



Research Activities



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Agency for Healthcare Research and Quality

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Significant increases in drug copayments may reduce patients' use of needed medications

Increasing patients' copayments for prescription medications led to decreases in their use of eight classes of therapeutic drugs, according to a new study cofunded by the Agency for Healthcare Research and Quality (HS13447). Researchers linked pharmacy claims data representing nearly 530,000 people aged 18 to 64. All of the subjects had employer-sponsored health insurance, with health benefit designs from 52 private health plans and 30 employers.

The study included health insurance plans of all types that had one-tier, two-tier, three-tier, and coinsurance drug benefit plans. The simulated copayment increases were relevant for all plans but were calibrated to two-tier plans. The analysis followed study subjects for nearly 4 years.

Based on this analysis, the researchers estimated that doubling copayments in a typical two-tier drug plan resulted in an approximately 45 percent reduction in the use of antiinflammatory drugs and antihistamines, a drop of

approximately 35 percent in the use of cholesterol-lowering medications and drugs to treat ulcers and asthma, and a decrease of about 25 percent in the use of medicines for high blood pressure, depression, and diabetes.

The rate of decrease depended on whether patients were taking the drug on an ongoing or intermittent basis. Patients with chronic illnesses were less likely to cut back or stop taking the medications needed to treat their conditions when drug copayments increased. However, they seemed to reduce their use of other medications. For example, the study found that patients with depression cut their use of most drugs by 25 percent but reduced their use of antidepressants by only 8 percent when their copayments doubled. Similarly, patients with high blood pressure cut their use of antihypertensives by only 10 percent but reduced their use of all other drugs by 27 percent.

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Drug copayments

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Researchers also found preliminary evidence that patient health suffers as individuals with some chronic illnesses cut back on their medicines. For example, as the use of prescription drugs declined, visits to hospital emergency rooms increased 17 percent, and hospital stays rose by

10 percent among patients with diabetes, asthma, and gastric acid diseases.

The research team was led by Dana P. Goldman, Ph.D., and Geoffrey F. Joyce, Ph.D., and their colleagues at the RAND Corporation in Santa Monica, CA, as well as by coauthors from Merck and California Healthcare

Foundation. Both organizations also co-funded the study.

For more information, see “Pharmacy benefits and the use of drugs by the chronically ill,” by Drs. Goldman and Joyce, Joe J. Escarce, M.D., Ph.D., and others, in the May 19, 2004, *Journal of the American Medical Association* 291(19), pp. 2344-2350. ■

Pharmaceutical Research

Less than half of older women who have suffered fractures due to osteoporosis are treated properly to prevent further fractures

More than half of all women will suffer a fracture due to osteoporosis (loss of bone mass) in their lifetime. In a recent study supported by the Agency for Healthcare Research and Quality (HS13013), only 46 percent of older women with osteoporosis-related fractures received treatment in the 6 months following a fracture to prevent further fractures as called for by clinical guidelines.

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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

Guidelines call for bone mineral density testing to detect bone loss and, when needed, medication to treat osteoporosis.

Practice lagged behind recommended guidelines even though physicians had access to external guidelines and the HMO's internal Web-based osteoporosis guidelines, notes Adrienne C. Feldstein, M.D., M.S. To characterize the gap between osteoporosis guidelines and practice, Dr. Feldstein and her colleagues at the Kaiser Permanente Center for Health Research studied administrative databases and medical records of 3,812 women average age of 71. The women were enrolled in an HMO and had been diagnosed with a new fracture from 1998 to 2001.

Fewer than 12 percent of the women were diagnosed with osteoporosis prior to the fracture, even though nearly 11 percent had conditions (for example, hyperthyroidism or chronic renal failure) or were taking medications (for example, long-term use of steroids or anticonvulsants) that would put them at risk for developing osteoporosis. In addition, more than one-third (39 percent) of these women were already at increased risk for falling due to medical problems (for example, stroke and dementia) or medication (such as long-acting benzodiazepines or tricyclic antidepressants). Finally, physician adherence to osteoporosis guidelines did not significantly improve from 1998 to 2001.

See “Older women with fractures: Patients falling through the cracks of guideline-recommended osteoporosis screening and treatment,” by Dr. Feldstein, Gregory A. Nichols, Ph.D., Patricia J. Elmer,

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Osteoporosis

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Ph.D., M.S., and others, in the December 2003 *Journal of Bone and Joint Surgery* 85-A(12), pp. 2294-2302.

Editor's Note: Another AHRQ-supported study on a related topic shows that women who suffer from a major traumatic injury are more likely than men to

have poor quality of life following the trauma. For more details, see Holbrook, T., and Hoyt, D.B. (2004, February). "The impact of major trauma: Quality-of-life outcomes are worse in women than in men, independent of mechanism and injury severity." (AHRQ grant HS07611). *Journal of Trauma Injury, Infection, and Critical Care* 56(2), pp. 284-290. ■

Better monitoring of the cardiac drug amiodarone among outpatients could improve its safety

Amiodarone is typically used to correct irregular heart beats to normal rhythm in cardiac patients. Despite its effectiveness, the medication is known to have serious potential side effects ranging from liver toxicity to lung and heart toxicity. Thus, doctors must be vigilant in monitoring patients taking amiodarone with liver enzyme measurements, thyroid and pulmonary function tests, electrocardiograms, and other tests. Since development of toxicity appears to be dependent on the dose and length of time the patient takes amiodarone, better outpatient monitoring could improve the drug's safety, suggests a study supported in part by the Agency for Healthcare Research and Quality (HS11169 and HS11534).

Researchers from Harvard University, Brigham and Women's Hospital, and the University of Toronto found that the majority of patients visited their provider regularly but received only minimum testing, perhaps due to the complexity of monitoring recommendations. After evaluating criteria for monitoring outpatient amiodarone therapy in a review of research studies from 1966 through 2000, the researchers developed a

four-stage model of medication monitoring. They retrospectively reviewed the charts of 99 outpatients at one institution who received amiodarone therapy for 1 year to assess monitoring practices.

About 70 percent of the recommended monitoring criteria were satisfied for all patients, but only 9 percent of patients received all of the recommended monitoring. Monitoring practices varied at all four stages of the monitoring model. Overall, 52 percent of patients received minimum baseline evaluations; 22 percent underwent ongoing surveillance with clinical exams and laboratory tests; 75 percent had appropriate responses to abnormal surveillance results, such as altered dosage; and 71 percent had timely followup visits. Also, 8 percent of patients had nine amiodarone-related adverse drug events, of which three were judged to be preventable.

See "Monitoring amiodarone's toxicities: Recommendations, evidence, and clinical practice," by Henry Thomas Stelfox, M.D., Sofia B. Ahmed, M.D., Julie Fiskio, and David W. Bates, M.D., M.S.C., in *Clinical Pharmacology & Therapeutics* 75, pp. 110-122, 2004. ■

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More frequent visits to the doctor are associated with increased safety monitoring for toxicity among chronic NSAID users

Gastrointestinal (GI) and kidney toxicity due to use of nonsteroidal antiinflammatory drugs (NSAIDs) has been widely reported. Most susceptible to toxicity are the elderly, patients with a history of GI bleeding or hypertension, and individuals who are taking more than one NSAID. Although published guidelines recommend periodic complete blood cell (CBC) count and creatinine laboratory monitoring (high levels of urinary creatinine indicate kidney problems) of patients taking NSAIDs for an extended time, many physicians don't follow the guidelines.

According to a recent study by researchers at the University of Alabama, only two-thirds of chronic NSAID users in a regional managed care organization examined in the study received CBC and creatinine monitoring. Only one-third received GI cytoprotective agents, and about one-fourth had at least one prescribed period when they were simultaneously taking another NSAID (NSAID overlap). The study was supported in part by the Agency for Healthcare Research and Quality (HS10389) through the Centers for Education and Research on Therapeutics (CERTs) program.

Patients on NSAIDs who saw their physicians more frequently, had used NSAIDs longer (associated with increased risk of kidney disease), or had hypertension or a history of GI bleeding were more likely to be monitored. However, visit frequency, more than provider or patient factors, prominently influenced NSAID safety practices. Physicians should see chronic NSAID users at least intermittently as a means to trigger discussion and possible testing for potential drug toxicity, according to researchers from the University of Alabama CERT. They linked data from medical charts, pharmacy claims, and administrative files on 373 frequent NSAID users (three or more consecutive NSAID prescriptions and 1 month or more of continuous NSAID use) and examined CBC testing, use of GI cytoprotective agents, and lack of NSAID overlap.

See "Nonsteroidal antiinflammatory drug toxicity monitoring and safety practices," by Fausto G. Patino, M.D., Dr.P.H., Jason Olivieri, M.P.H., Jeroan J. Allison, M.D., M.Sc., and others, in the *Journal of Rheumatology* 30(12), pp. 2680-2688, 2003. ■

Outcomes/Effectiveness Research

Early surgery reduces hip fracture pain

Hip fracture patients should be operated on within 24 hours of hospital admission because early surgery reduces pain, shortens hospital stays, and may limit the risk of major complications, such as pneumonia and arrhythmias, according to the authors of a new study supported by the Agency for Healthcare Research and Quality (HS09459 and HS09973). The benefits of early hip fracture surgery have long been debated within the medical community, but no randomized controlled trials have been conducted. Almost all of the research that has been conducted to date has examined early surgery's impact on death rates, according to the study authors.

Researchers led by Albert L. Siu, M.D., of Mount Sinai School of Medicine, examined roughly 1,200 patients in New York City hospitals who underwent hip fracture surgery. Adjusted findings show that early surgery had no impact on survival or functional ability by 6 months after discharge. However, the majority of patients reported severe pain on admission. Patients with early surgery had lower pain scores than patients who had later surgery, a difference that translated into between 6 and 7 fewer hours of severe pain, on average, during the first 5 days of hospitalization. In addition, the early surgery patients' hospital stays were on average nearly 2 days shorter than those of the later surgery patients (7.07 vs. 9.43). All of the patients were in

stable medical condition prior to surgery.

Patients often suffer severe pain before surgery is performed to repair the break, and only about one-quarter of patients make a full recovery. Between 14 percent and 36 percent of hip fracture patients die within 12 months from complications related to the fracture and recovery period.

For more information, see "The association of timing of surgery for hip fracture and patient outcomes," by Gretchen M. Orosz, M.D., Jay Magaziner, Ph.D., Edward L. Hannan, and others, in the April 14, 2004 *Journal of the American Medical Association* 291(14), pp. 1738-1743. ■

Study finds substantial mortality after a long-term followup period among patients with community-acquired pneumonia

The impact of pneumonia on death usually occurs in the first year after the acute illness. However, the prognostic implication of an episode of community-acquired pneumonia (CAP) continues for at least 5 years after the initial illness, according to a study supported in part by the Agency for Healthcare Research and Quality (National Research Service Award fellowship F32 HS00135). About one-third of CAP patients who survived 90 days after hospitalization for CAP died within 6 years. Patient characteristics—especially age, coexisting medical conditions, and nursing home residence—were the strongest independent predictors of long-term mortality.

After adjustment for these factors, abnormal acute physiologic or laboratory findings, which generally predict short-term CAP death, did not predict long-term death. Long-term mortality appears to be associated with intrinsic characteristics of the patient, which for the most part are not modifiable by medical care. Many chronic illnesses that predispose patients to development of CAP—including chronic

cardiopulmonary disease, cancer, and neurologic disease—also contribute to its long-term mortality, explains lead author Eric M. Mortensen, M.D., M.Sc., of the University of Pittsburgh. He advises that clinicians keep these results in mind, when discussing long-term prognosis with CAP patients and their families.

Dr. Mortensen and his colleagues compared the mortality of patients with pneumonia enrolled at four sites who survived at least 90 days after arriving at the hospital with mortality among age-matched control subjects (for whom data were derived from U.S. life tables). Of the 1,555 patients studied, 9 percent died within 3 months of hospitalization, and 30 percent died during the nearly 6-year study period.

See “Assessment of mortality after long-term follow-up of patients with community-acquired pneumonia,” by Dr. Mortensen, Wishwa N. Kapoor, M.D., M.P.H., Chung-Chou Chang, Ph.D., and Michael J. Fine, M.D., M.S.C., in the December 15, 2003 *Clinical Infectious Diseases* 37, pp. 1617-1624. ■

Researchers find no adverse perinatal outcomes associated with respiratory hospitalizations of pregnant women during flu season

Since 1998, the American College of Obstetricians and Gynecologists and the Centers for Disease Control and Prevention have recommended influenza vaccination for all pregnant women who will be in the second or third trimester of pregnancy during flu season, as well as for all pregnant women with certain medical conditions such as asthma. This is based on

published reports that identify women in the later stages of pregnancy as being at increased risk for serious flu-related illness. Experts disagree about the effects of maternal influenza on unborn babies.

The goal of a recent study led by researchers at Vanderbilt University was to examine the impact of respiratory hospitalization during pregnancy on serious maternal and

perinatal morbidity. The study was funded in part by the Agency for Healthcare Research and Quality through the Centers for Education and Research on Therapeutics (CERTs) program (HS10384).

The researchers performed a matched cohort study involving 294 pregnant women enrolled in the Tennessee Medicaid program during the eight study seasons

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Influenza vaccination

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(1985-1993) who had an acute cardiopulmonary hospitalization during flu season and 590 women without such hospitalizations. The two groups of women were matched by age, race, trimester of pregnancy, and presence or absence of high-risk conditions.

During eight consecutive flu seasons, 297 pregnant women in the study population had a respiratory disease hospitalization. Hospitalized women were older and had a higher prevalence of asthma (50 percent)

and other high-risk conditions than the source population.

Overall, perinatal outcomes did not differ between women hospitalized for respiratory illness and their matched controls. Women hospitalized with a diagnosis of pneumonia and/or influenza (92 women) had nearly twice the rate of low and very low birthweight infants compared with women in the control group (15 percent vs. 9 percent), but this difference was not statistically significant. Although there was no significant association between respiratory hospitalization

during flu season and adverse perinatal outcomes, the researchers conclude that pregnant women should be encouraged to receive influenza vaccination.

See “Maternal morbidity and perinatal outcomes among pregnant women with respiratory hospitalizations during influenza season,” by Tina V. Hartert, M.D., M.P.H., Kathleen M. Neuzil, M.D., M.P.H., Ayumi K. Shintani, Ph.D., M.P.H., and others, in the *American Journal of Obstetrics & Gynecology* 189, pp. 1705-1712. ■

Children's Health

Jaundice and feeding problems are not associated with short hospital stay, as long as newborns are evaluated at 3 or 4 days of life

Since 1995, the U.S. Congress and more than 40 States have passed legislation aimed at discouraging early discharge of newborns, which was thought to negatively affect their health. However, a new study supported in part by the Agency for Healthcare Research and Quality (HS10060) suggests that newborn jaundice (hyperbilirubinemia) and infant feeding problems are not associated with short hospital stay, as long as infants are evaluated when they are 3 or 4 days old when these problems typically surface.

Stephen B. Soumerai, Sc.D., of Harvard Medical School, and his colleagues retrospectively analyzed the medical records of a large Massachusetts health maintenance organization (HMO) for infants born between October 1990 and March 1998 among 20,366 mother-infant pairs with uncomplicated vaginal deliveries. They compared several infant outcomes after the 1994 implementation of an HMO protocol—calling for a 1-night stay following uncomplicated

vaginal delivery plus a nurse home visit within 48 hours of discharge—with the same outcomes after passage in 1996 of Massachusetts' 48-hour minimum stay mandate.

Jaundice diagnoses were flat at 8 percent of newborns at baseline and rose to a constant 11 percent throughout the HMO protocol and post-mandate periods. Diagnoses of feeding problems more than doubled at the time of HMO protocol implementation, yet they remained elevated after the mandate. These increases in jaundice and feeding problems seemed to be the result of more frequent evaluation of newborns during the critical day-3 to day-4 period.

Rates of outpatient bilirubin testing, severity of test results, phototherapy use for jaundice, diagnosis of feeding problems, and emergency department visits all experienced increases that began with the HMO program implementation and lasted well past the legislative mandate that followed. These changes

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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.

Early discharge of newborns

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closely aligned with rates of followup evaluation on day 3 or 4. Therefore, heightened vigilance rather than decreased length of stay is the most likely explanation for the change in outcomes.

See “Length-of-stay policies and ascertainment of postdischarge problems in newborns,” by Jeanne M. Madden, Ph.D., Dr. Soumerai, Tracy A. Lieu, M.D.,

M.P.H., and others, in the January 2004 *Pediatrics* 113(1), pp. 42-49.

Editor’s Note: Another AHRQ-supported study on a related topic shows how a single change around early discharge can disrupt existing patterns of care for newborn jaundice in unforeseen ways. For more details, see Palmer, R.H., Clanton, M. Ezhuthachan, S., and others. (2003, December). “Applying the ‘10 simple rules’ of the Institute of Medicine to management of hyperbilirubinemia in newborns.” (AHRQ grant HS09782). *Pediatrics* 112(6), pp. 1388-1393. ■

Even with advances in surgery, deaths among children with single ventricle congenital heart disease remain high

Children with two types of congenital heart disease, double-inlet left ventricle (DILV) and tricuspid atresia with transposed great arteries (TA-TGA), often have an associated aortic arch anomaly and may develop pulmonary vascular disease due to excessive pulmonary blood flow. Even with improved surgery, the death rate continues to be high among patients with a single-ventricle heart, according to a study supported in part by the Agency for Healthcare Research and Quality (HS13217).

Ruey-Kang Chang, M.D., M.P.H., of the University of California, Los Angeles, and colleagues reviewed the outcomes of 140 pediatric patients with DILV or TA-TGA who underwent surgery

at one hospital between 1983 and 2002. They examined multiple factors to assess the risk of death or the need for orthotopic heart transplantation (OHT) among 105 patients with DILV and 35 patients with TA-TGA.

The overall mortality rate, including patients who would have died without OHT, was 29 percent. Patients with DILV had a lower mortality rate than patients with TA-TGA (23 vs. 49 percent, respectively). The predicted survival rates at 5, 15, and 25 years were 89 percent, 80 percent, and 63 percent, respectively, for patients with DILV, and 68 percent, 63 percent, and 26 percent, respectively, for patients with TA-TGA. Even with improvements in surgery, only 52 percent of patients with a single left

ventricle were expected to survive beyond 25 years.

The presence of arrhythmia and the need for a pacemaker were associated with increased mortality, whereas pulmonary atresia or stenosis and pulmonary artery banding were associated with decreased mortality. Sex, era of birth, aortic arch anomaly, and systemic outflow obstruction (as long as it was recognized and relieved early) were not risk factors for death.

See “Outcome of patients with double-inlet left ventricle or tricuspid atresia with transposed great arteries,” by Yueh-Tze Lan, M.D., Dr. Chang, and Hillel Laks, M.D., in the January 7, 2004 *Journal of the American College of Cardiology* 43(1), pp. 113-119. ■

Studies examine hospital mortality rates and long-term outcomes of very low birthweight babies

Babies who are extremely low birthweight (ELBW, 1.1 to 2.2 pounds) and very low birthweight (VLBW, less than 3.3 pounds) are at greater risk of dying or developing neurodevelopmental problems than babies who weigh more at birth. Two recent studies supported by the Agency for Healthcare Research and Quality

examined hospital mortality and school difficulties among VLBW children.

The first study suggests that the number of VLBW babies saved could be increased if they were referred to hospitals based on the hospitals’ past neonatal intensive care unit (NICU) mortality rates rather than the volume of VLBW

babies they treat. The second study finds that school-aged ELBW children are burdened by childhood disability, school-related difficulties, and increased use of special educational resources. Both studies are discussed here.

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Low birthweight babies

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Rogowski, J.A., Horbar, J.D., Staiger, D.O., and others. (2004, January). "Indirect vs. direct hospital quality indicators for very low-birth-weight infants." (AHRQ grants HS10328, HS13371). *Journal of the American Medical Association* 291(2), pp. 202-209.

The type of medical care VLBW infants receive and their outcomes vary markedly among different NICUs. Some groups recommend that these at-risk babies be referred to high-volume NICUs that treat an average of 15 babies daily. However, this study suggests that many more infant lives could be saved if referrals were based on a hospital's past NICU mortality rates for VLBW infants rather than the volume of VLBW babies treated.

The investigators examined in-hospital deaths of 94,110 VLBW infants born from 1995-2000 in 333 hospitals with NICUs. The hospitals were included in the Vermont Oxford Network (VON). The VON data include detailed clinical and treatment information on all VLBW infants cared for by network hospitals and represent about 40 percent of the NICUs and 50 percent of the VLBW infants born in the United States.

In hospitals with less than 50 annual admissions of VLBW infants, an additional 10 admissions were associated with an 11 percent reduction in mortality. However,

annual NICU volume, NICU level, and other hospital characteristics explained at most 16 percent of the variation in infant mortality across sampled hospitals.

In contrast, hospitals in the lowest mortality quintile between 1995 and 1998 were found to have 36 percent lower mortality rates in 1999-2000, and hospitals in the highest mortality quintile between 1995 and 1998 had 37 percent higher mortality rates in 1999-2000. Based on these estimates, a referral strategy that moved all infants out of the lowest-ranked 20 percent and into the middle 60 percent of VON hospitals in 1999-2000 would result in 11 lives saved annually based on NICU volume history and 115 lives saved annually based on NICU past mortality rates.

Saigal, S., den Ouden, L., Wolke, D., and others. (2003, October). "School-age outcomes in children who were extremely low birth weight from four international population-based cohorts." (AHRQ grant HS08385). *Pediatrics* 112(4), pp. 943-950.

Once ELBW children reach school age, they experience serious school difficulties, whether they live in the United States, Canada, Bavaria, or Holland. The researchers followed 436 ELBW survivors from the four countries longitudinally from birth. They collected psychometric data that included at least one measure of cognitive status and one measure of

achievement from surveys administered to the children between 8 and 11 years of age. The researchers compared these data with measures based on reference norms within each country and obtained information on special education assistance and grade repetition from the parents.

Overall, the prevalence of total neurosensory impairments (cerebral palsy, deafness and blindness, and mental retardation) was similar for New Jersey, Ontario, and Bavaria (22, 27, and 25 percent, respectively) and lowest for Holland (11 percent). More than half of all ELBW groups required special educational assistance and/or repeated a grade. The proportion of children who performed within the normal range were as follows: IQ, between 44 and 62 percent; reading, between 46 and 81 percent; arithmetic, between 31 and 76 percent; and spelling, between 39 and 65 percent.

Thus, the impact on society, on families, and on the long-term future of ELBW children is similar in Western countries providing neonatal intensive care to ELBW infants. A separate study by these investigators found behavioral difficulties to be another major concern at school age in ELBW children in all four countries. To determine whether and to what extent these findings are applicable to current survivors of neonatal intensive care requires further investigation. ■

Continued staff education and improved processes in physicians' offices can enhance preventive care for children

A practice-based, team approach involving education and coaching of medical office staff in quality improvement expertise—such as chart screening—can improve the delivery of preventive care for children, according to the first randomized controlled trial on the topic. The research was supported in part by the Agency for Healthcare Research and Quality (HS08509).

Peter Margolis, M.D., Ph.D., of the University of North Carolina, Chapel Hill, and his colleagues randomly assigned a sample of 44 practices to intervention and control groups. They compared change over time in the proportion of children aged 24-30 months who received age-appropriate care for

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Preventive care for children

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four preventive services: immunizations and screening for tuberculosis, anemia, and lead.

The proportion of children per practice with age-appropriate delivery of all four preventive services changed after a 1-year period, from 7 to 34 percent in intervention practices and from 9 to 10 percent in control practices. After adjustment for baseline differences in the groups, the change in prevalence of all four services between the beginning and end of the study was 4.6-fold greater in intervention practices than in control practices.

Thirty months after baseline, the proportion of children who were up to date with preventive services

was higher in intervention than in control practices. Screening rates were significantly higher in intervention practices than in control practices for tuberculosis (54 vs. 32 percent), lead (68 vs. 30 percent), and anemia (79 vs. 71 percent). Continuing education combined with process improvement methods to implement office systems is an effective approach for increasing rates of delivery of preventive care to children, conclude the researchers.

See "Practice based education to improve delivery systems for prevention in primary care: Randomised trial," by Dr. Margolis, Carole M. Lannon, M.D., M.P.H., Jayne M. Stuart, M.P.H., and others, in the February 14, 2004 *British Medical Journal* 328, pp. 388-394. ■

Researchers examine the diagnosis, testing, and treatment of bronchiolitis in infants

Up to 3 percent of all children are hospitalized with bronchiolitis (inflammation of the bronchioles, small airways in the lungs) in their first year of life. Despite the high prevalence of bronchiolitis, which is caused primarily by the respiratory syncytial virus (RSV), little consensus exists on the need for laboratory testing to diagnose the illness or optimal management of the disease. These issues are examined in two studies by the Research Triangle Institute/University of North Carolina Evidence-based Practice Center, which is supported by the Agency for Healthcare Research and Quality (contract 290-97-0011) and directed by Kathleen Lohr, Ph.D. The studies are summarized here.

Bordley, W.C., Viswanathan, M., King, V.J., and others. (2004, February). "Diagnosis and testing in bronchiolitis: A systematic review." *Archives of Pediatric and Adolescent Medicine* 158, pp. 119-126.

Complete blood cell (CBC) counts and chest x-rays can be useful in children with unusual

clinical courses or severe bronchiolitis. However, in most infants with bronchiolitis, the limited evidence available does not support routine use of testing for RSV, chest x-rays, or CBC counts, since they have not been shown to alter clinical outcome, concludes this study. The investigators conducted an extensive review of the literature on diagnostic and supportive testing in the management of bronchiolitis. Of the 797 abstracts identified, 82 trials met inclusion criteria for analysis.

Evidence from the studies indicates that the use of testing is typically justified to rule out other diagnoses (for example, bacterial pneumonia), for first-time wheezing, and for deciding on treatment. However the studies do not define clear indications for such testing or the impact of testing on relevant patient outcomes. For example, numerous studies found that rapid RSV tests had acceptable sensitivity and specificity, but no data showed that RSV testing affected clinical outcomes in typical cases of the disease.

In the 17 studies that presented chest-x-ray data, x-ray abnormalities in children with suspected bronchiolitis ranged from 20 to 96 percent. However, insufficient data exist to show that chest x-ray films reliably distinguish between viral and bacterial respiratory disease or predict severity of disease. In a similar vein, 10 studies included CBC counts, but most did not present specific results. Given the high prevalence of bronchiolitis, the investigators suggest prospective trials of diagnostic and supportive testing.

King, V.J., Viswanathan, M., Bordley, C., and others. (2004, February). "Pharmacologic treatment of bronchiolitis in infants and children: A systematic review." *Archives of Pediatric and Adolescent Medicine* 158, pp. 127-137.

Bronchodilators and corticosteroids are commonly used to treat bronchiolitis in infants and children, but little consensus exists about optimal management strategies. This review of research

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Bronchiolitis in infants

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on the topic conducted since 1980 included 44 studies of the most common bronchiolitis treatments. The studies presented no substantial evidence to support a routine role for epinephrine, beta-agonist bronchodilators,

corticosteroids, or ribavirin in treating children with bronchiolitis.

However, the randomized controlled trials that met inclusion criteria were generally underpowered to detect significant outcome differences between study groups. Also, few studies collected data on outcomes that are of great importance to parents and

clinicians, such as the need for and duration of hospitalization. The researchers call for a sufficiently large, well-designed pragmatic trial of the commonly used interventions for bronchiolitis to determine the most effective treatment strategies for managing the condition. ■

National survey reveals how primary care doctors identify and manage young children with developmental delays

More than half of the estimated 17 percent of children in the United States with developmental disabilities are not diagnosed before they enter school. Yet most primary care physicians are committed to the early diagnosis of developmental delays in young children, according to the first national survey of a random sample of 800 pediatricians and 800 family physicians (response rate of 49 percent). This work was supported in part by the Agency for Healthcare Research and Quality (AHRQ grant K08 HS00002).

Most of the physicians surveyed said they reviewed developmental milestones and prompted parents to voice developmental concerns during preventive care visits. About half of them used a formal developmental screening instrument as part of their routine practice with children ages 1 to 3 years. However, doctors noted that not having enough time and lack of reimbursement were barriers to providing developmental screening.

The survey also revealed great variation in how doctors manage developmental delays, including when they refer children to specialists, underscoring the need for a more standardized approach. In the survey, physicians were

asked about factors that might influence their developmental screening practices. The survey presented clinical vignettes, which described young children with probable developmental delays who were seen for preventive care visits, to elicit how physicians manage these children.

Based on survey responses, a girl with language delay was 60 percent more likely to be referred to audiology than a boy. This is a concern because mental retardation and autism spectrum disorders, which are associated with language delay and hearing loss, are more prevalent in boys. Notably, almost 30 percent of physicians did not refer an 18-month-old child with expressive language delay to audiology, a crucial step to rule out hearing loss as the cause of the delay. Audiology referrals increased to 78 percent of doctors when the child's language delay continued to 27 months.

The expression of parental concern, shown to be a reliable indicator of developmental delays, did not increase the probability of referral to diagnostic and treatment services for a child with suspected gross motor delays (for example, delayed walking). Finally, avoidant (for example, not looking at parents/ grandparents) rather than

disruptive patient behaviors were associated with an increased probability of referral, perhaps because doctors recognized a potential autism spectrum disorder.

For more information, see "How do primary care physicians identify young children with developmental delays? A national survey," by Laura Sices, M.D., Chris Feudtner, M.D., Ph.D., M.P.H., John McLaughlin, M.D., and others, in the December 2003 *Journal of Development and Behavioral Pediatrics* 24, pp. 409-417; and "How do primary care physicians manage children with possible developmental delays: A national survey with an experimental design," by the same authors, in the February 2004 *Pediatrics* 113(2), pp. 274-282.

Editor's Note: Another study on a related topic found that higher parental perception of child vulnerability is associated with worse developmental outcomes in premature infants at 1-year of age. For more details, see Allen, E.C., Manuel, J.C., Legault, C., and others. (2004, February). "Perception of child vulnerability among mothers of former premature infants." (AHRQ grant HS07928). *Pediatrics* 113(2), pp. 267-273. ■

Pediatricians will play a central role in caring for children in the event of a terrorist attack

As part of a network of health responders to a terrorist attack, pediatricians will be called on to address the concerns of patients and families, recognize signs of possible exposure to a weapon of terror, and understand first-line response to such attacks. Pediatricians also need to sufficiently participate in disaster planning to ensure that the unique needs of children are satisfactorily addressed, according to Irwin Redlener, M.D., Director of the National Center for Disaster Preparedness, Columbia University Mailman School of Public Health, and David Markenson, M.D., EMT-P, Director of the Program for Pediatric Preparedness, National Center for Disaster Preparedness. Their work was supported in part by the Agency for Healthcare Research and Quality (HS13855).

In a recent article, they suggest that a curriculum to prepare pediatricians for their role during bioterrorist attacks should include several key concepts. It must consider the unique aspects of children related to terrorism and disasters. For instance, children are more susceptible to various agents (for example, their faster

respiratory rates will expose them to relatively larger dosages of aerosolized agents such as sarin gas or anthrax). Also, children respond emotionally to trauma in age-specific ways, and there is limited availability of age- and weight-appropriate antidotes and treatments. For example, certain antibiotic therapies supplied in the National Pharmaceutical Stockpile, such as tetracycline, generally are not recommended for use in children.

After a disaster, pediatricians' offices or clinics may become care sites if area hospitals are unable to provide services. Pediatricians must be familiar with the chain of command and organization during hospital emergency responses, including local, State, and Federal Government authorities. Finally, pediatricians must advocate for children and families in terrorism preparedness planning.

For more information, see "Disaster and terrorism preparedness: What pediatricians need to know," by Drs. Redlener and Markenson, in *Advances in Pediatrics* 50, pp. 1-37, 2003. ■

Wage inequality is associated with infant mortality rates in wealthy industrialized countries

The degree to which social inequalities affect a population's health has been an ongoing debate for many years. A recent study found that one measure of social inequality, wage inequality, is associated with the infant mortality rate (IMR) in 19 wealthy countries belonging to the Organization for Economic Cooperation and Development (OECD). The study was supported in part by the Agency for Healthcare Research and Quality (National Research Service Award training grant T32 HS00029).

For the study, researchers used data from the OECD, World Value Surveys, Luxembourg Income Study, and political economy databases to assess the impact of health system variables on the relationship between wage

inequality and infant mortality in 19 OECD countries between 1970-1996. Overall, IMR declined from a mean of 16.6 per 1,000 in the 1970s to 6.2 per 1,000 in the 1990s. The Theil measure of wage inequality was positively and significantly associated with IMR, even while controlling for gross domestic product (GDP) per capita, the most powerful ecological predictor of infant mortality. The Theil measure is based on industrial sector wages; a higher Theil value means higher levels of wage inequality.

After controlling for GDP per capita and wage inequality, variables generally associated with better health included higher income per capita, the method of health care financing, and more physicians per 1,000 population.

Higher alcohol consumption, a larger proportion of the population in unions, and more government expenditures on health were associated with poorer health outcomes. Results suggest that improving aspects of the health care system, particularly equitable health care financing and more physicians, may be one way to partially compensate for the negative effects of social inequalities on population health.

See "Wage inequality, the health system, and infant mortality in wealthy industrialized countries, 1970-1996," by James A. Macinko, Ph.D., Leiyu Shi, M.B.A., Dr.P.H., and Barbara Starfield, M.D., M.P.H., in *Social Science & Medicine* 58, pp. 279-292, 2004.

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Wage inequality

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Editor's Note: A literature review by the same group of researchers showed that the

relationship between income inequality and health is unclear. For more details, see Macinko, J.A., Shi, L., Starfield, B., and Wulu Jr., J.T. (2003, December). "Income inequality and health: A critical

review of the literature." (AHRQ grant T32 HS00029). *Medical Care Research and Review* 60(4), pp. 407-452. ■

Health Care Quality and Safety

QI approaches improved diabetes care in Midwest community health centers in 1 year

Approximately 3,000 federally funded community health centers (CHCs) are core care providers for indigent patients. To reduce health disparities and improve care quality in CHCs, the Health Resources and Services Administration's Bureau of Primary Health Care began a major 6-year Health Disparities Collaborative in 1998. The focus of the first year, a diabetes care quality improvement (QI) initiative, improved diabetes care in Midwest CHCs, according to a study supported by the Agency for Healthcare Research and Quality (HS10479).

Marshall H. Chin, M.D., M.P.H., of the University of Chicago, and his colleagues evaluated the impact of the diabetes QI initiative 1 year before and after the initiative began at 19 Midwestern CHCs. The initiative was based on a chronic care model that emphasized patient self-management, delivery system redesign, decision support, clinical information systems, leadership, health system organization, and community outreach, as well as collaborative learning sessions. The researchers reviewed the health center charts of

969 adults with diabetes, surveyed 79 diabetes QI team members, and conducted interviews to evaluate if clinic care met American Diabetes Association standards.

The QI initiative clearly improved diabetes care at the health centers. Based on the review of patient charts, the performance of several key diabetes care processes increased. For example, rates of HbA1c measurement, an indicator of blood sugar levels, rose from 80 to 90 percent of patients, eye examination referrals from 36 to 47 percent, foot examinations from 40 to 64 percent, and lipid assessments from 55 to 66 percent. In addition, patients' mean HbA1c levels were lowered from 8.5 to 8.3 percent. Over 90 percent of survey respondents stated that the Diabetes Collaborative was worth the effort and was successful.

See "Improving diabetes care in Midwest community health centers with the Health Disparities Collaborative," by Dr. Chin, Sandy Cook, Ph.D., Melinda L. Drum, Ph.D., and others, in the January 2004 *Diabetes Care* 27(1), pp. 2-8. ■

Conference participants outline research agenda for pediatric outpatient safety

Little work has been done to address issues around safety in pediatric outpatient care. For example, the safety of many medications has not been tested for children. An area of particular concern is the growing use of pharmaceuticals for mental health conditions in children. Psychoactive drugs often are administered by nurses or unlicensed administrative staff in schools and day care programs.

These individuals usually have no training or knowledge of these medications.

To correct such oversights, the MassGeneral Hospital for Children Center for Child and Adolescent Health Policy organized a conference in May 2003 to open a dialogue about these issues and to develop a research agenda to promote safety in outpatient child and adolescent health care. The conference, which was supported in

part by the Agency for Healthcare Research and Quality (HS13883), provided compelling information about the need to treat children differently with respect to a number of medication issues. For example, conference participants discussed the importance of weight-based dosing and the need to interact with community providers, especially schools.

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Pediatric outpatient safety

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Participants also noted safety issues beyond medications. For example, there is little work on medical devices and their safety in children. Also addressed was the central role of parents in managing children's medications and other treatments.

Five themes emerged during the conference. First, communication lapses—for example, between doctors and families or between primary care physicians and specialists—contribute to errors in child and adolescent health care.

Second, technological solutions to safety problems, although appealing, may present new risks to pediatric safety. Third, doctors must convince community physicians, hospital managers, and policymakers that medical safety is a problem needing attention. Fourth, high priority must be given to studying effective approaches to enhancing safety. Finally, conference participants emphasized the importance of setting priorities to advance child health care safety.

Details are in "Promoting safety in child and adolescent health care: Conference overview," by James M. Perrin, M.D., and Sheila R. Bloom, M.S. in the January 2003

Ambulatory Pediatrics 4(1), pp. 43-46.

Editor's Note: A background paper, coauthored by Helen R. Burstin, M.D., director of AHRQ's Center for Primary Care, Prevention, and Clinical Partnerships, was prepared for the conference. The authors outline a research agenda for outpatient pediatric safety. For details, see Miller, M.R., Pronovost, P.J., and Burstin, H.R. (2004, January). "Pediatric patient safety in the ambulatory setting." *Ambulatory Pediatrics* 4(1), pp. 47-54. Reprints (AHRQ Publication No. 04-R031) are available from AHRQ.** ■

Minority Health

Greater severity of peripheral arterial disease among blacks may account for their higher rate of amputations

Black patients undergo amputation of a lower extremity (LE, at the above- or below-knee level) two to three times more often than white patients. Some have attributed this to a lack of access by blacks to lower extremity revascularization procedures such as angioplasty or LE arterial bypass graft surgery, when they are hospitalized for complications of peripheral arterial disease (PAD) or diabetes mellitus. However, a new study at an urban hospital with advanced vascular surgery facilities and a policy of aggressive limb salvage suggests that greater severity and progression of disease among blacks could account for these racial disparities independent of any access problems to hospitals for vascular surgery.

Mirroring regional findings, blacks were 1.7 times more likely than other patients to be admitted for a primary amputation, that is, a major amputation without any previous attempt at revascularization. However, after adjusting for age, sex, and diabetes mellitus prevalence, white and black patients were equally likely to undergo primary amputation.

Repeat amputees were 2.5 times more likely to be black than white. However, these patients had more advanced and aggressive PAD. It is not clear to what extent this outcome is related to less aggressive prior management of diabetes or to atherosclerosis risk factors or whether race is simply a marker for broader social determinants of health, notes Cheryl Rucker-Whitaker, M.D., M.P.H., of Rush-Presbyterian-St. Luke's Medical Center.

In the study, which was supported in part by the Agency for Healthcare Research and Quality (National Research Service Award training grant T32 HS00078), Dr. Rucker-Whitaker and colleagues used hospital discharge data for 1,127 patients undergoing LE arterial bypass graft, angioplasty, or major amputation from January 1, 1995 to February 1, 2000. They analyzed racial differences in the risk of admission for major amputation versus revascularization.

See "Explaining racial variation in lower extremity amputation," by Dr. Rucker-Whitaker, Joe Feinglass, Ph.D., and William H. Pearce, M.D., in the December 2003 *Archives of Surgery* 138, pp. 1347-1351. ■

Referrals for physical therapy for musculoskeletal conditions vary and may indicate problems with access to care

Individuals with musculoskeletal conditions ranging from acute strains and sprains to degenerative joint disease usually visit an orthopedic surgeon or a primary care physician (PCP). Patient insurance status and specific physician characteristics appear to influence whether visits to orthopedic surgeons and/or PCPs result in referral to a physical therapist (PT), even after controlling for patient diagnosis, illness severity, and supply of physical therapists, according to the findings from a recent study. The study was supported by the Agency for Healthcare Research and Quality (National Research Service Award training grant T32 HS00032).

Variation in PT referral may indicate problems with access to care and/or inappropriate referral

and may ultimately affect the quality and cost of care for patients with musculoskeletal conditions, concludes lead author Janet K. Freburger, P.T., Ph.D., of the Cecil G. Sheps Center for Health Services Research, Chapel Hill, NC. Dr. Freburger and colleagues analyzed data from the National Ambulatory Medical Care Survey of U.S. office-based physician practices. They examined whether a PT referral was made during 4,911 visits to PCPs and 4,201 visits to orthopedic surgeons for musculoskeletal conditions.

Primary care visits covered by Medicaid or a managed care plan were less likely to result in PT referral compared with visits covered by private insurance or a nonmanaged care plan. Orthopedic surgeon visits covered by workers'

compensation or managed care were more likely to result in PT referral than visits not covered by either one. Primary care visits to osteopathic physicians (who place more emphasis on the relationship of the organs and musculoskeletal system than other doctors) were more likely to result in PT referral than visits to allopathic primary care physicians (most doctors). Given identical visit characteristics, orthopedic surgeon visits were more likely than primary care visits to result in PT referral.

See "Physician referrals to physical therapy for the treatment of musculoskeletal conditions," by Dr. Freburger, George M. Holmes, Ph.D., and Timothy S. Carey, M.D., M.P.H., in the December 2003 *Archives of Physical Medicine and Rehabilitation* 84, pp. 1839-1849. ■

Deaf and hearing-impaired patients suggest ways doctors can improve communication to improve care quality and safety

Inadequate communication with deaf or hard-of-hearing patients can lead to misdiagnosis and medication errors, as well as patient embarrassment, discomfort, and fear, according to a study supported by the Agency for Healthcare Research and Quality (HS10223). Researchers led by Lisa I. Iezzoni, M.D., M.Sc., of Beth Israel Deaconess Medical Center, conducted in-depth interviews with 14 deaf and 12 hard-of-hearing adults about their communication concerns during medical visits and procedures and how communication could be improved.

Those interviewed suggested that clinicians ask hearing-impaired patients about their preferred way of communicating instead of requiring them to use ineffective ways to communicate such as lip reading (doctors often turn their head or lips are hidden by a mask or beard), writing notes, and using family members to interpret. Also, when treating deaf patients, doctors should use interpreters who are

trained specifically for medical settings, and they should speak more slowly to hard-of-hearing patients. The study participants suggested that doctors ask patients to repeat critical information such as medication instructions, as well as put it in writing, in order to avoid potentially dangerous miscommunication.

Interviewees described not understanding therapeutic regimens, medication dosages, or side effects or not knowing what to expect during physical exams and procedures. They suggested that doctors use lights as signals for required actions, such as holding one's breath during a mammogram, and find alternatives to lengthy phone message menus such as e-mail or fax. Offices should acquire and train staff to use a teletypewriter or telecommunications device for the deaf, and staff should be trained to communicate better with deaf and hard-of-hearing patients.

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Communication with deaf patients

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See “Communicating about health care: Observations from persons who are deaf or hard of hearing,” by Dr. Iezzoni, Bonnie L. O’Day, Ph.D., Mary Killeen, M.A., and Heather Harker, M.P.A., in the March 2, 2004 *Annals of Internal Medicine* 140, pp. 356-362.

Editor’s Note: Another AHRQ-funded study on a related topic describes a community-based educational forum to enhance communication skills. The forum improved people’s confidence in their ability to communicate effectively with their doctor. For more details, see Tran, A.N., Haidet, P., Street, Jr., R.L., and others. (2004). “Empowering communication: A community-based intervention for patients.” (AHRQ grant HS10876). *Patient Education and Counseling* 52, pp. 113-121. ■

Significant pain is common among hospitalized patients, even those at low risk for pain

The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) has developed a pain management program that hospitals must implement in order to maintain JCAHO accreditation. Moreover, JCAHO requires that all patients admitted to a hospital be covered by the hospital’s pain management program, not just those considered at high risk of pain such as cancer or surgery patients. This approach is a reasonable one, according to a study supported in part by the Agency for Healthcare Research and Quality (HS10597). It found that pain was common, even in hospitalized patients considered to be at the lowest risk for pain, and that individual factors could not predict who would be at high risk for pain.

Researchers from the University of Chicago studied 5,584 patients who were admitted to the general medicine inpatient service of a single urban academic medical center at some point over a 3-year period (July 1, 1997-June 30, 2000). They assessed the patients’ pain and pain control in a followup telephone survey 1 month after hospital discharge and determined pain predictors through administrative databases and the patient survey. Overall, 59 percent of the patients suffered pain (28 percent severe, 19 percent moderate, and 12 percent mild). The pain prevalence and severity data for this study closely resembled data reported for populations thought to be at high risk for pain.

Nearly one in five patients (18 percent) were dissatisfied with their

pain control. Certain patient characteristics were associated with pain or dissatisfaction with pain control, including diagnosis, number of coexisting illnesses, and age. However, the researchers were unable to identify a population truly at low pain risk using these predictors. Thus, as the JCAHO policy suggests, it may be important to consider all patients hospitalized in general medicine services as being at high risk for pain, conclude the researchers.

See “Pain and satisfaction with pain control in hospitalized medical patients: No such thing as low risk,” by Chad T. Whelan, M.D., Lei Jin, M.S., and David Meltzer, M.D., Ph.D., in the January 26, 2004 *Archives of Internal Medicine* 164, pp. 175-180. ■

A user-friendly computer touchscreen enables low literacy cancer patients to more accurately report quality of life outcomes

Individuals usually must be able to read and write English in order to be included in most U.S. research studies that assess quality of life and other patient-reported outcomes. Barely literate and non-English-speaking patients often are excluded from these studies because they are unable to complete the required set of questionnaires. A user-friendly talking computer touchscreen may solve this problem, according to a recent study that was supported by the

Agency for Healthcare Research and Quality (HS10333).

Using this approach, Elizabeth Hahn, M.A., of Evanston Northwestern Healthcare, and her colleagues were able to successfully measure self-reported quality of life outcomes in 420 ethnically diverse cancer patients with a wide range of literacy skills and computer experience. One question at a time was

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Computer touchscreens

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presented on the computer touchscreen, accompanied by a recorded reading of the question. Various colors, fonts, and graphic images were used to enhance visibility, and a small picture icon appeared near each text element that allowed patients to replay the sound as many times as they wished.

Early results from the first 126 enrolled patients showed that patients liked the multimedia approach, and they reported that the talking touchscreen was easy to use. The researchers conclude that the talking touchscreen will allow low literacy patients to be included more readily in clinical trials, clinical practice

research, quality of life studies, and health promotion/disease prevention initiatives. They have recently adapted the program for Spanish-speaking cancer patients and suggest that it may prove to be a good communication tool for health care providers and organizations, as they incorporate cultural competency principles into health services delivery practices for minorities and other underserved groups.

See "The talking touchscreen: A new approach to outcomes assessment in low literacy," by Elizabeth A. Hahn, M.A., David Cella, Ph.D., Deborah Dobrez, Ph.D., and others, in *Psycho-Oncology* 13, pp. 86-95, 2004. ■

Practices that allot more time for acute care visits and promote immunization have higher adult vaccination rates

A growing number of elderly men and women are dying from influenza and pneumonia, despite the fact that safe and effective vaccines against both conditions are readily available for adult patients. Moreover, Medicare covers the cost of both vaccines. Through 2001, only 63 to 65 percent of elderly individuals in the United States had been vaccinated against both diseases.

Patient factors are more important than practice factors in immunization rates. However, practices that allot more time for acute care visits and use more immunization promotion activities have higher vaccination rates, according to a study that was supported by the Agency for Healthcare Research and Quality (HS09874).

Practices that allotted 16-20 minutes versus 10-15 minutes for acute care visits had 2.5 times higher influenza vaccination rates. Practices that did not have a source of free vaccines had 57 percent fewer influenza vaccinations. Practices that were urban/suburban and had a source of free flu vaccines had four times more influenza vaccinations. Practices that had three or more vs. none to two immunization promotion strategies (for example, designated vaccination clinics, computerized immunization tracking systems, prompts on patient charts, and a source of free or reduced-cost vaccinations) had twice as many pneumonia vaccinations. Also, practices that allotted 16-20 minutes versus 10-15 minutes for acute care visits had nearly twice as many pneumonia vaccinations.

However, when practice and patient factors were combined in the analyses, patients' attitudes and knowledge about vaccines were more important, notes Mary Patricia Nowalk, Ph.D., of the University of Pittsburgh, lead author of the study. The study findings were based on analysis of interviews with 946 patients and responses of managers of 22 office practices to self-administered questionnaires about office practices and logistics affecting immunizations.

See "The physician's office: Can it influence adult immunization rates?" by Dr. Nowalk, Inis J. Bardella, M.D., Richard K. Zimmerman, M.D., and Shunhua Shen, M.S., in the January 2004 *American Journal of Managed Care* 10(1), pp. 13-19. ■

Doctors should target chronic disease and functioning among frail older patients to lower the risk of hospitalization

Interventions that target chronic disease and physical functioning among frail older adults may reduce the likelihood that they will be hospitalized. Those that focus on nutrition may also benefit elderly patients who are ill, especially those with lower body mass index (BMI), suggests a new study. According to the researchers, conditions and factors that place these vulnerable patients at risk of being hospitalized are congestive heart failure, diabetes, and anemia; taking several medications; low BMI; and emergency department visits in the past year. Better physical functioning reduces their risk of hospitalization. The six risk factors are usually noted in the patient's medical record, making it easier to target patients for an intervention designed to reduce their need for hospitalization, suggests lead investigator Teresa M. Damush, Ph.D., of the Regenstrief Institute for Health Care in Indianapolis.

In the study, which was supported in part by the Agency for Healthcare Research and Quality (HS07632), Dr. Damush and her colleagues analyzed a dataset of 1,041 patients (more than half of whom

were African-American) of an inner city primary care practice, who were either 75 years of age or older or 50 years of age or older with severe disease. They followed the patients for 1 year and recorded nonelective hospitalizations during that time. They used regression analysis to identify factors that would predict hospitalization.

Overall, 46 percent of the patients had heart disease, 45.5 percent had chronic obstructive pulmonary disease, and 34.9 percent had congestive heart failure. On average, patients took 5.6 medications. Many were obese or anemic and had physical functioning, general health, and vitality scores below the 50th percentile. One in five patients (21 percent) had one or more nonelective hospital admissions during the followup period.

See "Risk factors for nonelective hospitalization in frail and older adult, inner-city outpatients," by Dr. Damush, David M. Smith, M.D., Anthony J. Perkins, M.S., and others, in the February 2004 *Gerontologist* 44(1), pp. 68-75. ■

More than half of assisted living facilities will not admit individuals who have moderate cognitive impairment or behavioral problems or need assistance with transfer

Throughout the 1990s, assisted living was the most rapidly growing form of senior housing. A 1998 study defined assisted living facilities (ALFs) as places with 10 or more beds that serve an older population and represent themselves as ALFs, provide 24-hour supervision and housekeeping, and provide at least minimal care.

Analyses of the nationally representative data in this study indicate that in 1998, there were an estimated 11,459 such ALFs nationwide, with 611,300 beds and 521,500 tenants. The study was

sponsored by the Office of the Assistant Secretary for Planning and Evaluation of the Department of Health and Human Services, with additional support from the Agency for Healthcare Research and Quality (HS10606).

Many see ALFs as a residential setting offering only private accommodations. However, among the approximately 1,500 ALFs surveyed, only 31 percent had more than 79 percent private accommodations. Indeed, 28 percent of ALFs had at least one bedroom shared by three or more unrelated people.

Many ALFs were restrictive in their admission and retention policies. More than half of the study ALFs would not admit or retain individuals who had moderate cognitive impairment, behavioral problems, or who needed assistance with transfer (for example, from bed to chair). Though ALFs are considered places where people can age in place, 72 percent of study ALFs had, over a 6-month period, discharged one or more tenants because they needed nursing care.

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Assisted living

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ALFs are also expensive. In 1998, the average monthly charge for facilities that had a single rate was \$1,710, but rates exceeding \$6,000 per month were reported. Almost all tenants paid their ALF bill using private financial resources.

These characteristics and restrictions limit the ability of ALFs to provide service to the frail elderly population and those who

depend on Medicaid, according to principal investigator Charles D. Phillips, Ph.D., M.P.H., of Texas A&M University System Health Science Center's School of Rural Public Health.

More details are in "A national survey of assisted living facilities," by Catherine Hawes, Ph.D., Dr. Phillips, Miriam Rose, M.Ed., and others, in the *Gerontologist* 43(6), pp. 875-882, 2003..

Editor's note: Another AHRQ-funded study on a related topic examined State initiatives to

measure resident satisfaction in nursing homes and assisted living facilities. For more details, see Lowe, T.J., Lucas, J.A., Castle, N.G., and others. (2003).

"Consumer satisfaction in long-term care: State initiatives in nursing homes and assisted living facilities." (AHRQ grant HS11825). *Gerontologist* 43(6), pp. 883-896. ■

HIV/AIDS Research

Improved pain management could reduce use of outpatient care and associated costs for patients with HIV disease

Despite treatment advances, pain remains a considerable problem for an estimated 25 to 80 percent of people infected with HIV. Improved pain management in these patients and identification of those at risk for developing pain could reduce their use of outpatient care, lead to substantial cost savings, and improve quality of life for affected individuals, according to a study led by Aram Dobalian, Ph.D., J.D., of the University of Florida at Gainesville. This research was supported by the Agency for Healthcare Research and Quality (HS08578) through the HIV Cost and Services Utilization Study (HCSUS).

Dr. Dobalian and his colleagues assessed outpatient use over 6 months among 2,267 participants in HCSUS, a nationally representative probability sample of HIV-positive adults receiving care in the United States. Overall, 67 percent of patients with HIV disease reported suffering from pain during the previous 4 weeks. Self-reported pain was higher among those with AIDS, intravenous drug-using females, the unemployed, and those without a college

degree. Blacks reported less pain than other patients. Patients reporting or developing more pain and those in poorer health (CD4 count less than 50 and less energy) used more outpatient services.

Individuals who did not report pain at first or second followup were predicted to have 5.20 outpatient visits; those who had no pain at first followup but developed maximum pain (10 score) by the second followup were predicted to have 6.94 visits; and those with maximum pain at first and second followups were predicted to have 7.24 visits. Individuals with Medicare, Medicaid, or private insurance were more likely to have used outpatient services than uninsured patients. However, those with private HMO coverage were no more likely to use outpatient services than those without insurance.

See "Pain and the use of outpatient services among persons with HIV," by Dr. Dobalian, Jennie C.I. Tsao, Ph.D., and R. Paul Duncan, Ph.D., in the February 2004 *Medical Care* 42(2), pp. 129-138. ■

Health care costs are lower in Minnesota than in other States due mostly to structural factors, not financial incentives

Previous studies have shown that health care costs in Minnesota are lower than in many other States. A recent study supported by the Agency for Healthcare Research and Quality (contract 290-00-0017) identified several possible reasons for this difference. Analysis of Minnesota medical group practices conducted during 2001 revealed that they had lower per-member, per-month costs due to better clinical support systems and use of mid-level providers rather than financial incentives, such as capitation (a fixed payment per person cared for, regardless of the type of service delivered, which provides an incentive to limit costly services).

In general, the Minnesota practices were far more advanced in the use of electronic-based information systems and in the use of clinical guidelines, physician profiling, and benchmarking programs than were practices nationally. On the other hand, 86 percent of the Minnesota practices had no revenue from any type of capitation. Their largest proportion of practice revenue was reported to come from some form of fee-for-service payment in which the health plans paid the practices for services rendered. Physician

compensation in the group practices reflects the need to encourage both productivity and cost controls in this competitive managed care environment. Nearly half of physician compensation is based on productivity, but productivity often excludes revenue from other than physician work RVUs (relative value units, procedures per full-time equivalent physician).

Although only about 40 percent of the Minnesota practices had computer terminals at the patient care site, this was more than twice the national figure. Moreover, about 80 percent of the Minnesota practices used some benchmarking methods, and more than half used at least some clinical guidelines compared with only 20 percent of medical group practices nationally. The group practices in Minnesota have cultures that emphasize cost-effective medical care and, as a result, costs are lower, according to John Kralewski, Ph.D., of the University of Minnesota.

See "Managing patient care cost in Minnesota medical group practices," by Dr. Kralewski, Bryan Dowd, Ph.D., Janet Silversmith, M.A., and others, in the February 2004 *Minnesota Medicine*, pp. 48-54. ■

Increased State Medicaid reimbursement for nursing home care reduces residents' risk of being hospitalized

A recent Institute of Medicine report questioned the adequacy of Medicaid nursing home payment rates in ensuring quality of care to residents. The importance of Medicaid reimbursement to nursing home care quality is described in a recent study supported in part by the Agency for Healthcare Research and Quality (HS09723).

The study found that a \$10 increase in the 1993 Medicaid reimbursement rate above the mean rate of about \$75 a day reduced by 9 percent a resident's risk of hospitalization. This finding underscores the importance of properly aligning State Medicaid

and Federal Medicare long-term care policies because States currently have no incentive to increase reimbursement rates to avoid residents' hospitalization, according to Brown University researchers, Orna Intrator, Ph.D., and Vincent Mor, Ph.D.

Drs. Intrator and Mor examined initial health status assessments and hospitalizations and deaths (for those not hospitalized) in the 6 months following hospitalization among 2,080 randomly selected residents from 253 nursing homes in 10 States in 1993. Of all the residents studied, more than 65 percent listed Medicaid, 31 percent listed Medicare, and more than 31

percent listed a private payment source for nursing home care. The overall hospitalization rate was 15 percent, but this ranged from 9 percent in Oregon to 25 percent in Iowa.

Despite this great variation in rate of hospitalization, there was a decreasing trend in hospitalization with increasing nursing home daily reimbursement rates. Also, nursing home residents in States with a case-mix reimbursement system (that is, homes were reimbursed more for sicker residents) were 30 percent less likely to be hospitalized than residents in States without a case-mix reimbursement

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Reimbursement for nursing home care

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system. Residents in States with higher Medicaid reimbursement

rates were also less likely to die. For every \$10 increase above the \$75 per diem, the odds of mortality were reduced by 12 percent.

See “Effect of State Medicaid reimbursement rates on

hospitalizations from nursing homes,” by Drs. Intrator and Mor, in the March 2004 *Journal of the American Geriatrics Society* 52, pp. 393-398. ■

Researchers find New York SCHIP improves health care access, continuity, and quality

Numerous studies indicate that uninsured children have poorer access to health care and poorer quality of care than insured children. However, few studies have examined the impact and benefits of providing health insurance to low-income children. Recent findings from the Child Health Insurance Research Initiative (CHIRI™) project in New York indicate that enrollment in the State Children’s Health Insurance Program (SCHIP) improved enrollees’ access, continuity, and quality of health care. SCHIP was enacted in 1997 to provide health insurance coverage to low-income, uninsured children who lack private insurance but are ineligible for Medicaid.

Researchers compared demographic and health measures for a group of children (0-18 years of age enrolled in New York SCHIP for the first time) prior to enrollment in SCHIP and 1 year after enrollment. At the time of the study, New York’s SCHIP program encompassed 18 percent of SCHIP enrollees nationwide. Nearly one-third of children in the study were non-Hispanic blacks, and almost half were Hispanic. Over 80 percent of enrollees’ families had an income less than 160 percent of the Federal poverty level. Nearly two-thirds of children were uninsured for 12 months or more before enrolling in SCHIP. Of those who were insured before SCHIP enrollment, 43 percent had been enrolled in Medicaid.

Researchers found that among New York SCHIP enrollees, the program decreased the proportion of enrollees who did not have a usual source of care (from 14 percent to 3 percent), decreased the proportion of enrollees with any unmet health care needs (31 percent to 19 percent), and reduced unmet need for specific types of care (specialty care, 16 percent), acute and preventive care (10 percent each), and dental and vision care (13 percent each). Enrollment in SCHIP increased the proportion of children with a preventive visit (74 percent to 82

percent) with no significant changes in the number of emergency, specialty, and acute care visits.

The type of usual source of care (USC) sought by enrollees remained nearly constant before and after SCHIP enrollment. Doctor’s offices (42 vs. 41 percent), neighborhood health centers (20 vs. 27 percent), and hospital clinics (21 vs. 22 percent) were the main sites for primary care before and after SCHIP enrollment. However, among children with a usual source of care, nearly one-quarter changed their primary care physician shortly after SCHIP enrollment. Surprisingly, this shift did not result in enrollees moving from neighborhood health centers to private doctor’s offices. Indeed, neighborhood health centers were the only practice type that experienced statistically significant gains following SCHIP enrollment.

Enrollment in SCHIP also improved children’s continuity of care. The proportion of children who used their usual source of care for most or all visits nearly doubled (from 47 percent to 89 percent). In addition, quality of care increased—families gave a higher rating to the benefits and medical care that they received after SCHIP enrollment compared with before enrollment. The authors conclude that enrollment in SCHIP improved the coordination and receipt of primary care, resulting in greater family satisfaction.

This research was supported in part by the Agency for Healthcare Research and Quality (HS10450). The CHIRI™ initiative is cosponsored by AHRQ, the David and Lucile Packard Foundation, and the Health Resources and Services Administration.

See “Improved access and quality of care after enrollment in the New York State Children’s Health Insurance Program (SCHIP),” by Peter G. Szilagyi, M.D., M.P.H., Andrew W. Dick, Ph.D., Jonathan D. Klein, M.D., M.P.H., and others in the May 2004 *Pediatrics* electronic pages 113e(113), pp. e395-e404, available online at www.pediatrics.org. ■

State governments assumed an increasing role in funding home care after passage of the 1997 Balanced Budget Act

After increasing dramatically between 1987 and 1996, use of paid home care peaked in 1996 at 6.6 million individuals receiving such care and nearly \$34 billion in home care expenditures. Home care use and expenditures subsequently fell between 1996 and 1999, largely due to decreased Medicare funding following the Balanced Budget Act (BBA) of 1997. At that point, State and local governments began to play a greater role in funding home care, according to a study by William D. Spector, Ph.D., and Joel W. Cohen, Ph.D., of the Agency for Healthcare Research and Quality, and Irena Pesis-Katz, of the University of Rochester.

By 1996, the government (Federal, State, and local) funded more than three-quarters of all

home care, and Medicare alone paid for more than half (compared with 19 percent in 1987) of home care. However, the overall Medicare share fell to a low of 25 percent in 1999, while the overall share grew for Medicaid (from 17 percent in 1996 to almost 33 percent by 1999) and other State and local programs (from 1.7 percent in 1996 to more than 25 percent of home care expenditures in 1999).

This shift was accompanied by changes in the mix and intensity of services. After the BBA, fewer skilled services were provided to the elderly population (which is consistent with a decline in Medicare funding, which mainly funds skilled care), and more unskilled services were provided to the nonelderly population (most

State and local programs focus on personal care). However, with the introduction in 2000 of prospective payment for Medicare home health care and increasing fiscal pressures at the State level, these trends may not continue, note the researchers. Their findings are based on analysis of data from the 1987 National Medical Expenditure Survey and the 1996, 1998, and 1999 Medical Expenditure Panel Surveys.

See "Home care before and after the Balanced Budget Act of 1997: Shifts in financing and services," by Drs. Spector and Cohen and Ms. Pesis-Katz, in the January 2004 *Gerontologist* 44(1), pp. 39-47. Reprints (AHRQ Publication No. 04-R039) are available from AHRQ.** ■

Use of medical care in the Nation is greatest among the wealthy, and income-related inequality in use is highest among seniors

Despite publicly financed health insurance programs in the United States, such as Medicare and Medicaid, ability to pay influences the use of medical care. Higher income Americans of all ages use more care than their lower income counterparts irrespective of medical "need," and inequality in use is greatest among the elderly, according to a study supported by the Agency for Healthcare Research and Quality (HS10770).

Alex Y. Chen, M.D., M.S.H.S., of Children's Hospital Los Angeles, and Jose J. Escarce, M.D., Ph.D., of the University of California, Los Angeles, and RAND, analyzed data from the Household Component of the 1996-1998 Medical Expenditure Panel Survey (MEPS). MEPS

contains person-level data on health status, medical care expenditures, demographic characteristics, and household income. The researchers used the data to predict need-adjusted annual medical care expenditures per person by income level. They used the predictions to calculate Gini-like indices of inequality for all adults, working-age adults, seniors, and children 5 to 17 years of age. Their analysis was based on an adaptation of the Gini index, which is used by economists to quantify the degree of inequality in the distribution of income. A positive value of the index corresponds to inequality favoring the wealthy.

For all age groups, predicted expenditures per person, adjusted for medical need, generally

increased as income rose. The index of inequality for all adults was +0.087; for working-age adults, +0.099; for seniors, +0.147; and for children, +0.067. If one assumes that the population was equally divided between poor and wealthy adults, the inequality index of +0.087 for all adults would correspond to the wealthy accounting for 58.7 percent of total medical care expenditures and the poor accounting for 41.3 percent. The expenditure gap would be greatest for seniors, whose inequality index of +0.147 corresponds to wealthy seniors accounting for 64.7 percent of total expenditures or 1.83 times as much as poor seniors (35.3 percent of care expenditures).

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Inequality in use of medical care

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See “Quantifying income-related inequality in healthcare delivery in the United States,” by Drs. Chen and Escarce in the January 2004 *Medical Care* 42(1), pp. 38-47.

Editor’s Note: Another AHRQ-funded study on a related topic found that patients with chronic disease and other high-risk patients are responsible for the largest proportion of health care costs. The authors suggest that strategies to coordinate care for high-risk groups have the most potential to

improve outcomes and maximize the investment of health care dollars. For more details, see Asplin, B.R. (2004, February). “Show me the money! Managing access, outcomes, and cost in high-risk populations.” (AHRQ grant HS13007). *Annals of Emergency Medicine* 43(2), pp. 174-177. ■

Young and healthy individuals fare better than moderately sick individuals with consumer-directed health benefits

The young and healthy are the winners, and the moderately sick are the losers with consumer-directed health benefits, according to a study conducted by Dwight McNeill, Ph.D., of the Agency for Healthcare Research and Quality. When Dr. McNeill was at Brandeis University, he received support from AHRQ (National Research Service Award training grant T32 HS00062) to conduct a simulation of estimated out-of-pocket spending for premiums and medical care by consumers in consumer-directed versus traditional plans (health maintenance organizations, or HMOs, and preferred provider organizations, or PPOs). In addition, he analyzed demographic factors associated with out-of-pocket spending based on data derived from the 1998 Medical Expenditure Panel Survey.

The consumer-directed benefit plan used in the simulation offered a \$1,000 health reimbursement account (HRA) with total deductibles of \$1,500, \$2,500, and \$3,500; a maximum out-of-pocket limit at the deductible; and no coinsurance. When a beneficiary spends more than \$1,000 a year on medical care, the individual exhausts the annual HRA

and enters the risk zone in the “gap.” The likelihood of reaching the gap increases with age to more than 50 percent for those 55-64 years of age.

It does not take much medical care to trip the \$1,000 gap at today’s medical prices (about the cost of a colonoscopy). The young and healthy are potential winners with consumer-directed plans because their relatively low use of medical care allows them to build up HRA balances. However, these opportunities are limited. Most employers do not allow employees to take HRA balances with them when they leave, and most young workers do not stay long at one job. Second, HRA balances do not provide investment opportunities, as do 401(k) pension savings plans or medical savings accounts. Dr. McNeill suggests capping health insurance expenses to a small percentage of income (up to 5 percent) to limit the financial burden on the sick.

See “Do consumer-directed health benefits favor the young and healthy?” by Dr. McNeill, in the January 2004 *Health Affairs* 23(1), pp. 186-193. Reprints (AHRQ Publication No. 04-R033) are available from AHRQ.** ■

Greater HMO penetration in an area reduces the number of preventable hospitalizations

Timely and effective ambulatory (outpatient) care of certain conditions such as asthma and diabetes, called ambulatory care sensitive conditions (ACSCs), is thought to prevent hospitalizations for these conditions. A greater penetration in a market area of health maintenance organizations

(HMOs), which tend to offer more comprehensive preventive services than other types of care plans, significantly reduces preventable hospitalizations due to some ACSCs, according to a recent study. The study was conducted by Chunliu Zhan, M.D., Ph.D., of the Center for Quality Improvement and Patient Safety, Agency for

Healthcare Research and Quality, Herbert Wong, Ph.D., of AHRQ’s Center for Delivery, Organization, and Markets, and other researchers.

The researchers found that a 10 percent increase in HMO penetration was associated with a

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3.8 percent decrease in preventable hospitalizations. Advanced age, female sex, poor health, poverty, more hospital beds, and fewer primary care physicians per capita were significantly associated with more preventable hospitalizations. These findings suggest that HMOs may be more successful than other care models in managing ACSCs in outpatient settings, which leads to fewer hospitalizations.

As traditional HMO penetration gives way to less restrictive managed care plans that may not offer equally comprehensive benefits for preventive care and wellness programs, the effect of HMO penetration on reducing preventable hospitalizations may erode, caution the researchers. They analyzed hospital discharge abstracts for 932 urban counties in 22 States from the Healthcare Cost and Utilization Project State Inpatient Databases, hospital annual survey data, and 1998 Health Resources

and Services Administration Area Resource Files to determine the association between preventable hospitalizations and HMO penetration.

More details are in "The effects of HMO penetration on preventable hospitalizations," by Dr. Zhan, Marlene R. Miller, M.D., M.Sc., Dr. Wong, and Gregg S. Meyer, M.D., M.Sc., in the April 2004 *Health Services Research* 39(3), pp. 345-361. Reprints (AHRQ Publication No. 04-R038) are available from AHRQ.** ■

Agency News and Notes

Preventive Services Task Force issues new recommendations

The U.S. Preventive Services Task Force recently issued new recommendations related to screening for hepatitis C virus infection, screening for family and intimate partner violence, and use of fluoride supplements to prevent cavities in preschool children. The Task Force, the leading independent panel of private-sector experts in prevention and primary care, is chaired by Ned Calonge, M.D., Chief Medical Officer and State Epidemiologist for the Colorado Department of Public Health. The Task Force is sponsored by the Agency for Healthcare Research and Quality.

In formulating recommendations, the Task Force conducts rigorous impartial assessments of all the scientific evidence for a broad range of preventive services. Its recommendations are considered the gold standard for clinical preventive services.

The new screening recommendations and associated materials are described here. Visit the Task Force Web site at www.preventiveservices.ahrq.gov for more information and to order

copies of easy-to-read fact sheets and materials for clinicians, as well as information on earlier recommendations.

Screening for hepatitis C virus infection. Hepatitis C virus (HCV), which is primarily acquired by exposure to infected blood, can lead to cirrhosis of the liver and liver cancer, fatigue, and poorer quality of life. The Task Force recommends against routine screening for HCV infection in asymptomatic adults who are not at increased risk for infection. Patients at increased risk for HCV infection include intravenous drug users; those who had blood transfusions before 1990, when HCV screening tests became available; children of HCV-infected mothers; and, to some extent, those who engage in high-risk sexual behaviors.

The Task Force based their recommendation on a comprehensive review of the evidence on prevalence of HCV infection, antiviral treatment effectiveness, and the benefits of screening. The Task Force found good evidence that screening with available tests (initially with enzyme

immunoassay and confirmation with the strip recombinant immunoblot assay) can detect HCV infection in the general population. However, the prevalence of HCV infection in the general population is low (about 2 percent), and most who are infected do not develop cirrhosis or other major negative health outcomes. In addition, there is no evidence that screening for HCV infection leads to improved long-term health outcomes, such as decreased cirrhosis of the liver, liver cancer, or death.

There is limited evidence that current treatment improves long-term health outcomes. Also, the treatment regimen is long and costly and is associated with a high patient dropout rate due to adverse effects. There is no evidence as yet that newer treatments, such as pegylated interferon plus ribavirin, can improve long-term health outcomes. Potential harms of screening include unnecessary biopsies and labeling, although there is limited evidence to determine the magnitude of these harms. The Task Force

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concluded that the potential harms of HCV screening in asymptomatic adults, who are not at increased risk for this infection, are likely to be greater than the potential benefits.

See “Screening for hepatitis C virus infection in adults: Recommendation statement,” by the U.S. Preventive Services Task Force, in the March 16, 2004 *Annals of Internal Medicine* 140(6), pp. 462-464. For a detailed review of the evidence used for the recommendation, see Chou, R., Clark, E.C., and Helfand, M., “Screening for hepatitis C virus infection: A review of the evidence for the U.S. Preventive Services Task Force,” in the same journal on pages 462-464.

Family and intimate partner violence. Each year in the United States about 1 million abused children are identified; 1 to 4 million women are physically, sexually, or emotionally abused by their intimate partners; and an estimated half million older adults in domestic settings are abused and/or neglected.

The Task Force comprehensively reviewed the research evidence on the performance of violence screening instruments and effectiveness of interventions based in health care settings and found no direct evidence that screening for family and intimate partner violence leads to decreased disability or premature death. The Task Force concludes there is insufficient evidence to recommend for or against routine screening.

There were no studies that focused on the accuracy of screening tools for identifying family and intimate partner violence among children, women, or older adults in the general population. The Task Force did find fair to good evidence that interventions reduce harm to children when child abuse or neglect has been assessed. However, they found limited evidence as to whether

interventions reduce harm to women and no studies that examined the effectiveness of interventions in older adults.

No studies directly addressed the harms of screening and interventions for family and intimate partner violence. As a result, the Task Force could not determine the balance between the harms (for example, loss of contact with established support systems, psychological distress, and escalation of abuse) and benefits of screening for family and intimate partner violence. Although few studies provide data on detection and management to guide clinicians, the Task Force suggests that clinicians always be alert to physical and behavioral signs and symptoms associated with abuse or neglect, treat any injuries, and arrange for professional counseling for the patient. Clinicians should also provide the patient with telephone numbers of local crisis centers, shelters, and protective services agencies.

See “Screening for family and intimate partner violence: Recommendation statement,” by the U.S. Preventive Services Task Force, in the March 2, 2004 *Annals of Internal Medicine* 140(5), pp. 382-386. For a detailed review of the evidence, see Nelson, H.D., Nygren, P., McInerney, Y., and Klein, J., “Screening women and elderly adults for family and intimate partner violence: A review of the evidence for the U.S. Preventive Services Task Force,” in the same journal, pages 387-396.

Fluoride supplements to prevent cavities in preschool children.

Primary care clinicians who practice in areas where the water supply is deficient in fluoride should prescribe oral fluoride supplements to preschool children over the age of 6 months, according to a Task Force recommendation. Dental cavities are a common childhood problem affecting as many as 19 percent of children between the ages of 2 and 5

years and more than half of children ages 5 to 9 years.

The Task Force notes that primary care clinicians can play an important role in the prevention of cavities by prescribing fluoride supplements to those children whose water supplies are deficient in fluoride. Current dosage recommendations are based on the fluoride level of the local community’s water supply and are available online at www.ada.org. Information on the fluoride content in a local community’s water supply can be requested from local health departments. It is important for clinicians to know the fluoride levels in their patients’ primary water supply before providing fluoride supplementation to avoid over-supplementation that can lead to fluorosis, which typically leads to mild discoloration of teeth.

The Task Force did not find adequate evidence that risk assessment for dental caries performed by primary care clinicians results in fewer cavities among young children. Therefore, the Task Force concluded that there was insufficient evidence to recommend for or against routine risk assessment for dental disease in preschool children by primary care clinicians. The Task Force based its conclusion on a report from a team led by James Bader, D.D.S., at AHRQ’s RTI International-University of North Carolina Evidence-based Practice Center.

See “Prevention of dental caries in preschool children: Recommendations and rationale,” in the May 2004 *American Journal of Preventive Medicine* 26(4), pp. 326-329. For a detailed review of the evidence, see “Physicians’ roles in preventing dental caries in preschool children: A summary of the evidence for the U.S. Preventive Services Task Force,” in the same journal, pages 315-325.

Editor’s note: All Task Force recommendations and supporting materials are available online at www.preventiveservices.ahrq.gov. ■

AHRQ issues new evidence reports on responding to bioterrorism and use of fish oil supplements to fight heart disease

The Agency for Healthcare Research and Quality has published new evidence reports that focus on bioterrorism preparedness and response, training of hospital staff to respond to a mass casualty incident, and use of fish oil to help fight heart disease. The reports were developed by AHRQ-supported Evidence-based Practice Centers (EPCs). There are 13 AHRQ-supported EPCs. They systematically review the relevant scientific literature on topics assigned to them by AHRQ and conduct additional analyses when appropriate prior to developing their reports and assessments.

The goal is to inform health plans, providers, purchasers, and the health care system as a whole by providing essential information to improve health care quality. EPC reports and summaries are published by AHRQ and are available online and through the AHRQ clearinghouse. Visit the AHRQ Web site at www.ahrq.gov and click on “Clinical Information” or see the back cover of *Research Activities* for ordering information.

Bioterrorism preparedness and response. Coordinating resources across local and State lines—also known as regionalization—may benefit some bioterrorism preparedness and response capabilities, but more research is needed to find the best ways of coordinating those resources, according to this new evidence report. The report, *Regionalization of Bioterrorism Preparedness and Response*, identifies three key ways regionalization can make a difference in communities’ response.

First, regionalization may help communities with surge capacity—a

health care system’s ability to rapidly expand beyond normal services—to provide critical response services such as medical care, distribution and dispensing of preventive drugs, outbreak investigation, and emergency management.

Second, regionalization may be the best way for State and local governments to use scarce resources by joining with other communities to develop teams of trained response personnel and maintain supplies of response equipment.

Third, pre-existing agreements and written plans that specify roles, payment, and chain of command may help in coordinating the numerous response organizations likely to be involved. The researchers also found that:

- Most Federal, State, and local organizations that are likely to be part of a regional response were designed independently or for purposes other than responding to bioterrorism. Efforts to coordinate these organizations for bioterrorism preparedness have only just begun.
- Supply chain management concepts used in manufacturing are directly relevant to those parts of a bioterrorism response that require the purchasing, inventorying, distributing, and rapid dispensing of needed supplies.
- Pre-event hospital designation (such as limiting high-cost specialty care to specifically designated hospitals with increased experience in treating severely injured patients) and formalized protocols for pre-hospital and hospital trauma

care (such as first responders knowing where and how to rapidly transport exposed patients) contribute to improved patient outcomes.

The report was prepared by a team of researchers led by Dena Bravata, M.D., at AHRQ’s Evidence-based Practice Center at Stanford University-University of California, San Francisco. In reviewing the available literature on this topic, the researchers found few evaluations of systems relevant to preparedness and even fewer evaluations of the regionalization of systems relevant to bioterrorism preparedness. They recommend that future research focus on the costs and benefits of regionalization of surveillance, inventory management and distribution systems, and information management.

The report, *Regionalization of Bioterrorism Preparedness and Response*, Evidence Report/Technology Assessment No. 96 (AHRQ Publication No. 04-E016-1, summary; 04-E016-2, full report) is available from AHRQ.

Editor’s note: This report is one of more than 50 studies, workshops, conferences, and other activities funded under the Agency’s bioterrorism research portfolio. For more information, go to www.ahrq.gov and select “Bioterrorism Planning and Response.” AHRQ sponsors research that provides the evidence base for tools and resources needed in bioterrorism planning and response.

Training of hospital staff to respond to a mass casualty incident. Disaster scenarios that

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EPC reports

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once seemed merely theoretical have become a disturbing reality and represent a growing threat for a mass casualty incident. There is a clear need to determine the best ways to mitigate the potential impact of a mass casualty incident that could result in multiple casualties that may overwhelm local resources and potentially could involve natural, biological, chemical, nuclear, or other agents.

The Johns Hopkins University EPC reviewed published evidence regarding the usefulness of the following approaches in training staff to respond to a mass casualty incident: hospital disaster drills, computer simulations, and tabletop or other exercises, as well as the methods and tools that have been used in evaluating these approaches.

Their review revealed that the evidence is limited. However, enough studies were available to suggest that hospital disaster drills can help to identify problems with incident command, communications, triage, patient flow, security, and other issues. The evidence also indicated that computer simulations and tabletop and other exercises may help to train key decisionmakers in disaster response. They conclude, however, that the evidence was insufficient to support firm conclusions about specific training methods or the usefulness of reported evaluation methods. They note that future disaster preparedness efforts would benefit from increased reporting of hospitals' experiences in disaster response training.

Training of Hospital Staff to Respond to a Mass Casualty Incident, Evidence Report/Technology Assessment No. 95, is available from AHRQ (AHRQ

Publication No. 04-E015-1, summary; 04-E015-2, full report).

Use of fish oil to fight heart disease. Fish oil can help reduce deaths from heart disease, according to this new series of evidence reports. The systematic reviews of the available literature found evidence that long chain omega-3 fatty acids, the beneficial component in fish and fish oil supplements, reduce heart attack and other problems related to heart and blood vessel disease in people who already have these conditions, as well as reduce their overall risk of death. Although omega-3 fatty acids do not alter total cholesterol, HDL cholesterol, or LDL cholesterol, evidence suggests that they can reduce levels of triglycerides—a fat in the blood that may contribute to heart disease.

The review also found other evidence indicating that fish oil can help lower high blood pressure slightly, may reduce risk of coronary artery reblockage after angioplasty, may increase exercise capability among patients with clogged arteries, and may possibly reduce the risk of irregular heartbeat—particularly in individuals with a recent heart attack.

The evidence reports on the health effects of omega-3 fatty acids are part of a series conducted by AHRQ-supported Evidence-based Practice Centers at the request of the National Institutes of Health's Office of Dietary Supplements, which plans to use the findings to develop research agendas on the issues. Five reports have been issued so far, and an additional six reports will be issued next year.

Other findings from the AHRQ evidence reviews include:

- Omega-3 fatty acids do not affect fasting blood sugar or glycosylated hemoglobin in people with type II diabetes, nor

do they appear to affect plasma insulin levels or insulin resistance.

- Alpha-linolenic acid—a type of omega-3 fatty acid from plants such as flaxseed, soybeans, and walnuts—may help reduce deaths from heart disease but to a much lesser extent than fish oil.
- Based on the evidence to date, it is not possible to conclude whether omega-3 fatty acids help improve respiratory outcomes in children and adults who have asthma.
- Omega-3 fatty acids appear to have mixed effects on people with inflammatory bowel disease, kidney disease, or osteoporosis and no discernible effect on people who have rheumatoid arthritis.

The evidence reports and EPCs that produced them are as follows:

Tufts-New England Medical Center EPC, Boston

- *Effects of Omega-3 Fatty Acids on Cardiovascular Disease*, Report No. 94 (AHRQ Publication Nos. 04-E009-1, summary; 04-E009-2, full report)
- *Effects of Omega-3 Fatty Acids on Cardiovascular Risk Factors and Intermediate Markers for Cardiovascular Disease*, Report No. 93 (AHRQ Publication Nos. 04-E010-1 summary; full report 04-E010-2)
- *Effects of Omega-3 Fatty Acids on Arrhythmogenic Mechanisms in Animal and Isolated Organ/Cell Culture Studies*, Report No. 92 (AHRQ Publication No. 04-E011-1, summary; 04-E011-2, full report)

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University of Ottawa EPC, Ottawa, Ontario

- *Health Effects of Omega-3 Fatty Acids on Asthma*, Report No. 91 (AHRQ Publication No. 04-

E013-1, summary; 04-E013-2, full report)

Southern California-RAND EPC, Santa Monica, CA

- *Health Effects of Omega-3 Fatty Acids on Lipids and Glycemic Control in Type II Diabetes and the Metabolic Syndrome, and on*

Inflammatory Bowel Disease, Rheumatoid Arthritis, Renal Disease, Systemic Lupus Erythematosus, and Osteoporosis, Report No. 89 (AHRQ Publication No. 04-E012-1, summary; 04-E012-2, full report) ■

AHRQ names third Child and Adolescent Health Scholar

Carole M. Lannon, M.D., M.P.H., has been appointed as AHRQ's third Child and Adolescent Health Scholar. Dr. Lannon is Director of the American Academy of Pediatrics (AAP) Steering Committee on Quality Improvement and Management and co-Director of the North Carolina Center for Children's Healthcare Improvement. She serves as medical editor of AAP's Education for Quality Improvement in

Pediatric Practice, a Web-based QI tool that will form the basis for maintenance of certification for pediatricians. She is also the principal investigator on the AHRQ Partnership for Quality Cooperative Agreement to work with local child health networks to improve care for children with attention-deficit-hyperactivity disorder. Dr. Lannon has contributed in other AHRQ initiatives involving neonatal jaundice practice improvement,

childhood obesity, and developmental and preventive services for children. Dr. Lannon received a B.A. from Macalester College. She earned her Doctor of Medicine degree from the University of Minnesota Medical School and her Master's degree from the University of North Carolina, School of Public Health. ■

Research Briefs

Aita, V., McIlvain, H., Susman, J., and Crabtree, B. (2003, December). "Using metaphor as a qualitative analytic approach to understand complexity in primary care research." (AHRQ grant HS08776). *Qualitative Health Research* 13(1), pp. 1419-1431.

Metaphors can identify and explore tacit knowledge and behaviors that are embedded in complex organizations and shape health care practices. The authors of this article explore the theoretical rationale, background, and advantages of using metaphor as an analytic approach to understand complexity in primary care research. They illustrate the advantages and implications of this

approach using an analysis of 18 family practices in a comparative case study designed to explore office practice strategies for delivering cancer prevention services. Examples of practice metaphors used included the "franchise," the "mission," and the "family," which described the overall nature of a practice and captured the dominant value that seemed to be motivating practice behaviors.

Asch, S.M., Fremont, A.M., Turner, B.J., and others. (2004). "Symptom-based framework for assessing quality of HIV care." (AHRQ grant HS08578). *International Journal for Quality in Health Care* 16(1), pp. 41-50.

Symptom-based indicators for quality of HIV care may provide a useful supplement to conventional measures, according to this study. Using a symptom-based framework for quality, the researchers found that HIV care for several common, burdensome symptoms was suboptimal. Of HIV-infected patients who reported being at least moderately bothered by one of three symptoms (cough with fever and/or shortness of breath, significant weight loss, or severe diarrhea), 41, 74, and 65 percent, respectively, reported receiving all indicated care for the most bothersome symptom in the previous 6 months. Care was better for patients with more severe HIV

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Research briefs

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disease (CD4 cell count less than 50 cells/microliter).

Bradley, E.H., Holmboe, E.S., Mattera, J.A., and others. (2004). "Data feedback efforts in quality improvement: Lessons learned from U.S. hospitals." (AHRQ grant HS10407). *Quality & Safety in Health Care* 13, pp. 26-31.

Data feedback, the process of monitoring practice performance, is a central component of quality improvement efforts. This study illustrates the diversity of hospital-based efforts at data feedback. It also highlights successful strategies and common pitfalls in designing and implementing data feedback to support performance improvement. It is based on interviews with 45 clinical and administrative staff in eight U.S. hospitals. Those interviewed made several points. Physicians must perceive the data as valid to motivate change, it takes time to develop the credibility of data within a hospital, benchmarking improves the meaningfulness of data feedback, and data feedback must persist to sustain improved performance.

Callahan, E.J., Strange, K.C., Bertakis, K.D., and others. (2003). "Does time use in outpatient residency training reflect community practice?" (AHRQ grants HS08029 and HS06167). *Residency Education* 35(6), pp. 423-427.

This study found that experienced family physicians provide more technical and less preventive and psychosocially oriented care than residents. Thus, time use in outpatient residency training does not reflect actual community practice, conclude the researchers. They compared time use during visits by 244 new adult outpatients to 33 second- and third-

year residents in a university clinic to time use during 277 new adult outpatient visits to 92 community practice family physicians. Controlling for patient mix, residents had longer visits, a less technical focus, and spent more of the visit on efforts to promote health behavior change and counseling. The differences in time use between the two groups may reflect differences in patient mix, practice setting, physician experience, or the time and financial pressures of community practice.

Carder, P.C., and Hernandez, M. (2004). "Consumer discourse in assisted living." (AHRQ grant HS09886). *Journal of Gerontology: Social Sciences* 59B(2), pp. S58-S67.

This article discusses organizational strategies employed by assisted living practitioners to promote consumer choice and independence while mediating potential risks to assisted living residents. The investigators used field notes, participation in manager-training programs, and interviews with residents and family members during a nearly 2-year study of three Oregon assisted living facilities. They found that consumer discourse that treats older residents as active consumers rather than recipients of long-term care services was evident in State rules, manager-training programs, organizational practices, and an institutional belief in specific consumer demands like independence and choice. The authors discuss the benefits and pitfalls of this approach.

Conrad, K.J., and Smith, E.V. (2004, January). "International conference on objective measurement: Applications of Rasch analysis in health care." (AHRQ grant HS10941). *Medical Care* 42(1Suppl.), pp. 1-6.

This article provides an overview of papers on Rasch analysis that were presented at an international conference on objective measurement. The authors explain that use of Rasch models enables predictions of how people at each level of ability are expected to do on each item. For example, in the mental health field, if a person says they feel suicidal, the odds are strongly in favor of their citing other symptoms such as loneliness, nervousness, and depression, as these symptoms are easier to endorse than feeling suicidal. Other papers address some key measurement issues that can be studied and problems that can be solved using Rasch analysis, such as the issue of missing data.

Cook, R.L., May, S., Harrison, L.H., and others. (2004, January). "High prevalence of sexually transmitted diseases in young women seeking HIV testing in Rio de Janeiro, Brazil." (AHRQ grant HS10592). *Sexually Transmitted Diseases* 31(1), pp. 67-72.

Sexually transmitted diseases (STDs) are a substantial health problem among young Brazilian women seeking HIV testing, concludes this study. The investigators administered a questionnaire to 200 women aged 14 to 29 years who visited an HIV testing site in central Rio de Janeiro and were tested for HIV, syphilis, chlamydia, and gonorrhea. HIV and other STDs were common (HIV, 8 percent; syphilis, 6.5 percent; chlamydial infection, 8 percent; and gonorrhea, 9.5 percent). HIV was associated with lower education and having an HIV-infected partner. Other STDs were associated with younger age at first intercourse, heavy alcohol consumption, and marijuana use.

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Gershon, R.R., Stone, P.W., Bakken, S., and Larson, E. (2004, January). “Measurement of organizational culture and climate in health care.” (AHRQ grant HS13114). *Journal of Nursing Administration* 34(1), pp. 33-40.

These investigators conducted a systematic review of the biomedical literature to clarify the definition of organizational culture and climate, begin the process of standardization of the terminology, and identify instruments that measure the constructs of organizational culture and climate. Based on the review, they categorized dimensions assessing organizational culture or climate into four areas: leadership characteristics, group behaviors and relationships, communications, and structural attributes of quality of work life. They also identified major health-care-related outcomes, the most common being patient satisfaction, job satisfaction, motivation, work stress, and turnover.

Gresenz, C.R., Rogowski, J., and Escarce, J.J. (2004, April). “Updated variable-radius measures of hospital competition.” (AHRQ grant HS10770). *Health Services Research* 39(2), pp. 417-430.

The size of a hospital’s market is influenced by a number of factors that include hospital characteristics and features of the local health care market. Using data from the 1997 State Inpatient Databases of the Healthcare Cost and Utilization Project for nine States, these investigators found several important correlates of a hospital’s market size. These include population density, number of other hospitals in the local area, and hospital characteristics such as

medical school affiliation, percentage of admissions that are Medicaid, and service offerings. However, the influence of population density and local hospital competition varied significantly depending on whether the hospital was in an urban or rural location.

Haley, S.M., Coster, W.J., Andres, P.L., and others, “Activity outcome measurement for postacute care;” and Coster, W.J., Haley, S.M., Andres, P.L., and others. (2004, January). “Refining the conceptual basis for rehabilitation outcomes measurement.” (Cofunded by AHRQ and the National Institute of Child Health and Human Development). *Medical Care* 42(1Suppl.), pp. I49-I61, I62-I72.

In the first study, the investigators developed a model for measuring rehabilitation outcomes of postacute care. The 41-item Activity Measure for Postacute Care (AM-PAC) assesses an individual’s execution of discrete daily tasks in his or her own environment across major content domains defined by the International Classification of Functioning, Disability, and Health. Three areas, applied cognition, personal care and instrumental activity, and physical and movement activities, accounted for 72 percent of variance among individuals. In the second study, the researchers administered the newly developed AM-PAC and other rehabilitation outcome instruments to 477 individuals from three different disability groups and four types of postacute rehabilitation care settings. The results support the validity of the personal care and instrumental activity dimension of the AM-PAC as a guide for future development of rehabilitation outcome instruments, such as

linked, setting-specific short forms and computerized adaptive testing.

Hayes, D.N., and Sege, R. (2003, December). “FiGHTS: A preliminary screening tool for adolescent firearms-carrying.” (AHRQ grant T32 HS00060). *Annals of Emergency Medicine* 42(6), pp. 198-207.

These researchers analyzed responses of 15,000 high school students to the 1999 National Youth Risk Behavior Survey to develop a preliminary screening tool, FiGHTS, to identify adolescents at risk for carrying firearms. They found that four simple screening questions and male sex may be used to generate a FiGHTS score—fighting (Fi), gender (G), hurt while fighting (H), threatened (T), and smoker (S)—that appears to be fairly sensitive and specific for identifying youths who carry firearms. An extended 13-item FiGHTS score that includes questions about sexual behavior, substance abuse, and criminal behavior is even more sensitive.

Hoff, T., Jameson, L., Hannan, E., and Flink, E. (2004, March). “A review of the literature examining linkages between organizational factors, medical errors, and patient safety.” (AHRQ grant HS11880). *Medical Care Research and Review* 61(1), pp. 3-37.

There is little evidence for asserting the importance of any individual, group, or structural variable in medical error prevention or enhanced patient safety at the present time, concludes this study. The authors conducted an extensive review of the literature examining linkages between organizational factors, medical errors, and patient safety. They conclude that two major issues bear on the development of future research in

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this area. The theoretical foundations of organizational research on patient safety must be strengthened, and problems associated with definitions and observation associated with error-focused dependent variables must be overcome.

Keren, R., Pati, S., and Feudtner, C. (2004). "The generation gap: Differences between children and adults pertinent to economic evaluations of health interventions." (AHRQ grant K08 HS00002). *Pharmacoeconomics* 22(2), pp. 71-81.

Appropriate accommodations for the special features and needs of children are relatively underdeveloped in cost-effectiveness studies of health care interventions, according to these authors. They discuss key areas warranting attention, such as the ways in which a child's distinctive biology modifies the cost and effectiveness of health care interventions and the challenges in assessing utilities for infants and young children, given their limited but developing cognitive capacity. Other areas to explore include accounting for how a child's age, dependency, and disability affect the selection of the appropriate time horizon and scope of analysis and what equity principles policymakers should employ in using economic evaluations to choose between child- and adult-focused interventions.

Lambert, M.C., Samms-Vaughan, M.E., Fairclough, M., and others. (2003). "Is it prudent to administer all items for each Child Behavior Checklist cross-informant syndrome?" (AHRQ

grant HS08385). *Psychological Assessment* 15(4), pp. 550-568.

The Child Behavior Checklist (CBCL) is widely used by researchers and clinicians in many countries to measure children's behavioral and emotional functioning. Designed according to a multi-informant approach to child assessment, the CBCL consists of parent, teacher, and youth (Youth Self-Report, or YSR) forms that rate the functioning of children being assessed. Through surveying children in 10 countries with these three forms of the CBCL, the authors derived cross-informant syndromes (CISs). This study used confirmatory factor analysis to test factor model fit for CISs on the YSR responses of 625 Jamaican children aged 11 to 18 years. More than three-fourths of the cross-informant items yielded little information. Eliminating such items could provide a more efficient behavioral measure.

Mark, B.A., Harless, D.W., McCue, M., and Xu, Y. (2004, April). "A longitudinal examination of hospital registered nurse staffing and quality of care." (AHRQ grant HS10135 *Health Services Research* 39(2), pp. 279-300.

This study's findings provide limited support for the prevailing notion that improving registered nurse (RN) staffing unconditionally improves quality of care. The investigators analyzed several systems of data for 422 hospitals from 1990 to 1995 to examine the association between nurse staffing and quality of care. Quality measures, adjusted for patient risk, included the in-hospital mortality ratio and the complication ratios for decubitus ulcers, pneumonia, and urinary tract infection. Increasing RN staffing had a diminishing marginal effect on reducing

mortality ratio, but it had no consistent effect on any of the complications.

Miranda, J., Nakamura, R., and Bernal, G. (2003). "Including ethnic minorities in mental health intervention research: A practical approach to a long-standing problem." (AHRQ grant HS10858). *Culture, Medicine, and Psychiatry* 27, pp. 467-486.

Few studies provide information on outcomes of mental health care for ethnic minorities. In this paper, the authors examine this topic and discuss how to proceed in developing an evidence base for understanding mental health care for minorities. They conclude that entering representative numbers of ethnic minorities in efficacy trials is unlikely to produce useful information on outcomes of care because the numbers will be too small to produce reliable findings. Also, conducting randomized efficacy trials for all mental health interventions for each ethnic group would be impractical. Nevertheless, innovative and theoretically informed studies that focus on specific cultural groups are needed to advance the knowledge base.

O'Malley, A.S., Clancy, C., Thompson, J., and others. (2004, March). "Clinical practice guidelines and performance indicators as related, but often misunderstood, tools." *Joint Commission Journal on Quality and Safety* 30(3), pp. 163-171.

Clinical practice guidelines (CPGs) and performance indicators (PIs) are tools that have been developed to address variation in medical practice. CPGs present available evidence for best practices. PIs measure and document practice performance to motivate organizations to improve through use of common metrics.

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The increasingly widespread use of PIs with CPGs risks lowering the standards of clinical care, since PIs are not intended to set optimal standards of care for any individual patient, according to these authors. Clinicians should not restrict their quality monitoring to focus on PIs because they could miss important opportunities to learn and to improve the care they deliver to their individual patients. Reprints (AHRQ Publication No. 04-R037) are available from AHRQ.**

Peek, C.W., Koropeckyj-Cox, T., Zsembik, B.A., and Coward, R.T. (2004, March). "Race comparisons of the household dynamics of older adults." (AHRQ grant T32 HS00086). *Research on Aging* 26(2), pp. 179-201.

Very little is known about ethnoracial variation in household dynamics, such as patterns of coresidence and the composition of households over time. This study analyzed data from a sample of older people residing in Florida to describe differences according to race in longitudinal patterns of household change that occurred during four 6-month intervals. About one-fourth of respondents experienced some change in household composition during the 2-year study. Older blacks lived in larger and more dynamic

households than whites and were more likely to form coresident relationships with grandchildren and nonrelatives. Age, sex, marital status, and disability were also associated with the likelihood of acquiring a new household member.

Wu, N., Miller, S.C., Lapane, K., and Gozalo, P. (2003, November). "The problem of assessment bias when measuring the hospice effect on nursing home residents' pain." (AHRQ grant HS10549). *Journal of Pain and Symptom Management* 26(5), pp. 998-1009.

These researchers studied the pain documented on nursing home resident assessments (minimum data sets, MDS) for 9,613 nursing home residents in six States who died in 1999 and 2000. The researchers compared the documented pain of residents who were enrolled or not enrolled in hospice care. At the time of their last assessment, residents in hospice were more likely to receive opioids for their moderate to severe pain than were non-hospice residents and residents enrolled in hospice after the last MDS assessments. However, hospice residents were twice as likely as non-hospice residents and 1.3 times as likely as residents who eventually enrolled in hospice to have pain documented, perhaps because of superior pain assessment by hospice.

Zou, K.H., Warfield, S.K., Fielding, J.R., and others. (2003, December). "Statistical validation based on parametric receiver operating characteristic analysis of continuous classification data." (AHRQ grant HS13234). *Academic Radiology* 10(12), pp. 1359-1368.

The accuracy of diagnostic test and imaging segmentation is important in clinical practice because it has a direct impact on therapeutic planning. These authors developed two parametric models for diagnostic or imaging data, which they validated using three clinical examples. First, they applied a semiautomatic fractional segmentation algorithm to magnetic resonance imaging of nine cases of brain tumors. Second, they evaluated the predictive value of 100 cases of spiral computed tomography of urethral stone sizes, distributed as binormal after a non-linear transformation, under two treatment options. Third, they transformed and modeled by binormal distributions prostate-specific antigen level for 180 men in a prospective clinical trial on prostate cancer. In all examples, areas under the receiver operating characteristic curves were computed, showing fair to excellent accuracy. ■

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