and professional organizations recommend that doctors reveal medical errors to patients, but they are often reluctant to do so due to fear of a malpractice suit or damaged reputation. However, patients want to know about errors that affect them and would like an apology from their doctor. In turn, doctors are upset when errors happen but are unsure where to seek emotional support, according to a study supported by the Agency for Healthcare Research and Quality (HS11898). The researchers who conducted the study suggest that doctors apologize to patients, let them know about the nature and cause of the error, and explain how they plan to prevent similar errors in the future.

The researchers analyzed transcripts of discussions about medical error disclosure among 13 focus groups: six groups of adult patients, four groups of academic and community physicians, and three groups of both physicians and patients, with a total of 52 patients and 46 physicians involved. All groups were presented with a hypothetical error of a doctor's handwritten order being misinterpreted, resulting in the diabetic patient getting an overdose of insulin. After a period in the intensive care unit, the patient recovers uneventfully. Another scenario was discussed in which the nurse caught the error before administering the insulin.

Patients wanted doctors to disclose all harmful errors honestly and compassionately. They wanted to know what happened, why the error happened, how the error's consequences would be mitigated, and how recurrences would be prevented. Doctors agreed that harmful errors should be disclosed but said that they "choose their words carefully." Patients also wanted an apology. However, doctors worried than an apology might create legal liability. Patients had mixed feelings about disclosure of near misses, while most physicians considered that disclosing near misses was impractical and would diminish patient trust.

See "Patients' and physicians' attitudes regarding the disclosure of medical errors," by Thomas H. Gallagher, M.D., Amy D. Waterman, Ph.D., Alison G. Ebers, and others, in the February 26, 2003 *Journal of the American Medical Association* 289(8), pp. 1001-1007. ■

Conference focuses on ways to improve safety of outpatient care

Most efforts to improve patient safety have focused on hospitals, although safety risks are widespread in ambulatory (outpatient) settings as well. Not enough attention has been directed at developing the evidence base needed to improve ambulatory safety, says Helen R. Burstin, M.D., M.P.H., director the Center for Primary Care Research, Agency for Healthcare Research and Quality.

A conference of health services researchers and health policy and medical group management professionals was held in late 2002. It focused on the epidemiology of patient safety in ambulatory care, strategies and methods to improve and ensure patient safety, and the effects of cultural, legislative, and regulatory environments on ambulatory patient safety.

Dr. Burstin and her colleagues summarized the conference in a recent article. Participants concluded that inadequate knowledge and understanding of the outpatient care sector severely limits the ability to understand and manage safety risks to patients. Their review of the research revealed the following high-risk areas for medical error in ambulatory care settings: failure to diagnose problems, omission of screening and followup, patient identification errors, oversedation, complex technology, and inadequately trained personnel. Infrastructure problems also create opportunities for error. For example, an episode of ambulatory care often requires communication and coordination among a number of clinicians, the patient, and family and among several different sites.

Also, more than 77 percent of all medical procedures are now performed in ambulatory settings, including many surgeries. Yet most ambulatory sites are subject to less regulation than hospitals, they have less peer interaction, and they have less well-developed policies and procedures to determine the training and experience required to perform certain procedures. Efforts now underway to improve ambulatory patient safety range from strengthening infrastructure support to making changes in the regulatory environment. The conference was supported by the Agency for Healthcare Research and Quality (HS10106) and the Centers for Medicare & Medicaid Services.

More details are in "Ambulatory patient safety: What we know and need to know," by Terry Hammons, M.D., Neill F. Piland, Ph.D., Stephen D. Small, M.D., and others, in the January 2003 *Journal of Ambulatory Care Management* 26(1), pp. 63-82. Reprints (AHRQ Publication No. 03-R021) are available from AHRQ.*

Go to AHRQ's Web site at www.ahrq.gov/about/cpcr/ptsafety/ to access the full report. ■

Health Care Costs and Financing

Capitated payments and gatekeeping practices have minor effects on referrals of managed care patients to specialists

The specialty referral process for privately insured patients enrolled in managed health plans is similar, regardless of the presence of gatekeeping arrangements (the primary care doctor has to authorize referrals to specialists) and capitated payments to the primary care physician (PCP), a capped amount per patient visit regardless of services performed. A new study found similar referral rates among managed care patients in gatekeeping plans with fee-for-service PCP payment or capitated PCP payment, even though the latter would appear to encourage referrals of complex, time-consuming patients. However, patients in plans with capitated PCP payment were more likely to be referred to specialists for chronic conditions and discretionary indications than those in non-gatekeeping plans, in which a patient can see a specialist without PCP referral (15.5 vs. 9.9 percent).

Physicians felt restricted in their ability to refer to the most appropriate specialists (due to restricted provider networks) in just 5 percent of cases. The proportion of patients in gatekeeping health plans within a practice was directly related to using staff as referral coordinators, allowing nurses to refer patients

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Specialty referrals

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without physician consultation, and permitting patients to request referrals by leaving recorded telephone messages.

Thus, physicians in managed care plans appear to modify the structure of their practices to facilitate access to and coordination of specialist referrals, according to Christopher Forrest, M.D., Ph.D., of the Johns Hopkins Bloomberg School of Public Health. For the study, which was supported by the Agency for Healthcare Research and Quality (HS09377), Dr. Forrest and his colleagues analyzed 14,709 visits made by privately insured, nonelderly patients seen by 139 PCPs in 80 primary care practices in 31 States. They examined the proportion of visits that resulted in a referral for specialty care, characteristics of referral, and physician coordination activities among gatekeeping plans with fee-for-service PCP payment, gatekeeping plans with capitated PCP payment, and non-gatekeeping plans.

More details are in "Managed health plan effects on the specialty referral process," by Dr. Forrest, Paul Nutting, M.D., M.S.P.H., James J. Werner, M.S., and others in the February 2003 *Medical Care* 41(2), pp. 242-253. ■

Patient characteristics and insurance coverage affect their ratings of managed behavioral health care plans

Patients' ratings of the quality of care delivered by health plans can be used by consumers, employers, and other plan purchasers to assess and compare the quality of services across plans or by providers to identify areas for improvement. However, patients' sex, education, health, and insurance coverage appear to influence their ratings of managed behavioral health care plans. Thus it may be important to adjust the ratings for patient characteristics when comparing plans, according to a study supported by the Agency for Healthcare Research and Quality (HS09205).

Paul D. Cleary, M.D., Ph.D., of Harvard University, and his colleagues mailed a survey to samples of adult patients in five public assistance and five commercial health insurance plans in four different States to assess patients' experiences with the care they received (for mental illness, personal or family problems, or alcohol or drug dependency) from one of three managed behavioral health care organizations in the previous 12 months. They then analyzed the influence of patient characteristics, health care use, and insurance coverage on patients' ratings.

Older and healthier patients rated their care and health plans more highly than did other patients. Patients with less education and those whose insurance paid all costs of care gave consistently higher plan ratings. Women and frequent care users enrolled in commercial plans gave more positive care ratings than men and less frequent users. Commercial enrollees who reported good mental health rated both their care and their plans more favorably than patients who reported poor or fair mental health. Among public assistance enrollees, mental health status was positively associated with care ratings but not consistently associated with plan ratings. Minority patients in public assistance programs had lower average ratings of care than white patients. After adjusting for enrollee characteristics and coverage, there were no differences between ratings of patients in commercial and public plans.

See "The influence of patient characteristics on ratings of managed behavioral health care," by Matthew J. Carlson, Ph.D., James A. Shaul, M.H.A., Susan V. Eisen, Ph.D., and Dr. Cleary, in the November 2002 *Journal of Behavioral Health Services & Research* 29(4), pp. 481-489. ■

Medicare plan quality information doesn't prompt people to switch from traditional to HMO plans or to choose low-cost HMOs

The Medicare program provides beneficiaries with data comparing the quality of Medicare traditional and HMO health plans via a toll-free hotline, Web site, and pamphlets. However, information about plan quality was not effective in encouraging people to leave traditional fee-for-service Medicare and join HMOs that are rated high in quality. Furthermore, those choosing among HMOs were not inclined to select a low-cost HMO, even when it was rated higher in quality, according to a recent study that was supported by the Agency for Healthcare Research and Quality (HS10797).

Jennifer D. Uhrig, Ph.D., of RTI International, and Pamela Farley Short, Ph.D., of Pennsylvania State University, provided a convenience sample of 225 elderly Medicare beneficiaries with information from the Health Plan Employer Data and Information Set (HEDIS), for example, how many plan members receive certain preventive screenings, and results from the Consumer Assessment of Health Plans Study (CAHPS®), to determine the impact of this information on Medicare plan choice. They randomized participants to several experimental groups, with each participant receiving quality information to make a hypothetical choice of the traditional FFS Medicare and two hypothetical Medicare HMOs (one high-cost and the other low-cost), and to a control group that did not receive quality ratings for any of the plans.

In the four experimental groups, higher quality ratings were associated with both the high-cost HMO and traditional Medicare; higher quality ratings were associated with both the low-cost HMO and traditional Medicare; higher quality ratings were associated with the high-cost HMO only; or higher quality ratings were associated with the low-cost HMO only. Most participants chose the same type of plan in the experiment as they had in real life. If informed competition is going to work in the Medicare market, it might be more effective to target new beneficiaries, beneficiaries who have been dropped from their HMO, those who purchase their own supplemental or managed care plan, and those who contact senior centers for help in choosing plans, conclude the researchers.

See "Testing the effect of quality reports on the health plan choices of Medicare beneficiaries," by Drs. Uhrig and Short, in the Winter 2002/2003 *Inquiry* 39, pp. 355-371. ■

Special Populations

Most individuals hospitalized for gunshot wounds are young and poor, and more than one-fourth have no insurance

Gunshot injuries are the second leading cause of death due to injury after motor vehicle accidents. Victims of gunshot injuries who are hospitalized often are uninsured and typically stay in the hospital for nearly a week. Most (86 percent) hospitalized victims are males, nearly half (47 percent) are younger than 25 years of age, 29 percent are uninsured, and 25 percent are insured by Medicaid. Those are the findings of a study by Jeffrey H. Coben, M.D., of Allegheny General Hospital, Pittsburgh, and Claudia A. Steiner, M.D., M.P.H., of the Agency for Healthcare Research and Quality. Formerly, Dr. Coben was AHRQ's senior scholar in residence for domestic violence.

Drs. Coben and Steiner analyzed data on these types of injuries using the 1997 Nationwide Inpatient Sample, a probability sample of 1,012 nonfederal community hospitals from 22 States, which is part of the Healthcare Cost and Utilization Project (HCUP). HCUP is a Federal-State-industry partnership, including public and private State data organizations. The researchers examined HCUP codes for external cause of injury (E codes) to identify firearm-related injuries.

They estimated 35,810 hospitalizations for gunshot-related injuries nationwide in 1997. The mean length of stay (LOS) for all patients with firearm-related injuries was 6 days. However, self-inflicted gunshot injuries had the longest mean LOS, an average of 8 days. About 60 percent of all patients were less than 30 years of

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Gunshot injuries

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age, and 7 percent died during hospitalization.

Estimated hospital charges for firearm-related injuries in the United States in 1997 totaled over $802 million, reflecting the often catastrophic consequences of gunshot wounds. In 1997, these injuries resulted in 2,500 intracranial injuries, 669 spinal cord injuries, and 1,000 small bowel resections. Over 60 percent of patients underwent more than two procedures while in the hospital. The majority of patients admitted with firearm-related injuries lived in low-income areas and were admitted to large urban teaching hospitals.

See "Hospitalizations for firearm-related injuries in the United States, 1997," by Drs. Coben and Steiner, in the *American Journal of Preventive Medicine* 24(1), pp. 1-8, 2003. Reprints (AHRQ Publication No. 03-R025) are available from AHRQ.** ■

Patients with traumatic brain injury should be screened for alcohol problems that can interfere with neurologic recovery

People with traumatic brain injury (TBI) are frequently intoxicated at the time of injury and often have a history of chronic alcohol problems. Screening TBI patients for pre-injury alcohol problems can identify most of those who will develop alcohol-related problems within a year after the injury, according to a study supported in part by the Agency for Healthcare Research and Quality (HS05304). This supports current recommendations for doctors to screen all people hospitalized for traumatic injury for preinjury alcohol problems.

Even people with drinking problems before TBI tend to decrease their drinking shortly after the injury. However, one-fourth of the survivors in this study reported heavy drinking, significant alcohol problems (for example, family complaints or trouble at work), or both, within 1 year after their injury, a time when alcohol use is thought to interfere with neurologic recovery.

The window of opportunity to prevent relapses seems to be soon after injury, perhaps within the first month, when drinking is at the lowest point, suggest the University of Washington School of Medicine researchers who conducted the study. They examined changes in alcohol use from before TBI to 1 year after TBI among 197 adults hospitalized at a trauma center for a broad range of head injuries that resulted in loss of consciousness, posttraumatic amnesia, or other evidence of brain trauma.

Overall, drinking and alcohol-related problems decreased considerably from preinjury to 1 year after injury. Light to moderate drinking or abstinence increased from 49 percent preinjury to 74 percent 1 year later. However, of those who were heavy or problem drinkers before injury, 44 percent remained heavy or problem drinkers 1 year after TBI. Individuals with a history of alcohol problems were nearly 11 times as likely to have significant alcohol problems after TBI as those without preinjury alcohol problems.

See "The natural history of drinking and alcohol-related problems after traumatic brain injury," by Charles H. Bombardier, Ph.D., Nancy R. Temkin, Ph.D., Joan Machamer, M.A., and Sureyya S. Dikmen, Ph.D., in the February 2003 *Archives of Physical Medicine and Rehabilitation* 84, pp. 185-191. ■

Knowledge of non-Western health practices may help doctors avoid misdiagnoses and other problems in Asian-American patients

Low-income Chinese- and Vietnamese-Americans, who speak very little English, often practice non-Western ways of healing such as coining (rubbing the spine and sternum with oil and a coin to release the "wind" or "cold") or cupping (heating air in a cup with a flame and placing the cup onto the skin to "pull out the cold air") for symptoms of respiratory infections and other minor illnesses. They would like to talk to their American doctors about these practices but often find that their doctors disapprove of the practices and/or know little about them, according to a study supported by the Agency for Healthcare Research and Quality (HS10316).

Without knowledge of coining or cupping, an American doctor viewing a bruise on an Asian American may see it as a sign of a hematological disease or abuse.

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Non-Western health practices

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Also, if a doctor dismisses discussions of Asian medicine, he or she may not be told that a patient is taking an herb to supplement the doctor's treatment, perhaps leading to problems for the patient. To avoid potential medical complications and misdiagnoses, doctors should ask patients directly about their health beliefs and their use of non-Western therapies, suggest the authors of the study. The study was conducted by researchers at Harvard Medical School, the University of Massachusetts, and the University of Rhode Island.

The researchers conducted 12 focus groups (6 for men and 6 for women) with a total of 122 predominantly poor, Chinese and Vietnamese patients who were recent arrivals in the United States and had limited English proficiency. The videotaped discussions revealed three areas of concern about quality of care that differed from those of other minority groups. Participants believed that providers' knowledge of, inquiry about, and nonjudgmental acceptance of traditional Asian medical beliefs and practices were essential to their quality of care. They wanted same-sex professional interpreters instead of children and other family members to communicate with the doctor. Finally, they wanted help navigating the health care system and obtaining support for social services.

See "Linguistic and cultural barriers to care: Perspectives of Chinese and Vietnamese immigrants," by Quyen Ngo-Metzger, M.D., M.P.H., Michael P. Massagli, Ph.D., Brian R. Clarridge, Ph.D., and others, in the January 2003 *Journal of General Internal Medicine* 18, pp. 44-52. ■

Agency News and Notes

AHRQ releases FY 2002 annual report on research programs and financial management

The Agency for Healthcare Research and Quality recently published a report detailing the agency's research activities, recent findings from AHRQ-sponsored projects, and financial performance during fiscal year 2002. Findings from AHRQ's Medical Expenditure Panel Survey and Healthcare Cost and Utilization Project, as well as other sources, open the report with a "snapshot" of health care in America today.

Part 1 of this 150-plus page report presents information on newly initiated and ongoing programs underway in FY 2002, including examples of some recent accomplishments and a description of the research priorities that will shape AHRQ's activities in the months and years ahead. The agency's organizational strucuture, functional components, and national advisory council are described, and examples of key research initiatives, partnerships with other agencies and organizations, and collaborative research underway across the nation are presented.

Part 2 of the report presents an overview of AHRQ's financial performance in FY 2002, including budgetary information, mechanisms of support, and a brief analysis of financial statements. In addition, selected financial statements and related notes are included. They report on AHRQ's financial position, net cost, changes in net position, budgetary resources, and reconciliation of net cost to budgetary resources.

Go to www.ahrq.gov and click on "About AHRQ" and then "Budget & Mission" to access the AHRQ annual report online. Print copies of the *AHRQ Annual Report on Research and Financial Management*, *FY 2002* (AHRQ Publication No. 03-00013) are available from AHRQ.* See the back cover of *Research Activities* for ordering information. ■

AHRQ releases new evidence reports on enhancing health care working conditions to improve patient safety and other topics

Increasing nurse staffing levels in acute-care hospitals and nursing homes and enhancing systems for communicating between hospitals and other health care settings are among the strategies that are likely to lead to improved patient safety, according to a new evidence report from the Agency for Healthcare Research and Quality.

The report, which was developed for AHRQ by the Oregon Health & Science University Evidence-based Practice Center (EPC), details the effects of health care working conditions on patient safety. Based on a review of 115 existing studies conducted in health care and non-health care settings, the EPC researchers concluded that there is enough evidence in the scientific literature to make specific recommendations about these strategies for improving patient safety. They also found that when complex procedures are performed by physicians who do them frequently, preventable complications are less likely. In addition, they found that fewer interruptions and distractions to staff can reduce errors, and systems to improve information exchange and "handing off" care between hospital and nonhospital settings can decrease medication errors.

However, the researchers also found that there is insufficient evidence to draw clear conclusions for several other specific working conditions, including workplace stress, lighting conditions, and various organizational factors.

In 2001, AHRQ began funding a large portfolio of patient safety research projects to address key unanswered questions about how errors occur and provide science-based information on what patients, clinicians, hospital leaders, policymakers, and others can do to make the health care system safer. The results of this research will identify strategies to improve the quality of care in hospitals, doctors' offices, nursing homes, and other health care settings across the nation, including home care.

Prominent among these projects are a number focusing specifically on working conditions that will address some of the issues this new report cites as needing further research. For example, some projects are examining the impact of nurses' stress and fatigue on patient safety and potential interventions that could enhance patient safety. AHRQ has published a fact sheet summarizing the working conditions research projects in AHRQ's portfolio, which is available at the AHRQ Website at www.ahrq.gov.

A summary of the new report, *The Effect of Health Care Working Conditions on Patient Safety,* Evidence Report/Technology Assessment No. 74 (AHRQ Publication No. 03-E024),** and the full report* (AHRQ Publication No. 03-E031) are available from AHRQ. See the back cover of *Research Activities* for ordering information.

Also, the report summary is available on the AHRQ Web site and from the National Guideline Clearinghouse™ at www.guideline.gov (select "NGC Resources").

Other evidence reports and summaries published recently by AHRQ are also available from AHRQ. Topics include the following:

- *Criteria for Determining Disability in Infants and Children: Failure to Thrive*, Evidence Report/Technology Assessment No. 72; summary** (AHRQ Publication No. 03-E019) and full report* (AHRQ Publication No. E020).
- *Criteria for Determining Disability in Infants and Children: Short Stature*, Evidence Report/Technology Assessment No. 73; summary** (AHRQ Publication No. 03-E025) and full report* (AHRQ Publication No. 03-E026).
- *Management of Treatment-Resistant Epilepsy*, Evidence Report/Technology Assessment No. 77; summary** (AHRQ Publication No. 03-E027) and full report (in press).
- *Best-Case Series for the Use of Immuno-Augmentation Therapy and Naltrexone for the Treatment of Cancer*, Evidence Report/Technology Assessment No. 78; summary** (AHRQ Publication No. 03-E029) and full report* (AHRQ Publication No. 03-E030). ■

AHRQ and the National Council on Patient Information and Education publish new consumer guide on reducing medication errors

The Agency for Healthcare Research and Quality and the National Council on Patient Information and Education have released a new resource, *Your Medicine: Play It Safe*, to help consumers use prescription medicines safely. The 12-page brochure, available in English and Spanish, includes a detachable, pocket-sized medicine record form that can be personalized.

Medication errors can occur when a patient receives the wrong medicine, takes an incorrect dose, takes a medicine at the wrong time, or inappropriately combines prescription, nonprescription, and/or other medicines, food, or beverages. The new brochure outlines four steps to help patients use prescription medicines safely:

- Give your health care team important information.
- Get the facts about your medicine.
- Stay with your treatment plan.
- Keep a record of your medicines.

Authors of an AHRQ-supported study published in the March 5, 2003, *Journal of the American Medical Association* found that more than 1.9 million medication errors occurred among Medicare patients from 1999 to 2000. More than one-fourth of the errors were preventable. Most errors associated with preventable adverse drug events occurred at the prescribing and monitoring stages, and problems with patient adherence to prescription instructions contributed to errors in more than 20 percent of cases, according to the study.

Publication of *Your Medicine: Play It Safe* continues a partnership between AHRQ and NCPIE that began nearly a decade ago when NCPIE developed *Prescription Medicines and You: A Consumer Guide*, which was published in six languages. NCPIE is a nonprofit coalition of more than 130 organizations committed to promoting the appropriate use of medicines through improved communication between patients and health care professionals.

The new guide is available in English on the AHRQ Web site at www.ahrq.gov/consumer/safemeds/safemeds.htm and on the NCPIE Web site at http://www.talkaboutrx.org. The Spanish guide is available on the AHRQ Web site at www.ahrq.gov/consumer/safemedsp/safemedsp.htm. Print copies are available from AHRQ.** See the back cover of *Research Activities* for ordering information. For information on purchasing bulk copies of the brochure, contact NCPIE via e-mail to ncpie@ncpie.info or call them at 301-656-8565. ■

Research Briefs

Bates, D.W., Evans, R.S., Murff, H., and others. (2003, March). "Detecting adverse events using information technology." (AHRQ grant HS11046). *Journal of the American Medical Informatics Association* 10(2), pp. 115-128.

Although patient safety is a major concern, most health care organizations rely on spontaneous reporting, which detects only a small minority of adverse events. Chart review can detect such adverse events in research settings but is too expensive for routine use. These authors reviewed methodologies for detecting adverse events using information technology (IT), reports of studies that used these techniques to detect adverse events, and study results for specific types of adverse events. Their review revealed that IT techniques, such as event monitoring and natural language processing, provide an inexpensive way to detect certain types of adverse events in clinical databases. These approaches already work well for some types of adverse events, including adverse drug reactions and hospital-induced infections, and are in routine use in a few hospitals. It also appears likely that these techniques will be adaptable in ways that allow detection of a broad array of adverse events,

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especially as more medical information becomes computerized.

Bernard, D., and Selden, T.M. (2003). "Employer offers, private coverage, and the tax subsidy of health insurance: 1987 and 1996." *International Journal of Health Care Finance and Economics* 2, pp. 297-318.

Economists have long been interested in the effects of tax-based subsidies on private health insurance coverage. The authors examined this relationship using pooled data from the 1987 National Medical Expenditure Survey (NMES) and the 1996 Medical Expenditure Panel Survey (MEPS). Their main tax price elasticity estimates for employer offers and for private coverage are near the mid-point of the existing literature. However, these estimates may mask substantial differences in tax-price responsiveness across subsets of workers. Their more disaggregated analysis revealed tax price responsiveness to be significantly above average for low-income workers, workers with low health risks, and workers in small firms—precisely those groups whose continued participation in employment-related risk pooling is of greatest policy conern. Reprints (AHRQ Publication No. 03-R031) are available from AHRQ.*

Eisenman, D.P., Cunningham, W.E., Zierler, S., and others. (2003, February). "Effect of violence on utilization of services and access to care in persons with HIV." (AHRQ grant HS08578). *Journal of General Internal Medicine* 18, pp. 125-127.

Based on a national sample of adults with HIV or AIDS being seen in primary care, nearly 21 percent of women, 12 percent of homosexual/bisexual men, and 8 percent of remaining men (presumably heterosexual) have been physically abused within an important relationship since HIV diagnosis. These researchers analyzed data from the HIV Cost and Services Utilization Study to determine the association of violence, assessed at baseline, with use of and access to health care at followup among gay/bisexual male, heterosexual female, and heterosexual male HIV/AIDS patients. They found that male gay/bisexual violence victims had increased odds of reporting emergency department visits, going without needed medical care because of expense, and having poor ability to access medical specialists. The researchers call for more research to further clarify the association of violence with health care among gay/bisexual men with HIV/AIDS.

Gill, C.J., and Mularski, R.A. (2003, January). "*Haemophilus aphrophilus* purulent pericarditis and tamponade." (AHRQ National Research Service Award training grant T32 HS00060). *Infections in Medicine* 20, pp. 31-33.

These authors describe a clinical case of a healthy man with chest pain and prolonged fever, which highlights the difficulties of diagnosing purulent pericarditis when it is caused by a relatively avirulent pathogen. The usual clinical course of purulent pericarditis is acute and severe. This case of purulent pericarditis was caused by an unusual pathogen, *Haemophilus aphrophilus,* an organism more commonly seen in the context of slowly progressive bacterial endocarditis. In this case, the man's blood cultures demonstrated *H. aphrophilus*, but echocardiographic studies revealed only small amounts of pericardial fluid and no valvular vegetations. The researchers report a sequence of events that eventually led to the diagnosis of purulent pericarditis and the therapeutic steps taken to manage the problem. They note that a contrast-enhanced computerized tomographic scan could have suggested the diagnosis earlier than echocardiography. This case study reinforces the contention that successful therapy depends on early recognition of this disease and prompt surgical drainage, with antibiotic therapy playing a secondary role.

Grabowski, D.C. (2002). "A multi-part model approach to examining Medicaid payment methods and nursing home quality." (AHRQ National Research Service Award training grant T32 HS00084). *Health Services & Outcomes Research Methodology* 3, pp. 21-39.

The issues of escalating costs and problems with quality have dominated nursing home policy discussions over the last three decades. The incentive to provide nursing home quality depends, in part, on whether the State Medicaid reimbursement system is prospective or retrospective in nature. This author examined the effects of State-level Medicaid reimbursement methods on the provision of quality in the context of bed constraint regulations that may influence market tightness. He constructed a three-part estimation strategy around the idea that a change in the Medicaid reimbursement method may affect both a facility's payer mix and the provision of quality. Across a range of quality measures, this multi-part

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model did not show nursing home quality to be significantly higher under a retrospective reimbursement system than under a prospective-based system of reimbursement. This finding held regardless of whether the analysis was isolated to those markets with the tightest supply of beds or those homes caring for predominantly Medicaid residents.

Groessl, E.J., Kaplan, R.M., and Cronan, T.A. (2003, February). "Quality of well-being in older people with osteoarthritis." (AHRQ grant HS09170). *Arthritis & Rheumatism* 49(1), pp. 23-28.

The objective of this study was to examine the sensitivity and validity of the Quality of Well-Being Scale (QWB) as a measure of health-related quality of life (HRQOL) in older people with osteoarthritis (OA). OA can involve degenerative changes, which sometimes lead to stiffness, swelling, and deformity that negatively affect functioning and quality of life. The study involved 363 elderly people with OA in a Southern California health maintenance organization. The majority of participants were white (92.3 percent) and retired (75.2 percent), and more than 64 percent were women. The researchers administered the QWB, the Arthritis Impact Measurement Scale (AIMS), a sensitive measure of arthritis symptoms, and other health measures, and obtained data on self-reported health status and health care use at baseline and 1 year later. The QWB scale asks questions about 27 different symptom complexes over the 6 previous days and assesses functioning during that time in three areas: mobility, physical activity, and social activity. Results showed that the QWB is comprehensive and incorporates many aspects of symptoms and functioning that affect quality of life in people with OA. The QWB score was also related to health care costs, to a depression-specific measure, and to self-rated health. These findings support the validity of the QWB for applications in studies involving patients with OA.

Horn, S.D., Torres, A., Wilson, D., and others. (2002, October). "Development of a pediatric age- and disease-specific severity measure." (AHRQ Contract 290-95-0042). *Journal of Pediatrics* 141, pp. 496-503.

The current severity of illness scoring systems available in pediatrics are based on statistical regression models constructed to explain variation in a single outcome, in-hospital death. However, death is uncommon in hospitalized children. Thus, mortality prediction may have limited utility. The researchers adapted the adult Comprehensive Severity Index (CSI) for hospitalized children and evaluated the ability of the CSI to predict common pediatric outcomes. The CSI is a disease-specific severity system that provides a consistent method to define grades of severity for patient historical factors, physiologic parameters, and laboratory results. They evaluated CSI's predictive power by using retrospective data collected from 16,496 randomly selected children admitted to 10 hospitals in 1995 and 1996. Admission CSI score predicted mortality well and discriminated well within 9 case-mix groups with 10 or more deaths. Maximum CSI score explained the variation in length of stay and cost within 32 case-mix groups. CSI had better predictability than the Pediatric Risk of Mortality, a pediatric severity scoring system.

Huie, S.A., Hummer, R.A., and Rogers. R.G. (2002). "Individual and contextual risks of death among race and ethnic groups in the United States." *Journal of Health and Social Behavior* 43, pp. 359-381.

The authors used the 1986-1997 National Health Interview Survey (NHIS)–National Death Index linked data file to examine the effects of individual and contextual factors on black-white and multiple Hispanic subgroup differences in adult mortality. They used a new, innovative area—the very small area—as the contextual unit of analysis. They found that excess mortality risks for all racial and ethnic groups considered were associated with not only individual characteristics, but also neighborhood characteristics. In addition, the percentage of foreign-born individuals in a neighborhood was found to be protective of Hispanic subgroup mortality for Puerto Rican, Mexican American, and other Hispanic adults in the 45-74 age category. The authors cite the need for additional research to examine more thoroughly the pathways through which neighborhood factors affect mortality among many Hispanic subgroups and the role of nativity as a protective factor for older adult Hispanic mortality. Reprints (AHRQ Publication No. 03-R022) are available from AHRQ.*

Neumann, P.J., and Levine, B. (2002). "Do HEDIS measures reflect cost-effective practices?" (AHRQ grant HS10709 and National Research Service Award training grant T32 HS00063). *American Journal of Preventive Medicine* 23(4), pp. 276-289.

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performance measures, used widely to assess the quality of care in health plans in the United States, generally reflect cost-effective practices. However, in a number of cases, practices may not be cost effective for certain subgroups, according to this study. The researchers examined the cost-effectiveness evidence for each of the 15 "effectiveness of care" measures in HEDIS 2000. They searched two databases of economic evaluations and two published lists of cost-effectiveness ratios in health and medicine through 1998 for cost-effectiveness ratios of similar interventions and target populations. They also searched for important interventions with evidence of cost-effectiveness—that is, less than $20,000 per life year (LY) or quality-adjusted life year QALY), which are not included in HEDIS. Evidence was available for 11 of the 15 HEDIS measures. Cost-effectiveness ranged from cost savings to $660,000/LY gained. Numerous non-HEDIS interventions also had some evidence of cost effectiveness, particularly interventions to promote healthy behaviors.

Ray, W.A., Thapa, P.B., and Gideon, P. (2002). "Misclassification of current benzodiazepine exposure by use of a single baseline measurement and its effects upon studies of injuries." (AHRQ grant HS10384). ***Pharmacoepidemiology and Drug Safety*** **11, pp. 663-669.**

To properly measure exposure to benzodiazepines and other medications taken intermittently requires more than a single baseline measurement. Exposure needs to be tracked on a day-by-day basis, according to this study. Previous studies have defined benzodiazepine exposure status from a single baseline measurement, and these have not consistently reported increased risk of unintentional injuries due to impaired psychomotor function. These authors used the medication records of 2,510 elderly Tennessee nursing home residents identified in a prior study of antidepressants and falls to determine both baseline use and current use of benzodiazepines. They identified falls from nursing home incident reports and medical records. The 666 baseline benzodiazepine users had current use on 45 percent of followup person-days; baseline non-users had current use for 4 percent of days. Misclassification of drug exposure increased with length of followup and with quintile of fall risk. ■

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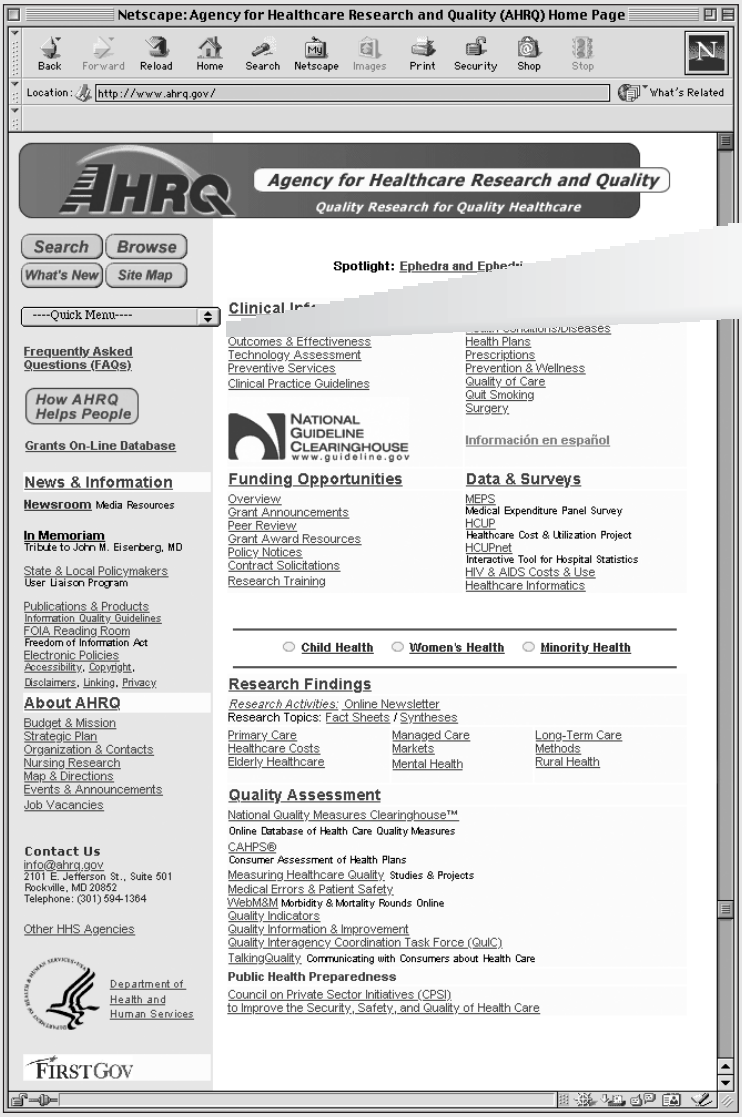

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