



Research Activities

No. 254, October 2001

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Outpatient mastectomies have increased over the last decade

A new study conducted by the Agency for Healthcare Research and Quality shows dramatic increases in outpatient complete mastectomies in five States. In Colorado, for instance, outpatient complete mastectomies jumped from under 1 percent in 1990 to 22 percent in 1996.

Claudia Steiner, M.D., M.P.H., of AHRQ's Center for Organization and Delivery Studies, and her colleagues Caroline Case, M.D., of Georgetown University, and Meg Johantgen Ph.D., R.N., of the University of Maryland, reviewed hospital inpatient and outpatient discharge records for all women who were treated for cancer with a breast procedure, either lumpectomy, partial mastectomy, or complete mastectomy. Inpatient and outpatient surgery data were available between 1990 and 1996 in Colorado, Maryland, New Jersey, and New York and between 1993 and 1996 in Connecticut.

Dr. Steiner and her colleagues found that two key factors influence whether a woman gets a complete mastectomy in the hospital or in an outpatient setting: the State where she lives and who

is paying for it. For example, women in New York were more than twice as likely, and in Colorado nearly nine times as likely, as women in New Jersey to have an outpatient complete mastectomy. Nearly all women who were Medicaid and Medicare beneficiaries were kept in the hospital after their surgery, as were 89 percent of women enrolled in HMOs.

Other significant findings include:

- Lumpectomies have been and continue to be performed almost exclusively in out-of-hospital settings.
- A woman's clinical characteristics—including severity of the breast cancer, presence of coexisting illness, extent of the surgery, and others—remain important considerations for an outpatient complete mastectomy.
- Women in this study were less likely to have complete mastectomies in outpatient settings if the procedure was performed at a publicly funded hospital or teaching hospital.

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Outpatient mastectomies

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For more details, see "Outpatient mastectomy: Clinical, payer, and

geographic influences," by Drs. Case, Johantgen, and Steiner, in the October 2001 *Health Services Research* 36(5), pp. 869-884. Reprints (AHRQ Publication No.

01-R008) are available from AHRQ.*

Women's Health

Hormone replacement therapy does not appear to increase the risk of breast cancer recurrence, but more studies are needed

Most of the 2.5 million women who have survived breast cancer in the United States are menopausal. Also, 70 percent of women who develop breast cancer in their reproductive years develop premature menopause from chemotherapy used to treat the cancer. Declining estrogen levels cause many of these women to suffer from hot flashes, mood and sleep disturbances, memory impairment, and sexual dysfunction; in addition, their risk of osteoporosis increases. Hormone replacement therapy (HRT) that can alleviate these symptoms is typically withheld from women who have had breast cancer because of concern that it might increase the risk of cancer recurrence.

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AHRQ
Office of Health Care Information
2101 East Jefferson Street, Suite 501
Rockville, MD 20852
(301) 594-1364

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

A new study, supported in part by the Agency for Healthcare Research and Quality (HS09796), suggests that HRT does not increase the risk of cancer recurrence, but Joseph Lau, M.D., of the New England Medical Center, and his colleagues call for further studies to confirm their findings. They based their findings on a systematic review of research studies through May 1999.

The researchers calculated the relative risk of breast cancer recurrence in each study by comparing the number of recurrences in the HRT group to those in the non-HRT group. Of the 11 eligible studies, 4 had non-HRT control groups and included 214 breast cancer survivors who began HRT after a mean disease-free interval of 52 months. Over a mean followup of 30 months, 4.2 percent of HRT users per year compared with 5.4 percent of nonusers experienced a recurrence of breast cancer. Including all 11 studies in the analyses (669 HRT users) and using estimated control groups for the 7 uncontrolled trials did not significantly change the results.

Although these findings do not exclude the possibility that HRT might increase the risk of recurrence, they suggest that it is unlikely that the magnitude of risk is large. Nonetheless, many women may not be willing to tolerate even a relatively small increase in their risk of breast cancer recurrence to obtain the benefits of HRT. While waiting for results of ongoing randomized clinical trials, doctors should inform women with breast cancer who are interested in taking HRT about the uncertain effects of HRT on recurrence risk, conclude the researchers.

More details are in "Hormone replacement therapy after breast cancer: A systematic review and quantitative assessment of risk," by Nananda F. Col, M.D., Linda K. Hirota, Richard K. Orr, and others, in the April 15, 2001 *Journal of Clinical Oncology* 19, pp. 2357-2363.

Chronic hypertension is associated with an 11-fold increase in the risk of preeclampsia during pregnancy

Preeclampsia is a reversible complication that occurs in about 2.5 percent of pregnancies. It is diagnosed from symptoms of hypertension, proteinuria (excessive protein in the urine), and edema (swelling) after 20 weeks of gestation. Preeclampsia can develop in both normotensive women (those with normal blood pressure) and those with preexisting chronic hypertension, and it can progress to eclampsia, that is, convulsions. Preeclampsia and eclampsia contribute to maternal death and increased risk of preterm birth, intrauterine growth retardation, and newborn deaths.

A recent study revealed that, compared with normotensive women, both black and white women who have chronic hypertension have an 11-fold higher risk of developing preeclampsia during pregnancy. Furthermore, since black women in the study had twice the rate of chronic hypertension of white women (1.5 vs. 0.7 percent,

respectively), chronic hypertension intervention programs would provide significantly greater prevention benefits and a lower disease burden among black women, conclude the researchers. The study was conducted by researchers at the Program for Health Effectiveness Research, Clinical Research Center at the Morehouse School of Medicine in Atlanta, and was supported in part by the Agency for Healthcare Research and Quality (HS07400).

The researchers used hospital discharge summary records from the National Hospital Discharge Survey for 1988 to 1996 to examine the relationship between preexisting chronic hypertension and preeclampsia among 38,402 black and 144,285 white pregnant women with hospital deliveries during the study period. They found that irrespective of race, the risk of preeclampsia was greater among younger women (aged 15 to 19) than older women (aged 20 to 39) and among single women compared with married women. Women who

had diabetes or a genitourinary infection also were at greater risk of preeclampsia than women who did not have these conditions.

See "Preeclampsia associated with chronic hypertension among African-American and white women," by Aziz R. Samadi, M.D., M.P.H., Robert M. Mayberry, Ph.D., and James W. Reed, M.D., in the Spring/Summer 2001 *Ethnicity & Disease* 11, pp. 192-200.

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Maternal fever during labor is a strong predictor of infection-related neonatal and infant death

When a mother has a fever during labor, it is usually a sign of inflammation of the fetal membranes due to infection. This fever is strongly associated with infection-related neonatal and infant deaths among both preterm and term infants, according to a study supported in part by the Agency for Healthcare Research and Quality (HS09788).

Researchers from the University of Medicine and Dentistry of New Jersey and the

Robert Wood Johnson Medical School retrospectively analyzed the association of intrapartum fever with neonatal and infant death among more than 11 million single live births in the United States during the period 1995-1997. They used linked birth and infant death data from the National Center for Health Statistics.

Nearly 2 percent (1.6 percent) of mothers had intrapartum fever

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Maternal fever during labor

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(100.2° F or higher). Intrapartum fever was associated with increased risk for early neonatal (0-6 days) death among both preterm and term infants, and infant (up to 1 year of age) death among mothers having their first babies. Among preterm infants of mothers who had previously given birth, intrapartum maternal fever increased the risk by 30 percent for early neonatal death, after

adjustment for important confounding factors, ranging from maternal age and race to pregnancy and labor complications.

When considering both first-time mothers and those who had given birth before, intrapartum fever was a strong predictor of infection-related death. Among term infants, intrapartum fever tripled the risk of early neonatal death and nearly doubled the risk for infant death. Intrapartum fever also increased the risk of early neonatal and infant death among preterm infants. Intrapartum fever

was associated with meconium aspiration syndrome, hyaline membrane disease that causes respiratory distress, neonatal seizures, and newborn need for assisted ventilation among both term and preterm infants.

More details are in "Association of maternal fever during labor with neonatal and infant morbidity and mortality," by Anna Petrova, M.D., Ph.D., Kitaw Demissie, M.D., Ph.D., George G. Rhoads, M.D., M.P.H., and others, in the July 2001 *Obstetrics and Gynecology* 98, pp. 20-27.

Clinical Decisionmaking

Echocardiography can help identify patients at risk of cardiac complications following major noncardiac surgery

Cardiovascular complications are the most common cause of death among patients undergoing noncardiac surgery. Transthoracic echocardiography (TTE) is frequently ordered before noncardiac surgery, although its ability to predict postoperative cardiac complications has been uncertain. Echocardiography is an imaging technique that can be used to visualize the position and motion of the heart walls or internal structures of the heart from the echo obtained by directing ultrasonic waves through the chest wall.

A recent study suggests that preoperative TTE can add helpful information to clinical criteria to better predict which patients are at risk of postoperative cardiac

complications following major noncardiac surgery. However, echocardiograms are unlikely to improve management of otherwise low-risk patients based on clinical criteria or patients with a low probability of having an abnormal echocardiogram. Routine clinical data should suffice for these patients, according to the researchers.

It is premature, however, to recommend that TTE be performed routinely in patients with both a moderate or high clinical risk for postoperative cardiac complications and a high risk for abnormal echocardiographic findings, caution Lee Goldman, M.D., M.P.H., of the University of California, San Francisco, and Thomas H. Lee, M.D., M.S., of

Brigham and Women's Hospital in Boston. With support from the Agency for Healthcare Research and Quality (HS06573), the researchers evaluated what additional information beyond clinical data TTE provided for predicting cardiac complications after surgery among 570 patients who underwent TTE before major noncardiac surgery at a university hospital from 1989 to 1994.

TTE preoperative systolic dysfunction was associated with about three times the odds of postoperative heart attack (odds ratio, OR 2.8) and cardiogenic pulmonary edema (OR 3.2), and it indicated double the likelihood of major cardiac complications (OR 2.4). Moderate to severe LV hypertrophy (thought to jeopardize

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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.

Echocardiography

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blood supply to myocardial tissue by interfering with coronary flow reserve), moderate to severe mitral valve regurgitation, and increased aortic valve gradient also doubled the odds of major postoperative

cardiac events (OR 2.3, 2.2, and 2.1, respectively). Overall, models with echocardiographic variables predicted major cardiac complications significantly better than those that included only clinical variables.

See "Usefulness of transthoracic echocardiography as a tool for risk

stratification of patients undergoing major noncardiac surgery," by Luis E. Rohde, M.D., M.Sc., Carisi A. Polanczyk, M.D., M.Sc., Dr. Goldman, and others, in the March 1, 2001 *American Journal of Cardiology* 87, pp. 505-509.

Right heart catheterization during major noncardiac surgery does not reduce postoperative cardiac complications

Cardiac complications are the most common cause of death among patients undergoing elective noncardiac surgery and are usually associated with hemodynamic changes (changes in blood circulation) during surgery. This has led in some cases to hemodynamic monitoring during and immediately after surgery via right heart catheterization (RHC) for certain patients undergoing high-risk procedures.

RHC permits measurement of the pulmonary artery pressure, right heart pressure, cardiac output, and left ventricular pressure. The goal is to detect and correct inadequate oxygen delivery due to the increased metabolic demand of surgery and early signs of cardiac ischemia or congestive heart failure. However, perioperative RHC does not reduce the rate of major postoperative cardiac complications in noncardiac surgery patients, according to a study supported by the Agency for Healthcare Research and Quality (HS06573).

Because of the risks and high costs associated with RHC, its use in perioperative care of these patients should be evaluated in randomized controlled trials, recommend Lee Goldman, M.D., M.P.H., of the University of California, San Francisco, School of Medicine, and Thomas H. Lee, M.D., of Brigham and Women's Hospital in Boston. Drs. Goldman and Lee and their colleagues evaluated the relationship between use of perioperative RHC and postoperative cardiac complication rates in 4,059 patients 50 years of age or

older who underwent noncardiac surgery at one U.S. hospital between July 1989 and February 1994; 221 patients had RHC and 3,838 did not. Overall, 4.2 percent of patients suffered from major cardiac complications. Those who underwent perioperative RHC had a three-fold increase in the incidence of major postoperative cardiac complications (15.4 percent vs. 3.6 percent).

After adjusting for other factors, RHC patients were twice as likely as non-RHC patients to suffer from major postoperative cardiac and noncardiac complications. Finally, in a subset of 215 matched pairs of patients who did and did not undergo RHC, adjusted for physician propensity to use RHC and type of surgical procedure, RHC patients had three times the risk of postoperative congestive heart failure and twice the likelihood of major noncardiac complications. RHC patients also had longer hospital stays (a mean of 11 vs. 8 days). Also, any potential benefits of RHC may be offset in part by the physiological burden of indwelling instrumentation, conclude the researchers.

More details are in "Right heart catheterization and cardiac complications in patients undergoing noncardiac surgery," by Carisi A. Polanczyk, M.D., Sc.D., Luis E. Rohde, M.D., Sc.D., Dr. Goldman, and others, in the July 18, 2001 *Journal of the American Medical Association* 286(3), pp. 309-314.

Increasing primary care patients' access to short-term psychotherapy leads to lasting improvements in mental health

Although primary care doctors usually prescribe antidepressants as the first line of treatment for patients who are suffering from depression, there is evidence that many patients prefer counseling. Models that support integrated psychotherapy and medication-based treatment strategies in primary care have the potential for relatively long-term patient benefits, according to a new study.

Cathy D. Sherbourne, Ph.D., and Kenneth B. Wells, M.D., M.P.H., of RAND, and their colleagues randomized 48 managed care primary care clinics to participate in either usual care (UC) or one of two quality improvement (QI) programs—QI-Meds, or QI-Therapy. The study was supported in part by the Agency for Healthcare Research and Quality (HS08349).

In the QI-Meds group, nurse specialists contacted the patients monthly for 6 or 12 months and

helped primary care providers manage antidepressant medications. The nurse had a psychiatric expert available for consultation, and patients who preferred counseling were referred to psychotherapy options available to their practice (with regular copay levels). Patients in the QI-Therapy group could be referred to therapists, who provided individual or group cognitive behavioral therapy (CBT) for 12 to 16 sessions at a reduced copay. They also could receive medications from their regular primary care providers or see a non-study therapist with usual copayments. Clinics in the usual care group were mailed clinical practice guidelines on depression.

Both QI interventions reduced the likelihood of probable depression by 10-11 and 6-7 percentage points compared with usual care at 6 and 12 months, respectively. QI-Therapy patients had early (6 month) improvement in emotional well-being relative to

UC patients, which was sustained over the full 2 years of the study. In contrast, there were no significant differences in emotional well-being levels between UC and QI-Meds patients during any time period.

QI-Therapy patients had fewer role limitations than QI-Meds patients at 6 months and 12 months, although patients in both intervention groups had fewer role limitations than those in usual care. Also, QI-Therapy patients had a 20 percent reduction in overall poor outcomes throughout the 2 years compared with UC patients, as well as reduced poor outcomes relative to QI-Meds patients of 19 percent at 18 months and 27 percent at 2 years.

See "Long-term effectiveness of disseminating quality improvement for depression in primary care," by Drs. Sherbourne and Wells, Naihua Duan, Ph.D., and others, in the July 2001 *Archives of General Psychiatry* 58, pp. 696-703.

Researchers examine the use of x-rays to diagnose cervical spine injuries due to blunt trauma

Cervical spine injury (CSI) is relatively rare, seen in only 2 to 3 percent of patients x-rayed for blunt trauma to the spine. However, because failure to diagnose acute CSI could lead to neurologic disability, doctors often order cervical spine x-rays. Since from 97 to 99 percent of these x-rays are normal, this approach is costly and subjects patients to excess radiation exposure.

Researchers involved in the National Emergency X-Radiography Utilization Study (NEXUS) prospectively studied the

use of x-rays in CSI patients with blunt trauma seen at 21 emergency departments (EDs). Five NEXUS studies supported by the Agency for Healthcare Research and Quality (HS08239) and led by William R. Mower, M.D., Ph.D., of the University of California, Los Angeles School of Medicine, examined the prevalence and patterns of spinal injury among CSI patients x-rayed for blunt trauma to the spine. They also examined the usefulness of x-rays for diagnosing spinal injury in

these patients. These studies are described here.

Lowery, D.W., Wald, M.M., Browne, B.J., and others. (2001, July). "Epidemiology of cervical spine injury victims." *Annals of Emergency Medicine* 38(1), pp. 12-16.

These researchers examined demographics and injury patterns among CSI patients undergoing ED cervical spine x-rays for blunt traumatic injury as part of the NEXUS study. Overall, CSI was

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Cervical spine injuries

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more common among the elderly, males, and patients of white or "other" ethnicity. For example, people aged 65 or older were twice as likely to have CSI as younger people. In fact, CSI due to blunt trauma increased progressively with age. Elderly white men had the highest prevalence (5.5 percent) of any demographic group, followed by elderly white women (4.3 percent), who are prone to fractures from osteoporosis (severe loss of bone mass) that often accompanies estrogen loss during menopause.

The rate of CSI also varied by ethnicity, with the highest injury prevalence among white and Middle Eastern patients, at about 3 percent each, and lowest among blacks (1.5 percent). Also, those with "other" ethnicity (individuals who could not be classified into one of the existing categories) were nearly twice as likely to have CSI (relative risk, RR of 1.79) as other groups. Males and whites were nearly twice as likely to have CSI (RR 1.72 and 1.50, respectively). On the other hand, Hispanics were 36 percent less likely (RR 0.64) and women were 42 percent less likely (RR 0.58) to have CSI, as were blacks (RR 0.55) and those less than 18 years of age (RR 0.39).

Since CSI occurred in patients in all demographic categories, this information cannot be used to

select patients with blunt trauma to the spine who should or should not undergo x-rays, conclude the researchers. Of the 34,000 patients enrolled in the NEXUS study, CSI was present in 818 (2.4 percent) of patients. Most enrolled patients were males (59 percent), as were the majority of patients with CSI (71 percent)

Goldberg, W., Mueller, C., Panacek, E., and others. (2001, July). "Distribution and patterns of blunt traumatic cervical spine injury." *Annals of Emergency Medicine* 38(1), pp. 17-21.

This study examined the patterns of spinal injury in the 818 patients with CSI among the 34,000 NEXUS patients x-rayed. Results showed that CSI occurred in only 2.4 percent of patients with blunt trauma who were x-rayed. The second cervical vertebra was the most common site of injury, and the sixth and seventh cervical vertebrae were involved in over one-third of all injuries. However, other spine levels were involved more often than had previously been thought.

Overall, CSI patients had a total of 1,496 distinct cervical spine injuries to 1,285 different cervical spine structures. The second cervical vertebra (C2) was involved in 24 percent of fractures, including 92 odontoid fractures. The relatively high rate of C2 injuries, particularly among the elderly, has been documented by others.

Also, 39 percent of fractures occurred in the two lowest cervical vertebrae (C6 and C7). Injuries to the pedicles of the vertebral arch were relatively rare, occurring in only 6 percent of CSI patients. The vertebral body, injured in 235 patients, was the most frequent site of fracture. Nearly one-third (29 percent) of spinal injuries identified by x-ray were considered clinically insignificant.

Mower, W.R., Hoffman, J.R., Pollack, Jr., C.V., and others. (2001, July). "Use of plain radiography to screen for cervical spine injuries." *Annals of Emergency Medicine* 38(1), pp. 1-7.

Patients with blunt trauma to the spine usually undergo a standard three-view series of x-rays (cross-table lateral, antero-posterior, and odontoid views), as well as any other imaging tests deemed necessary by their doctors to identify CSIs. A comparison of injuries detected by screening x-rays with final injury status for each of the 818 NEXUS patients with CSIs showed that standard three-view x-rays provided reliable screening for bony CSIs among most patients with blunt spinal trauma. However, on rare occasions, these x-rays failed to detect significant unstable injuries. Furthermore, in many patients with blunt trauma, plain x-rays were not technically adequate, and additional

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Cervical spine injuries

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tests such as computed tomography (CT) or magnetic resonance imaging (MRI) were needed before CSI could be excluded, thus delaying diagnosis and care, according to this study.

Plain x-rays revealed 932 injuries in 498 patients (1.46 percent of all blunt trauma patients) but missed 564 injuries in 320 patients (0.94 percent of all patients). The majority of missed injuries occurred in cases in which plain x-rays were interpreted as abnormal (but not diagnostic of injury) or inadequate. However, 23 patients had 35 injuries (including three potentially unstable injuries) that were not visualized on adequate plain film imaging. These patients represent 2.81 percent of all CSI victims.

Panacek, E.A., Mower, W.R., Holmes, J.F., and others. (2001, July). "Test performance of the individual NEXUS low-risk clinical screening criteria for cervical spine injury." *Annals of Emergency Medicine* 38(1), pp. 22-25.

Reducing unnecessary x-rays for patients with blunt trauma to the spine would require criteria for identifying patients at low risk for cervical spine injury. To accomplish this, NEXUS researchers identified five low-risk criteria. They concluded that cervical spine x-rays are indicated for trauma patients unless they

exhibit all of the following criteria: no posterior midline cervical spine tenderness, no evidence of intoxication, normal level of alertness (for example, no disorientation or failure to remember or recall items), no focal neurologic deficit, and no painful distracting injuries (for example, long bone fracture or large burns that would impair the patient's ability to note spinal injuries).

Overall, these criteria were more than 99 percent sensitive for CSI and almost 100 percent sensitive for clinically significant CSI among NEXUS patients. All but 8 of the 818 NEXUS patients with CSI and all but 2 of the 578 patients with significant CSI were identified by using these five criteria for identifying blunt trauma patients who are at low risk for CSI. Furthermore, all of the criteria are needed if the decision instrument is to retain high sensitivity. Eliminating any single criterion would have resulted in the failure to identify some injuries.

Pollack, C.V., Hendey, G.W., Martin, D.R., and others. (2001, July). "Use of flexion-extension radiographs of the cervical spine in blunt trauma." *Annals of Emergency Medicine* 38(1), p. 8-11.

When standard three-view x-rays are negative for CSI in patients with blunt trauma but the doctor remains concerned about bony or ligamentous injuries, flexion-extension (F/E) x-rays of the cervical spine are often used. But

F/E imaging adds little to the acute evaluation of patients with blunt trauma, according to this study. Other approaches—including MRI, CT, or delayed F/E—in the presence of specific clinical concerns would seem to provide a more reasonable approach to adjunctive imaging.

F/E views are specifically recommended most often for patients with an acceleration-deceleration mechanism and patients with pain or tenderness. These patients have the potential for a ligamentous injury that may not be apparent in a static, neutral view of the cervical spine. However, F/E views require movement of the spine, which could provoke or exacerbate neurologic injury among such patients, explain the researchers.

They reviewed the x-ray findings of NEXUS patients with CSI and tabulated how frequently F/E imaging provided diagnostically important information that was not evident on other x-rays. Of 818 patients ultimately found to have CSI, 86 (10.5 percent) underwent F/E testing. Two patients sustained stable bony injuries detected only on F/E views. Four other patients had a subluxation (partial or complete dislocation) detected only on F/E views, but all had other injuries apparent on routine cervical spine imaging.

Researchers examine parental attitudes and outcomes of adolescents who weighed 2.2 pounds or less at birth

Extremely low birthweight (ELBW) babies (2.2 lbs or less) have a higher prevalence of poor physical growth, ill health, and hospitalizations during mid-childhood compared with their peers. Two new studies supported by the Agency for Healthcare Research and Quality (HS08385) examined the physical growth and current health status of these infants by adolescence, as well as parents' attitudes toward saving these infants at birth. The first study shows some catch-up growth by adolescence, as well as fewer acute health problems and less use of health services. The second study reveals that most parents, compared with only a few health care professionals, believe that efforts should be made to save all ELBW infants. The studies are summarized here.

Saigal, S., Stoskopf, B.L., Streiner, D.L., and Burrows, E. (2001, August). "Physical growth and current health status of infants who were of extremely low birth weight and controls at adolescence." *Pediatrics* 108(2), pp. 407-415.

By adolescence, the physical growth of ELBW survivors continues to be compromised. However, there seems to be some catch-up growth, fewer acute health problems, and less use of medical services, according to this study. These adolescents were born between 1977 and 1982 to residents of central-west Ontario, Canada, and followed from birth. The researchers compared the physical growth and health status of 154 ELBW survivors between

12 and 16 years of age with 125 sociodemographically matched children (controls) recruited at 8 years of age from the same region.

As a group, ELBW adolescents were 5.8 cm (about 2-1/4 inches) shorter and weighed a mean of 5.8 kg (about 12-3/4 pounds) less than control adolescents. There was a catch-up in their growth parameters between age 8 and adolescence, with a significantly greater catch-up in weight (especially for girls) than in height. At adolescence, the mean head circumference of the ELBW group was significantly smaller than same-age controls by 1.8 cm (about 3/4 of an inch). Subnormal head circumference has been reported to be associated with poor cognitive function and academic achievement.

In fact, over one-fourth (28 percent) of ELBW adolescents had neurosensory impairments compared with 2 percent of controls. ELBW survivors had a higher prevalence of visual problems (57 vs. 21 percent), seizures (7 vs. 1 percent), developmental delays (26 vs. 1 percent), learning disabilities (34 vs. 10 percent), and hyperactivity (9 vs. 2 percent). Twice as many ELBW adolescents as controls had functional limitations (81 vs. 42 percent). A third of the ELBW adolescents compared with 9 percent of controls were limited in their ability to participate in normal activities at school and elsewhere. However, only 5 percent had reduced self-care abilities. Finally, ELBW adolescents used more specialists and community resources than controls but less than when they were younger. The

growth deficits reported may not apply to more recent survivors of neonatal intensive care, note the researchers.

Streiner, D.L., Saigal, S., Burrows, E., and others. (2001, July). "Attitudes of parents and health care professionals toward active treatment of extremely premature infants." *Pediatrics* 108(1), pp. 152-157.

Survival of ELBW infants often means significantly higher rates of neurodevelopmental problems, impaired health, recurrent hospitalizations, educational problems, and strain on the family. A new survey sheds some light on the attitudes of parents of normal-birthweight and ELBW children and doctors about the desirability of saving ELBW infants. The researchers found that most parents of term and ELBW children (nearly 64 percent) compared with only 6 percent of health professionals (HPs) believe that efforts should be made to save all LBW infants, regardless of their condition or weight at birth. Also, 83 percent of parents compared with 66 percent of HPs were against a standard policy on whether to save such infants. None of the five doctors who agreed that all infants should be saved cited the Hippocratic oath (first do no harm), and only three neonatologists and one neonatal nurse equated withholding treatment with killing.

In contrast to parents, HPs also believed that the economic costs to society should be a factor in deciding whether to save an ELBW infant. Of the doctors who

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disagreed that all ELBW infants should be saved, 83 percent believed that it was unethical to save infants who potentially would have severe disabilities because of the lifelong stress that this would impose on the family. Most parents and doctors agreed that parents and

physicians should make the final decision about saving infants of borderline viability and that other groups, such as ethics committees or the courts, should not.

Doctors tended to be more optimistic than nurses about these babies' probability of survival and freedom from serious disabilities. As a result, they recommended to parents life-saving interventions for

their children at earlier gestational ages than nurses. These findings underscore the importance of joint parent-doctor decisionmaking regarding intervention to save ELBW infants. They are based on a survey of 169 parents of ELBW children, 123 parents of term children, 98 neonatologists, and 99 neonatal nurses regarding active treatment of ELBW infants.

Young people with coexisting substance abuse and emotional problems need specialized residential treatment

Young people who are in residential treatment for serious emotional or behavioral problems are among the most needy children in the child welfare system. Those who also abuse drugs or alcohol are more likely than the others to escape from the residence, commit suicide, or be placed in an institution such as a hospital or detention center, according to a study that was supported in part by the Agency for Healthcare Research and Quality (National Research Service Award training grant T32 HS00078).

Young people entering residential treatment programs should be screened for type and severity of substance use problems, and services should be individualized to ensure close supervision and monitoring of their high-risk behaviors. This specialized approach could facilitate their discharge into foster homes or as adopted children rather than moving them to another institution, conclude the Northwestern University researchers who conducted the study. They retrospectively analyzed medical chart data on 564 children and adolescents in residential treatment and State custody in Florida and Illinois, who had serious emotional or behavioral disturbances. They evaluated differences in clinical characteristics and compared placement outcomes

between young people with and without coexisting substance use disorders.

Overall, 26 percent of boys and 37 percent of girls had substance use problems in addition to serious emotional or behavioral disturbances. Youngsters with dual diagnoses were significantly more likely than those with only one diagnosis to be at risk for suicide (57 vs. 35 percent of girls, 45 vs. 32 percent of boys), elopement (77 vs. 41 percent of girls, 67 vs. 35 percent of boys), and crime or delinquency (63 vs. 31 percent of girls, 82 vs. 42 percent of boys). More girls with substance use problems were discharged to institutions than girls without these problems (56 vs. 15 percent), and fewer girls with substance use problems were placed in the community (44 vs. 85 percent). There were no significant differences in placement between boys with and without substance use problems.

For more details, see "Clinical characteristics of youths with substance use problems and implications for residential treatment," by Dana A. Weiner, Ph.D., Melissa E. Abraham, M.S., and John Lyons, Ph.D., in the June 2001 *Psychiatric Services* 52(6), pp. 793-799.

Improving the design of Medicaid dental programs may lead to better oral health for poor children

Medicaid-insured children are more likely than uninsured children to visit a dentist in a given year but not as much as privately insured children, who are most likely to see a dentist.

Richard J. Manski, D.D.S., M.B.A., Ph.D., and John F. Moeller, Ph.D., of the Agency for Healthcare Research and Quality, along with Burton L. Edelstein, D.D.S., M.P.H., of Columbia University,

used data from AHRQ's Medical Expenditure Panel Survey to examine dental care coverage, use, and expenditures for U.S. children during 1996.

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Medicaid dental programs

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Half (52 percent) of children younger than age 18 had private dental coverage for at least part of 1996, and 56 percent of children living in poverty were covered by Medicaid for at least part of the year. Over half (56 percent) of children with private dental coverage made at least one dental visit during that year compared with 28 percent of uncovered children. Also, 28 percent of Medicaid-insured children made at least one dental visit compared

with 19 percent of uninsured children. Overall, covered children obtained dental services at rates twice those of noncovered children at all income levels.

Only 56 percent of children residing in homes with \$22,000 gross annual family income (for a family of four) had Medicaid dental coverage, somewhat lower than expected. Since children from the poorest households, especially the youngest children, are almost universally eligible for Medicaid, the relatively low level of dental coverage for low-income children may reflect a failure to enroll children rather than a lack of

Medicaid availability itself. Small State-to-State differences in eligibility for Medicaid coverage and relative lack of access to Medicaid dental providers also may have contributed to this lower-than-expected rate of coverage, conclude the authors.

More details are in "The impact of insurance coverage on children's dental visits and expenditures, 1996," by Drs. Manski, Edelstein, and Moeller, in the August 2001 *Journal of the American Dental Association* 132, pp. 1137-1145. Reprints (AHRQ Publication No. 01-R083) are available from AHRQ.**

Outcomes/Effectiveness Research

Back pain studies examine racial differences in use of spine x-rays and effectiveness of sacroiliac joint function tests

Low back pain is a leading cause of spine x-rays among outpatients. Although many studies have shown black patients to receive fewer diagnostic procedures than whites, this is not the case with spine x-rays, according to a study supported by the Department of Veterans Affairs and the Agency for Healthcare Research and Quality.

Physical therapists rely on a variety of tests other than x-rays to examine sacroiliac joint (SIJ) dysfunction, a cause of low back pain that is presumed to be due to biomechanical disorders of the joint such as hypomobility and malalignment. A second AHRQ-supported study provides strong evidence to support the use of some tests over others to examine SIJ dysfunction. The studies are summarized here.

Selim, A.J., Fincke, G., Ren, X.S., and others. (2001). "Racial

differences in the use of lumbar spine radiographs." (AHRQ grant HS08194). *Spine* 26(12), pp. 1364-1369.

Differences in patient clinical characteristics are the source of racial differences in the use of lumbar spine x-rays to diagnose patients with low back pain, conclude the authors of this study. They investigated the use of lumbar spine x-rays in 401 patients with low back pain seen at four Veterans Affairs outpatient clinics between 1993 and 1996. They stratified patients into groups of white patients (315 patients) and minority patients (22 black, 4 Hispanic, and 1 other race). Upon study entry and 1 year later, patients completed a health status questionnaire and low back pain questionnaire (including questions about radiating leg pain). They also were asked about coexisting illnesses and were asked to perform a straight leg raising (SLR) test.

Minority patients had lumbar spine x-rays more often than white patients (48 vs. 27 percent). However, minority patients had higher pain intensity scores than white patients (63 vs. 48 percent) and were more likely to have radiating leg pain (76 vs. 55 percent). Minorities also had worse physical functioning, general health perception, social functioning, and role limitations because of emotional problems. At a higher intensity level of low back pain, minority patients received more lumbar spine x-rays than did white patients (74 vs. 50 percent). Also, among patients with radiating leg pain (positive SLR test), minority patients had more lumbar spine x-rays than white patients (23 vs. 11 percent).

However, after adjusting for these multiple clinical characteristics, race was no longer an independent predictor of use of

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Back pain research

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lumbar spine x-rays. This study demonstrates the importance of careful and comprehensive case-mix adjustment when assessing apparent racial differences in the use of medical services, conclude the researchers.

Freburger, J.K., and Riddle, D.L. (2001, May). "Using published evidence to guide the examination of the sacroiliac joint region." (National Research Service Award training grant T32 HS00032). *Physical Therapy* 81(5), pp. 1135-1143.

Various tests have been used by physical therapists to identify dysfunction of the SIJ region. These investigators reviewed studies from 1966 to 2000 on the diagnostic validity of tests designed to detect dysfunction in the SIJ region. They found that there is some evidence to support the use of pain provocation tests (application of force to the SIJ or

related structures to reproduce the patient's pain) and the patient's description of pain location to identify dysfunction in the SIJ region. However, there are few data to support the use of symmetry or movement tests to identify SIJ dysfunction.

In symmetry and movement tests, physical therapists palpate and judge the relative heights of bony landmarks along the iliac spines, while the patient is sitting and then standing, to evaluate SIJ alignment. Reviewed studies showed poor agreement between therapists and poor reliability and validity of data obtained from the tests. The results of x-ray studies suggested that the movements associated with SIJ bony landmarks are too small to accurately assess with palpation or visual assessment. Use of movement and symmetry tests together to identify SIJ dysfunction appeared to yield more reliable data than use of a single test, but more studies are needed.

Although results were mixed, evidence supported the reliability of data obtained with some pain provocation tests for determining the presence of SIJ dysfunction. Studies that have used anesthetic blocks suggest that a combination of positive pain provocation tests and the patient's description of the pain location may be useful for diagnosing SIJ dysfunction. In these studies, patients with SIJ dysfunction reported marked reduction in pain during pain provocation tests after anesthetic blocks of that region. Pain descriptions that appear to have some support include absence of pain in the lumbar region, pain below L5 (fifth lumbar vertebra), pain in the region of the posterior superior iliac spines, and pain in the groin area. In the absence of further research, the investigators suggest that therapists use pain provocation tests and descriptive information on pain location to identify dysfunction of the SIJ region.

Age and race are associated with receipt of Medicare-funded outpatient care among people with schizophrenia

Schizophrenia affects 1 percent of people in the United States, accounts for 25 percent of all hospital days, and costs the Nation \$30-\$40 billion each year. For a chronic, debilitating illness such as schizophrenia, underuse of outpatient care services increases the risk of crisis-oriented care. Yet only one-fourth of schizophrenics with Medicare coverage received any outpatient care in 1991.

Black and older schizophrenics covered by Medicare received less outpatient care than white and younger schizophrenics, according to a study conducted by the Schizophrenia Patient Outcomes Research Team (PORT). The PORT was supported by the Agency for Healthcare Research and Quality (PORT contract 290-92-0054), and led by Anthony Lehman, M.D., M.S.P.H., of the University of Maryland School of Medicine.

The researchers analyzed 1991 data on 12,440 schizophrenia-related Medicare claims. They found

that being male, black, 65 years of age or older, and having a substance abuse diagnosis were associated with a lower likelihood of receiving any outpatient care service. Among people under 65 years of age, whites were about 1.5 times as likely as blacks to have received outpatient care and 1.3 times as likely to have received individual therapy. Men and women 65 years of age or older (for whom symptoms are usually less severe) were about half as likely to have received any services, including individual, group, or family therapy. Among all those receiving Medicare-funded care, the costs of care were lower for blacks and for older people.

The most frequently used type of therapy was individual therapy, followed by somatotherapy (biological therapy), group therapy, and family therapy. For blacks, the likelihood of receiving individual

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therapy was 74 percent that of whites. People who received individual therapy tended to be younger than 65, to be female, to have additional psychiatric illnesses, and to be covered by Medicare only. The lower rates of individual therapy among those covered by both Medicare and Medicaid may reflect the

substitution of other Medicaid services for individual therapy, such as case management and rehabilitation.

See "Use and costs of ambulatory care services among Medicare enrollees with schizophrenia," by Lisa Dixon, M.D., M.P.H., Alan Lyles, Sc.D., M.P.H., Corey Smith, M.A., and others, in the June 2001 *Psychiatric Services* 52(6), pp. 786-792.

Elderly Health

Weight goals for younger people may not be appropriate for the elderly, for whom weight may be protective

Obese young and middle-aged adults tend to have more medical problems such as diabetes, hypertension, and colon cancer, as well as increased death rates compared with their thin and normal-weight counterparts. However, a new study suggests that extra weight may be protective for the elderly. The researchers found that obese elderly people were less likely to die than those who were thin or normal weight, even after adjusting for differences in medical problems and income. Thus, weight goals appropriate for younger people may not be appropriate for the elderly, conclude David C. Grabowski, Ph.D., of the University of Alabama at Birmingham, and John E. Ellis, M.D., of the University of Chicago.

In a study supported in part by the Agency for Healthcare

Research and Quality (National Research Service Award training grant T32 HS00084), they retrospectively analyzed a nationally representative sample of 7,527 community-dwelling people age 70 and older in 1984 to calculate the impact of body mass index (BMI) on their risk of death over an 8-year period. People in the lowest 10 percent of the BMI range (BMI less than 19) were termed thin, and those within the highest 165 percent of the distribution were classified as obese (BMI greater than 28). All individuals in between were considered normal weight.

The thin group had the highest mortality rate (54 percent), the obese group the lowest (33 percent), and normal-weight elderly were in the middle (37 percent). Adjustment for demographic factors, functional status, and health service use such as

hospitalizations and nursing home visits, still showed that compared with normal-weight older people, obese older people were 14 percent less likely to die, and thin people were 1.5 times more likely to die. Further adjustment for income and medical conditions did not substantially alter these results. The study's biggest limitation was the inability to control for cigarette smoking, which is associated with increased mortality and lower body weight, and to separate the effects of obesity from physical inactivity and low fitness status.

See "High body mass index does not predict mortality in older people: Analysis of the longitudinal study of aging," by Drs. Grabowski and Ellis, in the July 2001 *Journal of the American Geriatric Society* 49, pp. 968-979.

Elderly people who are hearing impaired use fewer health services than would be expected

Impaired hearing in elderly people can lessen their psychosocial and physical functioning, as well as diminish their quality of life. It also may interfere with their communication with health care providers, perhaps affecting their understanding of instructions about medication, diet, or other therapeutic

recommendations, and hearing problems may lead them to avoid using health care services. Little is known about the degree to which hearing impairment affects use of health care services by the elderly.

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Hearing impairment

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A recent study of elderly members of the large Kaiser health maintenance organization found that hearing impairment tripled the likelihood of making at least one visit to a health care provider. Once they made that initial contact, however, these members were no more likely to make subsequent visits than members who were not hearing impaired, despite expectations to the contrary.

These results suggest several possible explanations, according to Carla A. Green, Ph.D., M.P.H., and Clyde R. Pope, Ph.D., of Kaiser Permanente Center for Health Research. One, hearing impairment per se is not a condition that requires much increased use of health services. Two, providers and patients are adequately compensating for the difficulties associated with hearing impairment. Or three, hearing impaired people do not seek or are not receiving a level of care appropriate to the physical and psychosocial dysfunction that is associated with hearing loss. The

researchers suggest further studies to explore whether underuse of health care services for elderly people who are hearing impaired indeed exists and, if it does, whether it stems from clinician or patient attitudes about hearing impairment and its consequences, from the lack of available treatments, or from some other factor.

This research was supported in part by the Agency for Healthcare Research and Quality (National Research Service Award training grant T32 HS00069). The researchers examined the association of hearing impairment with the use of any health service among 1,436 randomly selected 65-year-old Kaiser members, after controlling for the effects of depression and other chronic illnesses known to affect health service use. Among these people, 85 percent used outpatient services in their 65th year, and 15 percent had prior diagnoses of hearing impairment or deafness in one or both ears.

See "Effects of hearing impairment on use of health services among the elderly," by Drs. Green and Pope, in the August 2001 *Journal of Aging and Health* 13(3), pp. 315-328.

Long-Term Care

Increasing Medicaid reimbursement to nursing homes slightly improves quality of care

Although many nursing homes provide good care, the quality of care in Government-certified nursing homes has concerned consumers, health care professionals, and policymakers for over 25 years. Medicaid—the dominant payer for nursing home services in the United States—reimburses nursing homes for care of impoverished individuals.

An increase in Medicaid reimbursement to New York State and all U.S. nursing homes in 1996 resulted in a small decrease in the likelihood of pressure sores. Depending on the model used, an increase in reimbursement of \$1 was associated with between a 0.9969 (for all U.S. markets) and a 0.9983 (for New York State) lower likelihood (1 is equal likelihood) of a resident developing pressure sores, a frequently used indicator of nursing home quality of care.

A weakness of this quality of care measure is that 96 percent of residents do not have facility-acquired pressure sores. Future research with alternative outcome-based quality measures like pressure sores is needed to determine the exact gains in quality of care from increased Medicaid reimbursement, says David C. Grabowski, Ph.D., of the University of Alabama at Birmingham. In the study, which was supported in part by the Agency for Healthcare Research and Quality (National Research Service Award training grant T32 HS00084), he analyzed data from State surveys of all federally certified nursing homes to determine the impact of Medicaid reimbursement on the rate of pressure sores. These sores, which are preventable and treatable, range from persistent skin redness to large open lesions that can expose tissue and bone.

Previous studies have generally measured nursing home care quality using either input-based measures (nurse-to-patient ratio) or regulatory violations. When the investigators in this study used the nurse-to-patient quality measure, they found a slight increase in the nurse-to-patient ratio with a \$1 increase in Medicaid reimbursement. These findings contradict puzzling findings from earlier studies showing that increased Medicaid reimbursement decreased the level of nursing home quality in the presence of certificate-of-need and construction moratorium regulations.

See "Medicaid reimbursement and the quality of nursing home care," by Dr. Grabowski, in the *Journal of Health Economics* 20, pp. 549-569, 2001.

When integrated into nursing home care, hospice care decreases hospitalizations for Medicare patients

More than one in five older people die in a nursing home. Often, inappropriate and traumatic hospitalizations diminish the quality of life of these patients. Legislation provides for Medicare hospice care in nursing homes to provide comfort care by contracted hospice providers. This integration of hospice care into nursing home care reduces hospitalizations among dying nursing home patients, according to a study supported in part by the Agency for Healthcare Research and Quality (HS10549).

Researchers from Brown University studied hospitalizations for Medicare nursing home residents in five States who had enrolled in hospice care between 1992 and 1996 and who died before 1998. They compared hospitalizations of 9,202 Medicare

hospice residents with 27,500 nonhospice residents with similar lengths of nursing home stays.

The goal of hospice care is to alleviate symptoms, reduce unneeded and unwanted medical intervention, and attend to the psychosocial needs of patients and families. Overall, 24 percent of hospice and 44 percent of nonhospice residents were hospitalized in the last month of life. Nonhospice residents also benefitted from being in homes with hospice care, probably due to diffusion of the palliative care philosophy and practices associated with hospice. Compared with residents in facilities with no hospice, hospitalization was 18 percent less likely for nonhospice residents in facilities with low hospice use and 29 percent less likely for those in facilities with moderate hospice use (defined as 5

percent or more patients in hospice).

Although the hospice Medicare benefit does have a hospice inpatient option, it was infrequently used, accounting for only 3 percent (\$77 of \$2,296) of all per patient hospice expenditures in the last 30 days of life. The researchers conclude that Medicare dollars saved with reduced hospitalizations may offset any increased Medicare costs associated with long-stay hospice patients, as well as improve the quality of life of dying nursing home patients.

More details are in "Hospice enrollment and hospitalization of dying nursing home patients," by Susan C. Miller, Ph.D., Pedro Gozalo, Ph.D., and Vincent Mor, Ph.D., in the July 2001 *American Journal of Medicine* 111, pp. 38-44.

Quality of Care

Large remote rural towns may provide the best conditions for high quality care of older people with diabetes

It is difficult to provide high-quality care to elderly patients with diabetes, and it may be even more difficult in rural areas where there are fewer physicians. In a recent study, researchers from the University of Washington used Medicare claims data to compare the quality of diabetes care received by elderly patients in urban and rural communities in the State of Washington. They found that almost half of the patients who had two or more physician encounters for diabetes care in 1994 did not receive a glycated hemoglobin test to determine blood-sugar levels—a key indicator of how well a person's diabetes is controlled—even though Medicare reimburses separately for this test.

In fact, only 28 percent of elderly diabetes patients in the State received that test, a cholesterol

measurement test, and an eye test for diabetic retinopathy, three of the recommended tests that indicate good quality of diabetes care. Patients living in large remote rural communities were significantly more likely to have received all three screening tests than patients in any of the other areas, according to the study, which was supported in part by the Agency for Healthcare Research and Quality (Rural Health Research Center contract 290-93-0036).

Patients living in large rural communities near metropolitan areas, small remote rural areas (independent of their proximity to an urban area), and urban areas were much less likely to receive diabetes screening tests. Urban patients were much more likely than their rural counterparts to consult endocrinologists

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Care for elderly diabetics

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(16 vs. 7 percent), who are more likely to order diabetes screening tests. Yet, adherence to diabetes care guidelines was highest in large remote rural communities that have endocrinologists, even though the rate at which patients visit these specialists is less than half of that in urban communities.

Large remote rural communities have moderate-sized hospitals, a balanced mix of generalists and specialists, and population sizes between 10,000 and

50,000 people. Patients are not exposed to the problems associated with too few physicians or fragmentation of services amidst a surplus of specialists. There may be care advantages for diabetes patients living in areas such as these, conclude the researchers.

See "Improving the quality of outpatient care for older patients with diabetes," by Roger A. Rosenblatt, M.D., M.P.H., Laura-Mae Baldwin, M.D., M.P.H., Leighton Chan, M.D., M.P.H., and others, in the August 2001 *Journal of Family Practice* 50(8), pp. 676-680.

England and the United States differ in their approaches to improving cardiac care

The United States and England have different quality improvement (QI) strategies for improving care for coronary heart disease, the leading cause of death in both countries. The strong base of health services research and local QI efforts in the United States afford many opportunities to evaluate the effectiveness of various QI strategies for improving cardiac care. However, the United States lacks comprehensive national standards and monitoring systems to determine whether cardiac care is actually improving. In contrast, national and regional standards for cardiac care have been implemented more rapidly in England, but evaluative mechanisms are still under development, according to a recent study.

John Z. Ayanian, M.D., of Harvard Medical School, and Thomas J. Quinn, a registered nurse specializing in cardiac care, of the U.K. Department of Health, reviewed and compared key QI strategies in both countries. Their review, which was supported by the Agency for Healthcare Research and Quality (HS08071 and HS09718), revealed that compliance with coronary care clinical guidelines is mandatory in England but only voluntary in the United States. National standards for cardiac care are a much more prominent QI strategy in England due to the centralized nature of health care funding and planning in the British National Health Service. Without a national health system, the United States has neither the political mandate nor the mechanisms to implement national standards for cardiac care.

In the market-based U.S. system, quality reports are viewed as more acceptable than standards to promote consumer choice and provider accountability. Statewide public release of performance reports on physicians and hospitals have focused on coronary heart disease mortality and have stimulated internal efforts by hospitals to improve quality. In England, public performance reports for CHD have been more limited, but their role is likely to increase. Benchmarking, local physician opinion leaders, and physician financial incentives are promising tools to improve quality of cardiac care in the United States and England.

More details are in "Quality of care for coronary heart disease in two countries," by Dr. Ayanian and Mr. Quinn, in the May 2001 *Health Affairs* 20(3), pp. 55-67.

Researchers examine the impact of consumer health plan reports on plan choices and quality of care

Improving U.S. health care depends at least in part on the presumption that health plan purchasers and consumers will get better care if they can choose care that meets their needs and

expectations. The Consumer Assessment of Health Plans (CAHPS®) survey, which was developed by the Agency for Healthcare Research and Quality, lays the groundwork for informed

health care choices and enhanced quality of care.

A recent conference, sponsored by AHRQ and the Centers for

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Medicare and Medicaid Services (formerly the Health Care Financing Administration), examined ways to improve consumer/purchaser assessment reports and assess the impact of these reports on health plan choices and health care quality improvement. Selected conference papers by AHRQ researchers and AHRQ-supported researchers, published in a special issue of *Health Services Research*, examine these issues.

An overview by AHRQ Director John M. Eisenberg, M.D., and the articles, which are based largely on data generated by the CAHPS survey, are described here. Reprints of the overview and two staff-authored articles are available from AHRQ, as noted.

Eisenberg, J.M. (2001, July). "Overview of the issue." *Health Services Research* 36(3), p. 443-446.

Health care quality involves more than adherence to technical standards and the achievement of desirable physiologic outcomes. Once research identified what people are concerned about in the care they receive, the next step was to develop tools to measure it, leading to development of CAHPS. Over 90 million Americans can get information on the health plans they are offered because of the CAHPS surveys.

The goal now is both to inform Americans how to use results from the CAHPS survey more effectively in making plan choices and to find out how CAHPS itself can be improved. Articles in this journal issue examine considerations for producing reliable and valid measures when collecting data from people of different cultures,

the types of information people want and whether they are getting it, the education needed to help individuals interpret and use the information, and the kind of support needed to arrive at a health plan decision. The researchers also examine what report developers need to know about their audiences, whether purchasers and consumers are using the data from reports such as CAHPS to make health plan or other health care choices, and whether CAHPS and similar assessments are being used to improve quality of care.

Reprints (AHRQ Publication No. 01-R024) are available from AHRQ.**

Harris-Kojetin, L.D., McCormack, L.A., Jael, E.F., and others. (2001, July). "Creating more effective health plan quality reports for consumers: Lessons from a synthesis of quality testing." (AHRQ grant HS09218). *Health Services Research* 36(3), pp. 447-476.

These researchers synthesized the results of five qualitative studies into seven major lessons learned. The studies involved 11 focus groups and 182 consumer interviews in 6 geographic areas with 268 publicly and privately insured consumers. Their objective was to gain insights into consumers' perceptions and preferences for written materials in order to develop pamphlets to help Medicaid, Medicare, and employed consumers choose a health plan, incorporating newly available measures of health plan quality (e.g., HEDIS and CAHPS).

The researchers learned that the materials should link new unfamiliar information (such as care quality) to more familiar information, such as cost and coverage, that consumers already find important. Navigational aids such as visual clues, instructions,

and section overviews are useful and often necessary. Pamphlets should reflect diversity among the target audience, including levels of education and available time to read materials. Materials should help consumers quickly and easily understand how health plan options differ on key aspects of coverage (e.g., choice of providers, access to specialty care, out-of-pocket costs, and premiums) and help consumers prioritize what is most important to them in choosing a health plan. More effective materials help break down the process of comparing and narrowing plan choices into a series of smaller, connected steps. Finally, materials should help consumers understand how and why to use quality of care information. The authors include illustrative examples of how these lessons were put into practice.

Reprints (AHRQ Publication No. 01-R029) are available from AHRQ*

McCormack, L.A., Garfinkel, S.A., Hibbard, J.H., and others. (2001, July). "Health plan decision making with new Medicare information materials." (AHRQ grant HS09218). *Health Services Research* 36(3), pp. 531-554.

These investigators conducted telephone surveys with Kansas City Medicare beneficiaries in 1998 and 1999 to examine the effect of providing new Medicare information on health plan decisionmaking attitudes and behaviors. They randomly assigned the Medicare beneficiaries to a control group or one of three groups that received varying amounts and types of information: the *Medicare & You* 1999 handbook; the same version of the handbook and a Medicare version of the CAHPS report; and the *Medicare & You* bulletin, an

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abbreviated version of the handbook.

Experienced beneficiaries in the experimental groups were significantly more confident with their current health plan choice than control group members. New beneficiaries (those just aging into the Medicare program) were significantly less likely to use the new materials to choose or change health plans relative to control group members. The authors hypothesize that this was due to the strong message in the 1999 version of the handbook that consumers did not have to change plans.

In general, the effects on confidence and health plan switching did not vary across the different treatment materials. Because providing more information to beneficiaries did not result in commensurate changes in confidence levels or rate of health plan switching, factors other than the amount of information, such as how it is presented, may be more critical than volume, conclude the researchers. They caution that careful attention should be given to the content and wording of key messages.

Weech-Maldonado, R., Morales, L.S., Spritzer, K., and others. (2001, July). "Racial and ethnic differences in parents' assessments of pediatric care in Medicaid managed care." (AHRQ grant HS09204). *Health Services Research* 36(3), pp. 575-594.

These researchers analyzed 1997-1998 data from the National CAHPS Benchmarking Database on parents' evaluations of the pediatric care provided by 33 Medicaid HMOs in six States during the 6 months prior to the

survey. In general, racial/ethnic minority parents reported more negative experiences with their health plan or providers than whites. However, among Hispanics and Asians, language barriers had a larger negative effect on reports of care than race/ethnicity. English-speaking Hispanics did not differ significantly from whites on any of the reports of care, and English-speaking Asians did not differ significantly from whites on four of the five reports of care.

Blacks, Asians who didn't speak English, and American Indians had lower scores than whites on their ability to get needed health care. Hispanics who did not speak English, Asians who did not speak English, blacks, and American Indians reported lower scores for timeliness of care and plan service than whites. These same groups, except for blacks, also reported lower scores for provider communication. Non-English-speaking Hispanics and Asians also reported lower scores for staff helpfulness. However, these differences did not translate necessarily into lower ratings of care. Compared with whites, American Indians had lower ratings for personal doctor and health plan, and non-English-speaking Asians had lower ratings for health care. On the other hand, English-speaking Asians rated specialist care higher than whites, and Spanish-speaking Hispanics rated personal doctor, specialist, and health plan higher than whites.

The authors conclude that health plans need to pay increased attention to racial/ethnic differences in assessments of care. Furthermore, the study's finding that language barriers are largely responsible for racial/ethnic disparities in care suggests that linguistically appropriate health

care services are needed to address these gaps.

Scanlon, D.P., Darby, C., Rolph, E., and Doty, H.E. (2001, July). "Use of performance information for quality improvement." (AHRQ grant HS09204). *Health Services Research* 36(3), pp. 619-641.

Standardized health plan performance measures such as CAHPS and the Health Plan Employer Data and Information Set (HEDIS) are typically used by consumers, States, employers, and others to evaluate health plans. Managed care organizations (MCOs) also use these performance measures to improve the quality of care they provide, but the degree and sophistication of use varies, according to this study. The researchers interviewed chief executive officers, medical directors, and quality improvement directors from 24 large health plans in four States where there had been public reporting of plan performance with HEDIS and CAHPS. The researchers conducted a total of 42 interviews resulting in discussion of 116 quality improvement initiatives in preventive care, disease management, and customer service/member satisfaction.

Many MCOs used performance measures to target quality improvement initiatives, evaluate current performance, set goals (for example, a 20 percent increase in use of beta blockers after heart attack), identify root causes of problems (such as a low rate of prenatal care in the Medicaid population), and monitor progress of quality improvement initiatives already implemented. Performance measures were identified as a precipitating factor in 77 percent of

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quality improvement initiatives focused on purchasers, such as Medicaid programs, or accrediting bodies, such as the National Committee on Quality Assurance (NCQA). Health plans also used performance measures to compare their plan's performance with that of others.

Reprints (AHRQ Publication No. 01-R081) are available from AHRQ.*

Morales, L.S., Elliott, M.N., Weech-Maldonado, R., and others. (2001, July). Differences in CAHPS® adult survey reports and ratings by race and ethnicity: An analysis of the National CAHPS® Benchmarking Data 1.0. (AHRQ grant HS09204). *Health Services Research* 36(3), pp. 595-617.

For this study, the researchers examined racial/ethnic group differences in adults' reports and ratings of care using data from the National CAHPS Benchmarking Database (NCBD) 1.0. Adult data from the NCBD 1.0 is made up of CAHPS 1.0 survey data from 54 commercial and 31 Medicaid health plans from across the Nation. A total of 28,354 adult respondents were included in this study. Respondents were categorized as being either Hispanic (n = 1,657), white (n = 20,414), black (n = 2,942), Asian/Pacific Islander (n = 976), or American Indian/Alaska native (n = 588).

Four single-item global ratings (personal doctor, specialty care,

overall rating of health plan, and overall rating of health care) and five multiple-item report composites (access to needed care, provider communication, helpfulness of office staff, promptness of care, and health plan customer service) from CAHPS 1.0 were examined. The researchers assessed differences in global ratings and report composites between whites and members of other racial/ethnic groups, controlling for age, sex, perceived health status, educational attainment, and insurance type.

Findings revealed that members of ethnic/racial groups, with the exception of Asians/Pacific Islanders, reported experiences with health care similar to those of whites. Global ratings of care by Asians/Pacific Islanders, however, were similar to those of whites. The researchers conclude that improvements in quality of care for Asians/Pacific Islanders are needed, and that comparisons of care in racially and ethnically diverse populations based on global ratings of care should be interpreted cautiously.

Elliott, M.N., Swartz, R., Adams, J., and others. (2001, July). Case-mix adjustment of the National CAHPS® Benchmarking Data 1.0: A violation of model assumptions? (AHRQ grant HS09204). *Health Services Research* 36(3), pp. 555-573.

These researchers compared the models used for case-mix adjustment of consumer reports and ratings of health care. They used data from the CAHPS survey 1.0 National Benchmarking Database

on 54 commercial and 31 Medicaid health plans from across the United States. These included data on 19,541 adults older than age 18 in commercial plans and 8,813 adults in Medicaid plans who responded regarding their own health care and 9,871 Medicaid adults who responded regarding the health care of their minor children.

Four case-mix models (no adjustment; self-rated health and age; health, age, and education; and health, age, education, and plan interaction) were compared on 21 ratings and reports regarding health care for the three populations (adults in commercial plans, adults in Medicaid plans, and children in Medicaid plans). The researchers examined the magnitude of case-mix adjustments, the effects of adjustments on plan rankings, and the homogeneity of these effects across plans. They found that case-mix adjusters—especially self-rated health—have considerable effects, but these effects vary substantially from plan to plan in violation of standard case-mix assumptions. The researchers conclude that case-mix adjustment of CAHPS data needs to be reexamined, perhaps by using demographically stratified reporting or by developing better measures of response bias.

Special Populations

Adult socioeconomic status better predicts development of certain diseases than socioeconomic status as a child

Adult socioeconomic status is a more important predictor of coronary heart disease (CHD), chronic bronchitis, and depression than measures of social status earlier in life (as indicated by father's social class), according to findings from the Whitehall II study of 10,308 British civil servants. Researchers at London's University College prospectively studied these adults for a mean of 5.3 years to analyze the independent contribution of their employment grade and father's social class to prediction of these three diseases.

The researchers found that the lower one's employment grade, the higher the likelihood of CHD, chronic bronchitis, and depression in men (odds ratio per unit decrease in grade 1.30, 1.44, and 1.20, respectively; 1 is equal odds). After adjustment for father's social class, grade at entry into the civil service, and current grade, the strongest effect on adult disease was found for current grade. Even among adults with parents who lived beyond the age of 70, the inverse association of these three diseases and adult socioeconomic status was maintained.

In addition, of the high grade men, 1,186 of 2,953 came from low social class. Their heart disease rate was the same as that of high grade men from advantaged backgrounds but lower than that of low grade men. Similar results were found for women. This underscores the importance of addressing early life disadvantage because it influences adult circumstances rather than disease directly. Also, improving the conditions in which adults live and work is likely to improve disease risk independent of earlier disadvantage, conclude the researchers. Their study was supported in part by the Agency for Healthcare Research and Quality (HS06516).

More details are in "Relative contribution of early life and adult socioeconomic factors to adult morbidity in the Whitehall II study," by Michael G. Marmot, M.B., B.S., Ph.D., Martin Shipley, M.Sc., Eric Brunner, Ph.D., and Harry Hemingway, M.B., B.Chir., in the May 2001 *Journal of Epidemiology and Community Health* 55, pp. 301-307.

Evidence-Based Medicine

Exercise may help patients with chronic fatigue syndrome

Increasing activity and physical exercise may help ease the symptoms of fatigue in some patients with chronic fatigue syndrome (CFS), improving their quality of life and ability to function, according to a new evidence report from the Agency for Healthcare Research and Quality. The researchers did not find, however, that one type of exercise was better than another.

The researchers also found either insufficient or inconclusive evidence to draw any conclusions about other treatments for the condition. Patients with CFS are sometimes treated with immune therapy, corticosteroids, antidepressants and other pharmacological agents or supplements, and complementary therapies.

The report was prepared for AHRQ by the San Antonio Evidence-based Practice Center at the

University of Texas Health Science Center at San Antonio and the Veterans Evidence-based Research, Dissemination, and Implementation Center (VERDICT), a Veterans Affairs Health Services Research and Development Center of Excellence. The topic was nominated by the National Institute of Allergy and Infectious Diseases.

A summary of Evidence Report Number 42: *Defining and Managing Chronic Fatigue Syndrome* (AHRQ Publication No. 01-E061) is available from AHRQ.* Copies of the full report will be available from AHRQ in early 2002. You also may access the summary through AHRQ's Web site at <http://www.ahrq.gov/clinic/cfssum.htm> and from the National Guideline Clearinghouse (NGC) at <http://www.guideline.gov> (select NGC Resources).

Health Care Organization/Delivery

Primary care doctors had a high rate of job turnover in the late 1980s and early 1990s

Job turnover among primary care physicians (PCPs) was a substantial problem in the late 1980s and early 1990s, according to a study supported by the Agency for Healthcare Research and Quality (HS08984). It revealed that more than half (55 percent) of a group of PCPs younger than age 45 left at least one practice between 1987 and 1991. In fact, 20 percent of the group studied left two practices. Not surprisingly, PCPs who were dissatisfied with their jobs were more than twice as likely to leave as satisfied doctors. However, other personal and organizational factors also influenced doctors to leave practices, explains Sharon Buchbinder, R.N., Ph.D., of Towson University.

Dr. Buchbinder and her colleagues examined national survey responses in 1987 and 1991 of 507 nonfederally employed PCPs younger than 45 years who had completed their medical training between 1982 and 1985. They examined the relationship of personal and organizational characteristics, as well as overall job satisfaction, to PCP turnover. Two personal characteristics were particularly significant. PCPs who believed that third-party-payer influence would decrease in 5 years were 1.3 times more likely to leave than those who did not. Also, PCPs who were not board certified were 1.3 times more likely to leave

than those who were board certified. The data available for this study did not indicate whether a PCP left a practice voluntarily or involuntarily. Thus, it was not possible to determine whether lack of board certification caused PCPs to be terminated or to seek employment elsewhere.

Only one organizational factor, perceived overuse of standardized protocols for patient care, significantly affected PCP job turnover, with PCPs who perceived overuse being 1.18 times more likely to leave. Overall, PCP job satisfaction was the most powerful predictor of PCP turnover, with dissatisfied PCPs 2.4 times as likely to change jobs. In the case of PCPs who completed training in the 1970s, the encroachment of third-party payers and managed care into their lives could have had a major effect on their job satisfaction. The researchers note the need for a standardized physician job satisfaction instrument to improve measurement and management of PCP job satisfaction and turnover.

More details are in "Primary care physician job satisfaction and turnover," by Dr. Buchbinder, R.N., Ph.D., Modena Wilson, M.D., M.P.H., Clifford F. Melick, Ph.D., and Neil R. Powe, M.D., M.P.H., M.B.A., in the July 2001 *American Journal of Managed Care* 7(7), pp. 701-713.

Hospital CEOs' views of health care competition influence their choice of physician-organization integration strategies

Competition and managed care are often cited as the primary drivers behind hospitals' adoption of physician-organization integration (POI) strategies. However, after controlling for objective measures of competition, resource availability, and managed care, CEOs of some types of hospitals still viewed competition differently than CEOs of other types of hospitals. Furthermore, how hospital CEOs viewed competition

influenced hospital POI strategies, according to a study supported in part by the Agency for Healthcare Research and Quality (HS09183).

Hospital CEOs' views of the competitive medical care environment partly hinge on the institutional context in which they work and, to a lesser extent, their personal background and training, explains Jeffrey A. Alexander, Ph.D., of the University of Michigan. Dr. Alexander and his colleagues from the University of

Alabama at Birmingham and the University of Pennsylvania examined the role of hospital CEO perceptions of competition in predicting the adoption of five different POI strategies. Controlling for the task environment and organizational characteristics of the hospital, CEO perceptions of greater general market competition were positively related to networking and joint ventures, use of physicians in

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Physician-organization integration strategies

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management and governance, and provision of services to physicians; negatively associated with cost information sharing; and not significantly associated with salary and ownership.

Neither measure of managed care (HMO penetration rate or number of HMOs) was significantly associated with CEOs' perceptions of market competition,

but this was during a period when managed care and competition had yet to dominate strategic thinking of hospitals and physicians. CEOs of larger and investor-owned hospitals perceived higher levels of competition in their markets, independent of the effects of other organizational variables. Public ownership (relative to voluntary hospitals) was negatively (but marginally) associated with CEO perceptions of market competition. CEO experience factors had little

impact on perceptions of hospital competition. Physician CEOs were much more likely to view their markets as competitive, all other factors being equal.

See "CEO perceptions of competition and strategic response in hospital markets," by Dr. Alexander, Lawton R. Burns, Ph.D., Michael A. Morrissey, Ph.D., and Victoria Johnson, Ph.D., in the June 2001 *Medical Care Research and Review* 58(2), pp. 162-193.

Agency News and Notes

AHRQ allocates \$50 million for new research on patient safety

The Agency for Healthcare Research and Quality has announced \$50 million in new research grants, contracts, and other activities to reduce medical errors and improve patient safety. This initiative represents the single largest investment the Federal Government has made so far to combat the estimated 44,000-98,000 patient deaths related to medical errors each year.

These fiscal year 2001 projects are part of a multiyear effort that will address key unanswered questions about how errors occur and provide science-based information on what patients, clinicians, hospital leaders, policymakers, and others can do to address this critical problem. The results of the research will include information on errors and patient safety improvement strategies that work in hospitals, doctors' offices, nursing homes, and other health care settings in urban and rural areas across the Nation.

Congress directed AHRQ to begin these activities as part of the Federal Government's response to the 1999 Institute of Medicine

report, *To Err is Human: Building a Safer Health System*. To help set priorities for these efforts, AHRQ and its Federal partners asked for input from consumers, providers, and policymakers at a national research summit last year. Many questions were raised at the summit that this research will help to answer. These include:

- What errors occur in settings other than the hospital, and how can these settings be made safer?
- What is the best way to report errors in order to learn from them?
- What effect can organizational factors like hospital leadership, culture, and working conditions have on reducing potential harm to patients?

The 94 patient safety projects funded by AHRQ will be carried out at State agencies, major universities, hospitals, outpatient clinics, nursing homes, physicians' offices, professional societies, and other organizations across the

country. These projects fall into the following six categories:

Collecting and Reporting Data on Medical Errors. This major new investment involves \$24.7 million for 24 demonstration projects that will examine different methods of collecting and analyzing data on errors to identify factors that put patients at risk of medical errors.

For example, a \$1.7 million project at the Department of Health in New York and a \$1.3 million project at the Department of Public Health in Massachusetts will examine how to improve the effectiveness of State-mandated reporting of errors. A \$2.8 million project at Harvard Pilgrim Healthcare will evaluate data collected from more than 16,000 primary care physicians participating in 10 of the Nation's leading health maintenance organizations (HMOs) to identify medication errors and test ways to prevent them.

In addition, a \$2.3 million project at Johns Hopkins University

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Research on patient safety

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in Baltimore, where researchers are working with the Society of Critical Care Medicine, and a \$1.6 million project at the American College of Surgeons in Chicago will study how professional societies can identify and get their members to respond to risks in the care they provide. A \$1.4 million project at Harvard University in Boston will examine the use of data from malpractice cases as a source of information about risks and the effectiveness of using that information to reduce the chance that a patient will be harmed.

Using Computers and Information Technology to Prevent Medical Errors. These activities include 22 projects for \$5.3 million. The researchers will develop and test the use of computers and information technology to reduce medical errors, improve patient safety, and improve quality of care.

For example, a \$255,000 project at the University of Alabama at Birmingham and another \$345,000 project at Creighton University in Omaha will test whether the use of hand-held computers with decision support systems can reduce medical errors in primary care clinics. A \$496,000 project at Montefiore Medical Center in New York City will use computer simulation tools to train surgery residents and to identify, quantify, and analyze errors and “near misses.” A \$275,000 project at the University of Chicago will identify factors that lead to errors in the use of infusion pumps to give patients intravenous fluids and medicine.

Working Conditions and Patient Safety. Eight projects (\$3 million) are included in this

category. Researchers will examine the critical issues of how staffing, fatigue, stress, sleep deprivation, organizational culture, shift work, and other factors can lead to errors. These issues—which have been studied extensively in aviation, manufacturing, and other industries—have not been closely studied in health care settings.

For example, a \$394,000 project at the University of California, San Francisco, will assess the relationship between daily changes in the working conditions in hospitals—including nurse staffing ratios, workload, and skill mix—and medical errors.

Innovative Approaches to Improving Patient Safety. This category includes 23 projects (\$8 million). Researchers at health care facilities and organizations in geographically diverse locations will develop innovative approaches to improving patient safety.

Researchers will study how to improve teamwork among health professionals to reduce harm to patients. For example, a \$1.4 million project will create a Center of Excellence in Patient Safety Research at the University of Texas in Houston that will apply lessons from crew resource management in aviation to create stronger teamwork in health care. Another \$168,000 project at the University of Chicago will examine how to improve communication and other aspects of teamwork.

Disseminating Research Results. These seven projects (\$2.4 million) will educate clinicians and others about the results of patient safety research. This work will help develop, demonstrate, and evaluate new approaches to improving provider education in order to reduce errors, such as applying new knowledge on patient safety to

curricula development, continuing education, simulation models, and other provider training strategies.

For example, several large health care provider organizations—including the American Hospital Association’s Hospital Research and Educational Trust, the American College of Physicians-American Society of Internal Medicine, the American College of Surgeons, and the National Patient Safety Foundation—will receive funding totaling more than \$1 million to test the effectiveness of educational strategies. Another project will study ways of sharing information modeled on hospital and medical school “morbidity and mortality” conferences.

Other Patient Safety Research Initiatives. To round out the \$50 million patient safety portfolio, AHRQ also has provided \$6.4 million in funding for 10 other projects. These include activities to expand the evidence base on what works and doesn’t work in improving safety; support for meetings of State and local officials to advance local patient safety initiatives; funding for small businesses to explore new products to help improve safety; the use of existing integrated systems of hospitals, doctors’ offices, and other facilities to study issues related to safety and quality of care; and a study to assess the feasibility of implementing a patient safety improvement corps.

To find out more, go to www.ahrq.gov/qual/newgrants/ for specific information on all 94 projects.

New Senior Nurse Scholar now on board at AHRQ

Patricia Hinton Walker, Ph.D., F.A.A.N., recently joined the staff of the Center for Outcomes and Effectiveness Research, Agency for Healthcare Research and Quality, as AHRQ's fifth Senior Nurse Scholar. A Professor at the University of Colorado Health Sciences Center, School of Nursing, Dr. Walker also served as Dean of the School of Nursing and Vice President for Patient Affairs. She was a member of the American Nurses Association Task Force on Standards and Regulation of Managed Care and has published broadly on the topics of nursing practice and education. In addition, she has provided significant national and international consultation in the areas of faculty practice, development of cost and quality outcomes research, and competency-based online education.

Dr. Walker received her doctorate in higher education administration and her masters in nursing from the University of Mississippi. Her research

interests include cost-effectiveness analysis with a focus on cost savings in managed care environments, activity-based costing, practice-based research in community-based settings, and the value of interdisciplinary care. Her project at AHRQ will involve participation in the Agency's new research initiative on clinical economics. Outcomes of her project for the American Academy of Nursing will assist nurse researchers to select appropriate methodologies for cost-effectiveness research and identify future research questions that should be addressed by nurse researchers. In addition, she hopes to explore strategies for improving the doctoral and postdoctoral preparation of nurses in the language, research questions, and methodologies for outcomes research (particularly cost-effectiveness research) that will enhance the success of nurse researchers in obtaining support for their work.

Announcements

New MEPS chartbook, insurance component data, and public use files are now available

The Agency for Healthcare Research and Quality has published a new Medical Expenditure Panel Survey (MEPS) chartbook on job-related health insurance, released 1999 data from the MEPS Insurance Component, and made available three new public use files. MEPS is the third in a series of nationally representative surveys of medical care use and expenditures sponsored by AHRQ. MEPS is cosponsored by the National Center for Health Statistics (NCHS). The first survey, the National Medical Care Expenditure Survey (NMCES), was conducted in 1977; and the second survey, the National Medical Expenditure Survey (NMES) was carried out in 1987.

MEPS collects detailed information on health care use and expenses, sources of payment, and insurance coverage of individuals and families in the United States. MEPS comprises four component surveys: the Household Component, the Medical Provider Component, the Insurance Component, and the Nursing Home Component. The new MEPS resources and information on accessing them are described here.

State Differences in Job-Related Health Insurance. MEPS Chartbook No. 7. Branscome, J.M. and Brown, Jr., E.

This report presents estimates of workers' access to job-related health insurance, the cost of that insurance, and the choice of plans available to workers in 1998. Key findings include:

- Establishments in Hawaii were the most likely to offer job-related insurance to at least some of their employees.
- In every State, establishments in large firms were more likely to offer health insurance than those in small firms.
- Establishments in Alaska, Idaho, Wyoming, Arkansas, Mississippi, Oklahoma, Nebraska, Louisiana, New Mexico, and Texas were the least likely to offer insurance to their employees.
- The national average premium was \$2,173 for single coverage and \$5,590 for family coverage.

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New MEPS products

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- Total premiums for both single and family coverage were highest in the Northeastern United States and lowest in the South and Midwest.
- Employees in Massachusetts made the highest contributions for single coverage; those in the District of Columbia, Florida, and Texas made the highest contributions for family coverage.
- Approximately 68 percent of establishments offered workers only one plan.
- Conventional indemnity plans were most common in Wyoming, Alaska, and Idaho, where managed care plans do not have a strong presence.

Copies of the chartbook (AHRQ Publication No. 01-0036) are available from AHRQ.*

MEPS 1999 Insurance Component Data

AHRQ has released summary information on the average health insurance premiums for employer-sponsored coverage for calendar year 1999, based on data from AHRQ's MEPS Insurance Component (MEPS IC). The MEPS IC includes a sample of businesses and governments throughout the United States each year beginning in 1996. From these data, national, regional, and State-level estimates can be made of the amount, types, and costs of health insurance available to Americans through their workplace. Highlights from the findings on private-sector employers follow:

- The average health insurance premiums in 1999 were \$2,325 for single coverage and \$6,058 for family coverage. Premiums increased 6.9 percent and 8.4 percent, respectively, over premiums in 1998, continuing a trend of increasing premiums each year since 1996.
- The average employee contributions to health insurance premiums in 1999 were \$420 for single coverage and \$1,438 for family coverage. Employee contributions increased 9.6 percent and 4.0 percent, respectively, over 1998, continuing the trend from previous years.
- Employers with less than 50 employees increased their employees' contributions towards premiums for single coverage at a significantly higher rate than larger employers. Employee contributions for family coverage did not change significantly from 1998.
- The percent of individual business establishments offering health insurance continued to increase slightly. However, the percent of individual

business establishments offering a choice of plans dropped after 3 prior years of reported increases.

- The number of employers offering health insurance to their retirees (both under and over 65 years of age) continued to drop.

More 1999 information on private-sector employers, as well as information on public-sector employers, is available in tabular form on the Web at http://www.meps.ahrq.gov/Data_Pub/IC_TOC.htm, or contact Jim Branscome at jbransco@ahrq.gov. Data from the 1996, 1997, and 1998 MEPS IC are available through MEPSnet/IC, an interactive analytical tool, at <http://www.meps.ahrq.gov/MEPSNet/IC/mepsnetic.asp>. General information about AHRQ and MEPS can be found on the AHRQ Web site at <http://www.ahrq.gov>.

MEPS Public Use Files

MEPS HC-024: 1996 Person-Round-Plan File (Released September 2001). Available for download only at http://www.meps.ahrq.gov/Data_Pub/HC_FY_Data96.htm#hc024. This public use data file contains data for each person with private health insurance reported in rounds 1, 2, and 3 of the 1996 MEPS Household Component (MEPS HC). Released as an ASCII file with SAS format statements and in SAS transport format, this public use file provides information collected on a nationally representative sample of the civilian noninstitutionalized population of the United States during calendar year 1996. The HC-024 file contains records for people insured through establishments providing hospital/physician, Medigap, dental, prescription medication, or long-term care coverage and includes variables pertaining to managed care and satisfaction with plan coverage.

1997 MEPS/1995 and 1996 NHIS Link File. This file contains a crosswalk that will allow data users to merge the 1997 full-year MEPS public use data files with the National Health Interview Survey (NHIS) 1995/1996 public use data files. In this linkage file, a record exists for each person included in the 1995 NHIS or 1996 NHIS respondent person sample or in the 1997 MEPS HC-020 public use file, which covers calendar year 1997 and contains data from rounds 1, 2, and 3 of the 1997 panel (which uses the 1996 NHIS as its sampling frame) combined with data from rounds 3, 4, and 5 of the 1996 panel (which uses the 1995 NHIS as its sampling frame). Confidentiality forms must be filled out and returned to AHRQ before this file can be obtained. Go to www.meps.ahrq.gov to access the confidentiality form.

MEPS HC-014: 1996 MEPS-HC Survey Data. This CD-ROM contains the following MEPS HC public use

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New MEPS products

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files released by AHRQ for calendar year 1996: the 1996 Full-Year Consolidated Data File (HC-012); the 1996 Event Files (HC-010A through HC-010I); the 1996 Medical Conditions File (HC-006R); the 1996 Jobs File (HC-007); and the 1996 Health Insurance Plan Abstraction (HIPA) Linked Data File (HC-017). For each of these releases, the following files are included: a README file, data file(s) in ASCII and

SAS transport format, documentation and codebook(s), and a file containing SAS programming statements and sample code for SAS users. Also included are these additional files: the data collection instrument for the MEPS HC rounds 1-5; matrix files containing a summary of all data items on the 1996 MEPS HC files; and self-executable software for use with portable document formatted (PDF) files. This free CD-ROM (AHRQ No. 01-DP05) is available from AHRQ.*

AHRQ publishes Spanish-language guide to getting better quality health care

A free Spanish-language booklet is now available from the Agency for Healthcare Research and Quality. It presents advice on what the average person can do to avoid medical errors and increase his or her likelihood of receiving good quality medical care.

Mejorando la calidad de la atención médica includes a series of tips to help the reader find high-quality health plans, physicians,

and hospitals. It also provides practical advice that will help patients get good health care, such as informing physicians of all the medications and doses they are taking; checking labels of medicines to ensure they are what the doctor prescribed; and asking physicians questions about their care and making sure they understand the answers. AHRQ's new booklet also offers information on how health care quality is

measured and how to find out about clinical trials on new medicines and treatments.

Free copies of *Mejorando la calidad de la atención médica* are available from the AHRQ clearinghouse (see the back cover of *Research Activities*) or send an e-mail to ahrqpubs@ahrq.gov to request a copy. Ask for AHRQ Publication No. 01-0032.*

AHRQ'S new quality indicators LISTSERV®

AHRQ has a new LISTSERV® that will allow you to begin receiving a series of Web-based, user-friendly indicators for improving the quality of inpatient and ambulatory health care. The first to be announced this fall will be AHRQ's prevention/access indicators, followed by mortality/use indicators and patient safety/complications indicators. These indicators resulted from a refinement and expansion of the original Healthcare Cost and Utilization Project (HCUP) Quality Indicators by the UCSF-Stanford Evidence-based Practice Center. Go to <http://www.ahrq.gov/data/hcup/qilist.htm> for more information and to sign up for the LISTSERV®.

Grant final reports now available from NTIS

The following grant final reports are now available for purchase from the National Technical Information Service (NTIS). Each listing identifies the project's principal investigator (PI), his or her affiliation, grant number, and project period and provides a brief description of the project. See the back cover of *Research Activities* for ordering information.

AMIA 2000 Annual Symposium. J.M. Overhage, M.D., Ph.D., American Medical Informatics Association, Bethesda, MD. AHRQ grant HS10115, project period 9/1/00-2/28/01.

The American Medical Informatics Association's 2000 annual fall symposium drew nearly 2,000 attendees from around the world. The program included in-depth tutorials, workshops, paper presentations, panels, theater style demonstrations, and meet-the-expert sessions. Attendees developed a research agenda for medical informatics by identifying applied and operational research topics best explored by developmental support, demonstrations, and evaluations, as well as more theoretic or basic research areas that will require laboratory investigation and basic developmental work. (Abstract and executive summary, NTIS accession no. PB2001-106535; 26 pp, \$23.00 paper, \$12.00 microfiche)***

Community-Based Pharmaceutical Care. Morris Weinberger, Ph.D., Indiana University, Indianapolis. AHRQ grant HS09083, project period 6/1/96-5/31/01.

Using a randomized, controlled trial, these researchers evaluated a pharmaceutical care program for 1,113 patients with asthma or

chronic lung disease who filled prescriptions in 36 community pharmacies. Pharmacies were randomized to pharmaceutical care or one of two control groups (peak flow monitoring, usual care). Patients in the pharmaceutical care group received recent patient-specific clinical data (peak flow rates, emergency department visits, hospitalizations, medications), customized patient educational materials, training, and resources to support pharmaceutical care. Patients in pharmaceutical care had significantly higher peak flow rates compared with the usual care patients but not with the patients in the peak flow monitoring group. Moreover, patients in the pharmaceutical care group were significantly more satisfied with both their pharmacists and health care. While significant improvement in both medication compliance and health-related quality of life were observed among the pharmaceutical care patients, similar improvements were observed in both control groups. Asthma patients receiving pharmaceutical care had more visits for acute exacerbations than those in usual care. (Abstract, executive summary, and final report, NTIS accession no. PB2001-108114; 44 pp, \$25.50 paper, \$12.00 microfiche)***

Cost-Effectiveness of Improving Care for Depression in Managed, Primary Care Practices. Kenneth B. Wells, M.D., M.P.H., Ph.D., RAND, Santa Monica, CA. AHRQ grant HS08349, project period 4/1/95-3/31/01.

This project involved development and evaluation of a quality improvement program for depression for use in nonacademic, community-based primary care practices. Six large primary care

organizations were recruited, including 46 primary care clinics with 181 of their 183 primary care clinicians. Practices were randomized to care as usual care (UC—i.e., written guidelines only) or one of two quality improvement (QI) toolkits (one for psychotherapy and one for medication) that provided training resources for clinicians and patients to initiate and adhere to guideline-concordant care for depression. The researchers enrolled 1,356 depressed patients in the 2-year study. The interventions improved the rate of appropriate depression care by 10 percentage points relative to UC over the first year and improved clinical and quality-of-life outcomes, employment status, and household wealth. Increased health care costs over 2 years were modest (\$400 to \$500 for each intervention relative to UC). Minority patients benefitted the most clinically, whites improved in employment, and all groups improved in wealth under QI. (Abstract, executive summary, and final report, NTIS accession no. PB2001-108534; 110 pp, \$33.00 paper, \$17.00 microfiche)***

Couples' Preferences for Prostate Cancer Screening. Robert J. Volk, Ph.D., University of Texas Medical Branch, Galveston. AHRQ grant HS08992, project period 9/30/96-9/29/00.

The researchers examined the preferences of 168 male primary care patients and their spouses for the outcomes of prostate cancer screening, treatment, and life with metastatic disease. Utilities were collected for six treatment outcome states and two health states involving metastatic prostate

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Grant final reports

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cancer. In general, wives' utilities for each health state were higher than husbands' utilities, indicating that the wives were less willing to trade quantity for quality of life. Concordance between the perspectives was low. A subset of patients was unwilling to trade time for any health state considered. The findings show that husbands' and wives' preferences for prostate cancer screening and treatment are highly variable. Including the spouse in decisionmaking about prostate cancer screening seems warranted. (Abstract, executive summary, and final report, NTIS accession no. PB2001-106536; 32 pp, \$25.50 paper, \$12.00 microfiche)***

Credentialing Physician Specialists: A World Perspective. Philip G. Bashook, Ed.D., American Board of Medical Specialties, Evanston, IL. AHRQ grant HS10095, project period 5/1/00-4/30/01.

The American Board of Medical Specialties Research and Education Foundation (ABMS) and the Royal College of Physicians and Surgeons of Canada (RCPSC) jointly sponsored an international conference, "Credentialing Physician Specialists: A World Perspective," in Chicago, June 8-10, 2000. The conference provided a forum to compare credentialing systems, compare assessment methods and standards for awarding credentials, and discuss how to link specialty credentialing with maintenance of competence. (Abstract, executive summary, and proceedings of conference, NTIS accession no. PB2001-108559; 254 pp, \$54.00 paper, \$23.00 microfiche)***

Developing and Testing Asthma Quality of Care Measures. Yvonne M. Coyle, M.D., University of Texas, Southwestern Medical Center, Dallas. AHRQ grant HS09461, project period 9/30/96-9/29/00.

The purpose of this project was to develop a system to evaluate the quality of acute asthma care. Study subjects were adults treated for acute asthma in a public hospital emergency department. Lung function change from the time of acute asthma care up to 2 to 3 weeks later provided a short-term measure of asthma morbidity. Patients' personal and environmental risk factors were used in the statistical analysis to assist in determining which acute asthma care treatments were effective in improving lung function. The most important patient and environmental risk factors for lung function following treatment for acute asthma were less knowledge about asthma and exposure to indoor allergens. Scheduling asthma care followup and providing patient education on asthma medication use at discharge were found to be most effective for improving lung function following acute asthma care and were translated into quality of care measures. (Abstract, executive summary, and final report, NTIS accession no. PB2001-106537; 44 pp, \$25.50 paper, \$12.00 microfiche)***

Disclosing Financial Incentives: Will Consumers Understand and Value the Information. Tracy E. Miller, J.D., Mount Sinai School of Medicine, New York, NY. AHRQ grant HS09810, project period 2/1/98-1/31/00.

This was a pilot study to inform efforts by policymakers and employers to educate enrollees about financial incentives and gatekeeping practices in managed

care. Many States have mandated the disclosure to enrollees of practices to control use of services, yet little is known about enrollee knowledge, attitudes, and preferences in relation to this information. Information about practices to limit use can empower consumers as they choose a plan. Individuals also need this information to understand and exercise their rights once they are enrolled. At the same time, the information may diminish patients' trust in their physicians. (Abstract, executive summary, and final report, NTIS accession no. PB2001-108113; 28 pp, \$23.00 paper, \$12.00 microfiche)***

Effects of Withholding Payments from Managed Care Plans on the Costs of Care in Medical Group Practices. John K. Kralewski, Ph.D., University of Minnesota, Minneapolis. AHRQ grant HS10055, project period 6/1/96-5/31/01.

The goal was to assess the effects of a managed health care plans' decision to withhold a portion of a clinic's payment on the subsequent use of resources to care for patients in that clinic. The influence of clinic organizational and cultural factors on costs and on the effects of withholds was also included in this analysis. Two associated studies related to clinic payment method were conducted: the effects of clinic structure and payment on prescription drug use and disease prevention practices. Data were obtained on 86 clinics providing services for a Blue Cross managed care program during 1997. The clinics were analyzed to determine the relationship between payment methods and cost of care. Cost and patient data were obtained from Blue Cross records, and medical group practice clinic data were obtained by a survey of those

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organizations. The effects of clinic and physician payment methods on per member per year adjusted patient costs were evaluated. Patient costs were adjusted for differences in payment schedules and patient age and sex. (Abstract, executive summary, and final report, NTIS accession no. PB2001-108484; 102 pp, \$33.00 paper, \$17.00 microfiche)***

National Quality Forum for Ambulatory Health Care. Naomi J. Kuznets, M.S., Ph.D., AAAHC Institute for Quality, Wilmette, IL. AHRQ grant HS10934, project period 9/30/00-9/29/01.

In June, 2001, the AAAHC Institute for Quality Improvement convened a National Quality Forum for Ambulatory Health Care in New Orleans, LA. The purpose was to provide a forum to disseminate clinical quality improvement knowledge in ambulatory health care. The issues discussed included methodological topics (study topic selection; survey development and piloting; sampling; data cleaning and analysis; and report drafting); study results; problem-solving techniques; and approaches used by several leading organizations and how these approaches could be applied to the ambulatory setting. (Abstract and executive summary of conference, NTIS accession no. PB2001-108533; 16 pp, \$23.00 paper, \$12.00 microfiche)***

National Study of Home Care: Providers, Users, and Outcomes. Karen E. Peters, M.P.H., University of Illinois, Chicago. AHRQ grant HS08992, project period 8/1/95-7/31/97.

Relationships between agency- and client-level variables were examined to explore the relative influences of each on length of stay

(LOS) as a measure of resource use in home health care. A multilevel theoretical perspective and analytical method were used. Cross-sectional data were analyzed on 905 agencies and 4,870 clients from the 1992 National Home Health and Hospice Care Survey (NHHCS) which collects data through a series of surveys on agency characteristics and patient populations. Models were developed to explain the variation in average LOS among U.S. home health care agencies, controlling for patient level characteristics. Findings indicate that 29 percent of the variance was accounted for, and there was a marginally significant variation in average LOS among chain-affiliated agencies.

Organizational theory suggests that structural characteristics serve as indicators of organizational behavior, and changes in structure may affect the way in which care is provided and use of services is negotiated by different home health care stakeholders. These stakeholders may have conflicting agendas that impact on decisions concerning cost, quality, access to care, and outcomes. (Abstract and executive summary of dissertation, NTIS accession no. PB2001-108524; 16 pp, \$23.00 paper, \$12.00 microfiche)***

Nursing Home Quality Indicators Dissemination Conference. Carol R. Hegeman, M.S., Foundation for Long Term Care, Albany, NY. AHRQ grant HS10085, project period 1/1/00-12/31/00.

The Foundation for Long Term Care held the 1-1/2 day dissemination conference "Nursing Home Quality Indicators from Theory to Practice," in a train-the-trainer format for nurse managers in New York State to advance understanding of the practical applications of health outcomes research in the nursing home

setting. The conference provided a systematic process for using quality improvement (QI) data in real-world cases of problem identification, evaluation, resolution, and ongoing QI activities. Nurses who attended the training learned to interpret the QI numbers, how to read and interpret reports, ways to use the information to target problem areas, how to make nursing homes responsive to resolution of QI problems, and how to disseminate this information to other nurse managers. (Abstract, executive summary, and attachment B, NTIS accession no. PB2001-104544; 16 pp, \$23.00 paper, \$12.00 microfiche)***

Patient Outcomes Associated with Antidepressant Drugs. Judith M. Garrard, Ph.D., University of Minnesota, Minneapolis. AHRQ grant HS07772, project period 3/1/93-2/28/99.

This 5-year project involved a prospective cohort study of approximately 500 elderly (65 years and older) enrollees in a managed care organization that provided a pharmacy benefit to community-dwelling (noninstitutionalized) elderly people. Results included empirical findings of potential underdetection of depression among the elderly who reported depressive symptoms, the role of minor depression in self-assessment of comorbidities among these subjects, and the association between minor depression and a more negative perception of quality of life compared with elderly people who did not have symptoms of depression. (Abstract, executive summary, and final report, NTIS accession no. PB2001-106533; 22 pp, \$23.00 paper, \$12.00 microfiche)***

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Promoting a Research Agenda: The Impact of Managed Care on Public Health. Barbara J. Hatcher, Ph.D., American Public Health Association, Washington, DC. AHRQ grant HS10092, project period 3/1/00-2/28/01.

The American Public Health Association (APHA) Task Force on Public Health and Managed Care held a 2-day conference in September 2000 on the impact of managed care on public health. Conference attendees examined recent studies on the impact of managed care on public health and identified gaps in existing research, the needs of users of research, and the priorities of organizations that fund research. Attendees used this information to develop a broad research agenda that addresses public health priorities. Particular attention was given to vulnerable populations, comprehensiveness of

services, and the public health infrastructure. (Abstract, executive summary, final report, and appendixes A-C, NTIS accession no. PB2001-104547; 26 pp, \$23.00 paper, \$12.00 microfiche)***

Understanding Clinical and Administrative Outcomes. Jeremy Holtzman, M.D., University of Minnesota, Minneapolis. AHRQ grant HS09735, project period 7/1/98-1/31/01.

Although assessing outcomes of health care is an important endeavor, the difficulty in collecting and interpreting outcomes data limits their usefulness. In this study, the researchers investigated the relationship of administrative data, specifically Medicare claims for services, with outcomes information to assess the possibility of using administrative data as a surrogate for directly collected outcomes data. They used data on

patient reports of outcomes following cholecystectomy and total hip arthroplasty, which had been collected as part of the Post-Hospitalization Outcomes Study. They merged this data with medical records data and Medicare claims. For cholecystectomy, there was little relation between symptomatic outcomes and subsequent use of health care services. For total hip arthroplasty, there was a significant relationship between pain and functional status in the year following hip replacement and Medicare claims for services. However, the use of services was across so many diagnoses it was unclear whether it was related to the results of surgery or overall illness burden. (Abstract, executive summary, and final report, NTIS accession no. PB2001-106538; 62 pp, \$27.00 paper, \$12.00 microfiche)***

Research Briefs

Berlowitz, D.R., Brandeis, G.H., Morris, J.N., and others. (2001). "Deriving a risk-adjustment model for pressure ulcer development using the minimum data set;" and Berlowitz, D.R., Brandeis, G.H., Anderson, J.J., and others. (2001). "Evaluation of a risk-adjustment model for pressure ulcer development using the minimum data set." (AHRQ grant HS09768) *Journal of the American Geriatrics Society* 49, pp. 866-871, 872-876.

Detailed clinical information on large numbers of nursing home residents, including the development of pressure sores (often the result of poor quality care), may now be obtained from databases containing the Minimum Data Set (MDS). These researchers used MDS data

from 1997 to develop a risk-adjustment model for pressure ulcer development that could be used to assess the quality of nursing home care. The study involved 14,607 nursing home residents who were without a stage 2 (blistered skin and tissue damage) or larger pressure ulcer on an initial assessment. Pressure ulcer status was determined 90 days later, and the researchers identified potential predictors of pressure ulcer development. A total of 17 resident characteristics were associated with pressure ulcer development, including dependence in mobility and transferring (for example, from bed to wheelchair), diabetes mellitus, peripheral vascular disease, urinary incontinence, lower body mass index, and end-stage disease. The

researchers developed the risk-adjustment model based on these characteristics and validated it in 13,457 nursing home residents. They used patients' risk of developing pressure ulcers to calculate expected rates of pressure ulcer development for 108 nursing homes. They found that expected rates ranged from 1.1 percent to 3.2 percent and observed rates ranged from 0 percent to 12.1 percent, showing that the model performed well.

Hagen, M.D., Garber, A.M., Goldie, S.J., and others. (2001, July). "Does cost-effectiveness analysis make a difference?" (AHRQ grant HS10931). *Medical*

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Decision Making 21(4), pp. 307-323.

Cost-effectiveness analysis assumes that medical decisions can direct resources to their most productive and efficient uses, maximizing the benefits obtained per unit of expenditure. These authors explain why cost-effectiveness analysis is rarely used to inform decisions about health care services in the United States. Clinical practices, for example, are strongly influenced by the culture of health care institutions and individual providers. Moreover, real-world clinical policy decisions must balance health against other goals, such as fair access to health services and help for those who need it most. Researchers attending a symposium on the topic used the example of Pap smears to screen for cervical cancer to elucidate both the potential of cost-effectiveness analysis and the obstacles to its use.

Howard, D.J. (2001). "Dynamic analysis of liver allocation policies." (NRSA training grant T32 HS00055). *Medical Decision Making* 21, pp. 257-266.

In the United States, livers are allocated using a "sickest-first" principle in which hospitalized transplant candidates are given priority over healthier patients. Comparisons of alternative liver allocation policies often begin by assuming that patients are either urgent or nonurgent, ignoring the process by which patients become urgent in the first place. This article uses a simulation model to study how patients' health changes between listing and transplant as a function of the rationing rule and the ratio of liver demand to supply. Compared with a first-come first-served queue or random assignment, a sickest-first policy results in worse patient outcomes when the demand-to-supply ratio is high. A substantial

portion of this differential may be attributed to the fact that under the sickest-first rule, many patients are listed in a nonurgent state and only transplanted once they have reached the sickest-patient category. The sickest-first rule is equitable, however, in that patients placed on the waiting list in the sickest category are not disadvantaged relative to patients listed in healthier states.

Patel, V.L., Arocha, J.F., Diermeier, M., and others. (2001). "Methods of cognitive analysis to support the design and evaluation of biomedical systems: The case of clinical practice guidelines." (Cosponsored by AHRQ, NLM, and Department of the Army). *Journal of Biomedical Informatics* 34(1), pp. 52-66.

These authors describe methods of cognitive evaluation that can be used to analyze the readability and coherence of clinical practice guidelines (CPGs). They propose that propositional and semantic analyses (widely used in cognitive science to evaluate texts), when used as part of the guideline development process, can improve the usability and comprehension of CPGs by clinicians who are offered guideline-based advice. CPGs often contain elaborate collections of prescribed procedures with logical gaps or contradictions that can promote ambiguity and hence frustration among users. A better understanding of the semantics and structure of CPGs may help to improve their clarity and usefulness, according to the researchers.

Schmid, C.H. (2001, June). "Using Bayesian inference to perform meta-analysis." (AHRQ grant HS10064). *Evaluation and the Health Professions* 24(2), pp. 165-189.

According to this author, Bayesian modeling offers an elegant approach to meta-analysis that

efficiently incorporates all sources of variability and relevant quantifiable external information. It provides a more informative summary of the likely value of parameters after observing the data than do non-Bayesian approaches. Two major advantages of Bayesian methods are the ability to incorporate the uncertainty from the estimate of the between-study variance and the provision of posterior estimates of the true effects in individual studies. Obtaining posterior estimates of study effects can help determine whether studies really are heterogeneous or whether perceived heterogeneity is an artifact of small sample sizes. The author also shows how to use Bayesian models to estimate a common mean and regression slopes.

Zou, K.H., and Normand, S-L.T. (2001). "On determination of sample size in hierarchical binomial models." (AHRQ grant HS09487). *Statistics in Medicine* 20, pp. 2163-2182.

The use of multicenter clinical trials has grown during the past decade. However, the methodology for the design of such trials is relatively limited. In many multicenter studies, in addition to the performance of any individual center, interest is often focused on a particular aspect of the participating centers, such as the average treatment benefit or the range in treatment benefit. Thus, the study objective may be directed at estimation of a particular function of the center-specific parameters across all centers. These authors consider 2- and 3-stage hierarchical designs to characterize the sample size. They illustrate methods for sample size calculations under the 2- and 3-stage models and compare them for the design of a multiinstitutional study to evaluate the appropriateness of discharge planning rates for a group of patients with congestive heart failure.

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