

Highlights Departments

- 2** Outcomes/
Effectiveness
Research
- 6** Children's Health
- 10** Health Care Use
and Access
- 12** Managed Care/
Primary Care
- 14** Hospital Issues
- 15** Health Care Costs
and Financing
- 17** Long-Term Care
- 19** Quality of Care
- 21** Medical Education

Regular Features

- 21** AHCPR News
and Notes
- 22** Announcements
- 26** Research Briefs
- 31** Indexes - 1998

Publicizing bypass surgery outcomes has not prompted doctors to deny surgery to higher risk elderly patients

Since 1990, the New York State Department of Health has published annual profiles, so-called "cardiovascular scorecards," of surgeons performing coronary artery bypass surgery. But apparently this profiling has not prompted New York surgeons to deny this procedure to elderly patients at higher risk for poor outcomes to avoid jeopardizing the surgeon's outcome profile.

A recent study found no evidence that New York's provider profiling limited the access of the State's elderly to this procedure or increased transfers to out-of-State hospitals for the procedure. In fact, despite an increasing number of bypass patients with higher preoperative risk profiles, bypass surgery outcomes in New York improved significantly faster than the national average after initiation of the profiling program, according to a study supported in part by the Agency for Health Care Policy and Research (HS06503, Ischemic Heart Disease PORT, and HS05635).

Led by Elizabeth R. DeLong, Ph.D., and Eric D. Peterson, M.D.,

M.P.H., F.A.C.C., Duke University Medical Center investigators used national Medicare data to examine trends in the percentages of New York residents aged 65 years and older receiving out-of-State bypass surgery between 1987 and 1992 (before and after program initiation). They also examined in-State procedure use among elderly heart attack patients during this period and compared surgical outcomes in New York Medicare patients with those for the rest of the Nation.

Between 1987 and 1992, the percentage of New York residents who received bypass surgery out of State actually declined, from 12.5 percent to 11.3 percent. An elderly patient's likelihood of undergoing the surgery in New York has increased significantly since initiation of the provider profiling program. What's more, between 1987 and 1992, 30-day mortality rates, unadjusted for patient risk factors, declined by 33 percent in New York Medicare patients compared with a 19 percent decline nationwide. This made

continued on page 2

Publicizing surgery outcomes

continued from page 1

New York the State with the lowest risk-adjusted bypass mortality of any State in 1992.

See "The effects of New York's bypass surgery provider profiling on access to care and patient outcomes in the elderly," by Drs. Peterson and DeLong, James G. Jollis, M.D., F.A.C.C., and others, in the October 1998 *Journal of the American College of Cardiology* 32(4), pp. 993-999. ■

Note: Only items marked with a single (*) or double (**) asterisk are available from AHCPR. Items marked with a single asterisk (*) are available from AHCPR's clearinghouse. Items with a double asterisk (**) are also available through AHCPR 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.

Outcomes/Effectiveness Research

Heart failure accounts for much of the variation among surgeons in bypass surgery mortality rates

Surgeons typically have varying mortality rates among their coronary artery bypass graft (CABG) surgery patients. Both surgeon and hospital experience have been reported to affect these mortality rates. However, a recent study has uncovered another influence. It found that fatal heart

failure accounted for 80 percent of the differences in mortality rates among 23 cardiothoracic surgeons who are members of the Northern New England Cardiovascular Disease Study Group. The study was supported in part by the Agency for Health Care Policy and Research (HS06503, Ischemic Heart Disease

Patient Outcomes Research Team [PORT], and HS06813) and led by Gerald T. O'Connor, Ph.D., of Dartmouth Medical School. The researchers prospectively studied 8,641 consecutive patients undergoing CABG surgery by the 23 study surgeons. A committee determined patient cause of death following CABG. The researchers ranked surgeons according to CABG mortality rates (adjusted for patient risk of death) and divided them into

three groups, from the lowest (3.3 percent), middle (4.5 percent), and highest (5.8 percent) CABG mortality rates. Heart failure accounted for nearly 2 percent of mortality rates in the lowest surgeon mortality group to 4 percent in the highest mortality group and for 80 percent of the difference between the lowest and highest mortality group.

Differences in rates of fatal heart failure could not be explained by patient characteristics. For instance, preoperative left ventricular function was virtually identical for patients in all mortality groups. The researchers suggest that variable results may rise from differences in processes of clinical care. Processes of care possibly related to heart failure include preoperative treatment of ischemia, myocardial protection, surgical techniques, perfusion and anesthesia techniques, and the recognition and treatment of perioperative heart failure.

For more information, see "Results of a regional study of modes of death associated with coronary artery bypass grafting," by Dr. O'Connor, John D. Birkmeyer, M.D., Lawrence J. Dacey, M.D., and others, in the *Annals of Thoracic Surgery* 66, pp. 1323-1328, 1998. ■

Research Activities is a digest of research findings that have been produced with support from the Agency for Health Care Policy and Research. *Research Activities* is published by AHCPR's Office of Health Care Information. The information in *Research Activities* is intended to contribute to the policymaking process, not to make policy. The views expressed herein do not necessarily represent the views or policies of the Agency for Health Care Policy and Research, the Public Health Service, or the Department of Health and Human Services. For further information, contact:

AHCPR
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
Susan Toloczko, Design and Production
Karen Migdail, Media Inquiries

Only a small number of heart attack patients may benefit from prophylactic use of implanted automatic defibrillators

A study published in 1996—the Multicenter Automatic Defibrillator Implantation Trial (MADIT)—found that there were 54 percent fewer deaths among heart attack patients who received implantable cardioverter-defibrillators (ICDs) to prevent life-threatening arrhythmias compared with patients who received conventional medical therapy. These findings raised hopes for improving survival of the thousands of heart attack (postinfarct) patients estimated as potentially benefiting from ICDs. However, a more recent study suggests that the actual proportion of these patients at high enough risk to benefit from prophylactic defibrillator placement may range from just 0.3 percent to 1.1 percent.

This finding has substantial health policy implications because the cost of the ICD device and its implantation has been estimated to be \$45,000 per device, not including followup costs, says Mark A. Hlatky, M.D., of

Stanford University. In a study supported in part by the Agency for Health Care Policy and Research (HS08362), Dr. Hlatky and his colleagues used data from the Cardiac Arrhythmia Suppression Trial (CAST) Registry to calculate the potential benefit of ICDs for postinfarct patients. The CAST Registry includes screening data on 94,797 patients from 35 medical centers, who are at risk for sudden unexpected death. Patients who had suffered a heart attack were screened to identify those at high risk for arrhythmic death using clinical entry criteria, Holter monitor recordings, and ejection fraction.

For details, see “Estimating the proportion of post-myocardial infarction patients who may benefit from prophylactic implantable defibrillator placement from analysis of the CAST registry,” by Nathan R. Every, M.D., M.P.H., Dr. Hlatky, Kathryn M. McDonald, M.M., and others, in the *American Journal of Cardiology* 82, pp. 683-685, 1998. ■

People at risk for major stroke vary widely in their values and treatment preferences

A major stroke that paralyzes an arm, leg, and one side of the body, leaving victims unable to take care of themselves, is considered worse than death by 45 percent of patients at risk for stroke. On the other hand, 15 percent of these patients are willing to give up only 2.5 years or life or less out of a possible 10 to avoid a major stroke, according to a study by the Stroke Prevention Patient Outcomes Research Team (PORT). The PORT is supported by the Agency for Health Care Policy and Research (PORT contract 290-92-0028).

The variation in patient response may reflect different attitudes toward physical disability, different religious and ethical values (for example, those opposed to giving up years of life regardless of the circumstances), and other factors, suggests David Matchar, M.D., of Duke University, the PORT’s principal investigator.

The researchers surveyed three patient groups, speaking with a total of 1,261 patients who were at risk of

stroke. The patients were presented with trade-offs between time in a certain health state and time in excellent health. For example, “Would you prefer living 10 more years following a major stroke or 8 more years in excellent health?” Patients who indicated that 10-year survival after major stroke was equivalent to 0 years in excellent health were asked if they would prefer to live 10 years after a major stroke or die from the stroke the instant it occurred.

Results showed that on a scale of 0 (death) to 1 (perfect health), most people described the state of health after a major stroke as a mere 0.30. However, willingness to trade off years of life to avoid a stroke varied. Although 45 percent considered a major stroke to be worse than death, 15 percent were willing to trade off little or no survival to avoid it.

Also in this issue:

- New findings on back pain treatment and outcomes, see page 4
- Triage and other factors affecting the neonatal ICU, see page 6
- Expanding Medicaid for prenatal support services, see page 8
- Early childhood immunizations, see page 9
- Computerized guidelines for antibiotic use, see page 10
- Use of incentives and feedback to increase cancer screening, see page 11
- Case-mix adjustment in hospital report cards, see page 12
- Factors affecting managed care penetration, see page 13
- Cost trends for HIV care, see page 15
- Effects of reducing Medicare coverage for Rx drugs, see page 16
- Differences in nursing home outcomes by ownership type, see page 17
- New RFAs on health care for low-income children, quality improvement, and therapeutic research centers, see page 22
- National Guideline Clearinghouse, see page 23

continued on page 4

Risk for major stroke

continued from page 3

Providers should speak directly with patients who are at risk of stroke about their preferences, recommend the researchers. Stroke-related interventions, even those that are costly or have undramatic

clinical benefits, are likely to have different cost-effectiveness implications if they can prevent a major stroke considered abhorrent by the patient. Obviously, the more abhorrent the patient views the consequences of a stroke, the more willing he or she may be to accept the intervention.

More details are in "Utilities for major stroke: Results from a survey of preferences among persons at increased risk for stroke," by Gregory P. Samsa, Ph.D., Dr. Matchar, Larry Goldstein, M.D., and others, in the October 1998 *American Heart Journal* 136(4), pp. 703-713. ■

Negative provider attitudes toward diabetes and its management may be barriers to better care for diabetic adults

Primary care providers (PCPs) often do not follow recommended standards for diabetes care. Their own negative attitudes toward the disease and its management, as well as a perceived lack of support from society and the health care system for their efforts to control diabetes, may be barriers to better care for patients with adult-onset diabetes.

Providers agree that the treatment of hyperglycemia (high blood sugar) is effective in preventing the complications of diabetes—such as kidney disease and blindness—and that their treatment and advice improve patient outcomes. However, when Anne C. Larme, Ph.D., and Jacqueline A. Pugh, M.D., of the MEDTEP Research Center on Minority Populations at the University of Texas Health Science Center, San Antonio, interviewed 31 PCPs, the physicians revealed doubts about the efficacy of diabetes treatment and their ability to carry it out.

In a study supported in part by the Agency for Health Care Policy and Research (HS07397), the researchers asked the PCPs attending an eight-session continuing medical education (CME) program how they rated on a 10-point scale the treatment of diabetes compared with

the treatment of five other chronic conditions. Most PCPs felt that diabetes was significantly harder to treat than hypertension and angina, and a majority rated hyperlipidemia and arthritis as easier to treat than diabetes. Most PCPs felt that diabetic medications were more difficult to regulate than those for other chronic conditions because patient response to the medication fluctuates, and the drugs sometimes increase rather than decrease symptoms.

Also, management of the disease relies on changes in diet and exercise, which lie outside of provider control. Finally, the extra time and expense required for diabetes care is not supported by clinic administrators. CME programs can more effectively promote adherence to standards of diabetes care by not only updating provider knowledge but also by addressing the emotional dimensions of care. Also, providers need to shift from an acute to a chronic model of care and from the role of primary decisionmaker to that of teacher and facilitator, conclude the researchers.

More details are in "Attitudes of primary care providers toward diabetes," by Drs. Larme and Pugh, in *Diabetes Care* 21(9), pp. 1391-1396, 1998. ■

Researchers examine treatment and outcomes for low back pain

Although a majority of patients with acute low back pain use self-care strategies without seeing a health care professional, 37 percent may see one or more of a variety of providers, including a primary care physician, chiropractor, orthopedic or neurologic surgeon, and/or a physical therapist. The North Carolina Back Pain Project, led by Timothy S. Carey, M.D., M.P.H., of the University of North

Carolina at Chapel Hill and supported by the Agency for Health Care Policy and Research (HS06664 and HS09370), examines variations in and effectiveness of diagnosis and treatment of low back pain.

Three recently published articles by Dr. Carey and his colleagues are summarized here. They suggest that once experienced, low back pain becomes a part of life for almost half of those affected, and for many,

it is intermittently disabling. Repeated visits and procedures do not appear to improve patients' long-term well-being, but they clearly account for substantial health care costs. Finally, back pain prognosis does not differ based on the type of provider initially seen or the level of practitioner confidence.

continued on page 5

Low back pain

continued from page 4

Carey, T.S., Garrett, J.M., Jackman, A., and Hadler, N. (1999). "Recurrence and care seeking after acute back pain: Results of a long-term follow-up study." *Medical Care* 37(2), pp. 157-164.

This study found that adults seeing different types of providers for acute back pain had similar back pain recurrence rates and functional status during recovery. This was true despite very different philosophies of care and practice patterns among primary care physicians (PCPs), chiropractors, orthopedic surgeons, and health maintenance organization PCPs. However, patients who had originally sought care from a chiropractor were two to three times more likely to seek care for modest recurrences of low back pain. Although chiropractic care was associated with excellent patient satisfaction, it did not improve functional status, and therefore, it was somewhat more expensive, according to the researchers.

Based on periodic interviews with 921 patients from their initial back pain visit until 22 months later, the researchers found that back pain recurred in over half of patients seen for low back pain. Yet despite recurrences, almost all of these patients were reasonably functional, and work disability was rare. The likelihood of any recurrence of back pain increased with the number of back pain episodes experienced prior to the current episode of pain. For instance, 15 percent of those with no previous episodes had a severe recurrence compared with 35 percent of those with more than five lifetime episodes of low back pain.

The role of the health care system in caring for these patients remains problematic. Repeated visits, with or without multiple radiographs and procedures, did not discernibly

improve patients' long-term well-being but clearly resulted in substantial health care costs. Yet patients continued to seek care, looking for reassurance and relief from their symptoms. One option would be to de-medicalize the experience, note the researchers. This would require reversing practitioner and patient expectations so that back pain recurrences might be considered a part of life similar to recurrences of disabling upper respiratory infections in young individuals.

Meanwhile, researchers and providers should concentrate on finding ways to improve functional status for the small number of very high-cost back-pain sufferers. Since current treatments only marginally affect their state, the emphasis should be placed on low-cost treatment and return to functioning, rather than complete symptom relief. This may afford them the greatest opportunity for improvement, conclude the researchers.

Sundararajan, V., Konrad, T.R., Garrett, J., and Carey, T. (1998, August). "Patterns and determinants of multiple provider use in patients with acute low back pain." *Journal of General Internal Medicine* 13, pp. 528-533.

Although 79 percent of back pain patients see only the initial physician who began their care for low back pain, a substantial minority (21 percent) see multiple providers, which is an expensive venture. The average cost of seeing only the initial provider is \$439 compared with \$1,137 for multiple providers, according to this study. The researchers prospectively studied patients with acute low back pain after an initial visit to a private primary care physician (PCP), chiropractor, orthopedic surgeon, or HMO PCP and interviewed them periodically until they recovered completely or to 6 months.

Duration of pain prior to the initial visit, sciatica, higher disability score, days to functional recovery, interval to complete recovery, referral by initial provider, disk attribution, satisfaction, and type of initial provider were significantly associated with seeking care from multiple provider types. Age, race, sex, and education were not significant. About 14 percent of those initially seeing a private PCP saw multiple providers, compared with 19 percent of those initially seeing a chiropractor, 30 percent of patients seeing an orthopedic surgeon, and 9 percent of those seeing an HMO PCP.

Although only 12 percent of those who had recovered by 3 months saw multiple provider types, 54 percent of those who had not recovered by then did so. Seeking further care may be an appropriate response to lack of improvement, suggest the researchers. They conclude that the correlation of patient-initiated use of multiple provider types with lack of symptomatic improvement reflects the inability of physicians to offer these patients an effective way to manage their low back pain, especially as it becomes chronic.

Smucker, D.R., Konrad, T.R., Curtis, P., and Carey, T.S. (1998). "Practitioner self-confidence and patient outcomes in acute low back pain." *Archives of Family Medicine* 7, pp. 223-228.

Chiropractors clearly are more confident than physicians in their ability to treat low back pain, and their patients typically are more satisfied. But receiving care from a more confident practitioner does not lead to faster recovery or more patient satisfaction, according to this study. Patients seen by PCPs with stronger self-confidence scores did not recover faster than patients of physicians with weaker scores. They had similar time to improved

continued on page 6

Low back pain

continued from page 5

function and pain resolution. Thus, bolstering practitioner confidence in diagnostic or therapeutic maneuvers for acute low back pain is unlikely to benefit most primary care patients seen for this problem, conclude the researchers.

They surveyed 189 physicians and chiropractors who participated in the North Carolina Back Pain Project.

The survey contained 10 items that measured aspects of practitioner confidence and attitudes in assessing and treating patients with low back pain. Patients were interviewed by telephone after their initial visit to the practitioner and periodically up to 6 months or complete recovery, whichever came first.

Chiropractors had significantly stronger self-confidence scores than physicians, but level of practitioner confidence did not predict patient

outcomes. The researchers suggest that other psychosocial factors in the physician-patient encounter, which were not measured in this study, may affect outcomes, particularly for patients with chronic pain syndromes. These may include the physician's communication skills, emotional support provided to the patient, amount of time spent with the patient, and hands-on evaluation and treatment. ■

Patient factors rather than differences in medical management affect visual acuity after cataract surgery

Denmark, Spain, Canada, and the United States manage cataract surgery and care differently. For instance, in Denmark, cataract extractions are mainly performed in public hospitals, while in North America and Spain, extractions are performed both in hospitals and in private clinics. Ophthalmologic and medical preoperative testing, as well as intraoperative monitoring, is much more intensive in North America and Spain than in Denmark. Physicians in Spain make significantly greater use of general anesthesia, but very infrequently perform phacoemulsification compared with physicians at the other three sites.

Despite variations in surgical techniques and management of cataracts, similar patients in the four countries had similar visual acuity following cataract surgery, according to this study, which was supported in part by the Agency for Health Care Policy and Research (HS07085). These were patients with comparable preoperative characteristics and no other coexisting medical problems. Patient age, preoperative visual

acuity, general health status, and coexisting ocular abnormalities, rather than cataract management, predicted visual outcomes, explains Gerard F. Anderson, Ph.D., of Johns Hopkins University.

Dr. Anderson and his colleagues examined preoperative and 4-month postoperative interview data and visual acuity on patients 50 years of age and older scheduled for first-eye cataract surgery at multiple centers in four countries (772 in the United States, 159 in Canada, 291 in Denmark, and 200 in Spain). After accounting for differences in patient characteristics, there was no significant difference across the four sites in mean 4-month postoperative visual acuity.

For more details, see "Visual outcomes of cataract surgery in the United States, Canada, Denmark, and Spain: Report from the International Cataract Surgery Outcomes Study," by Jens Christian Norregaard, M.D., Ph.D., Charlotte Hindsberger, M.Sc., Jordi Alonso, M.D., Ph.D., and others, in the *Archives of Ophthalmology* 116, pp. 1095-1100, 1998. ■

Children's Health

Researchers examine neonatal ICU practices, triage, improvements in care, and the use of narcotics

The rapid decline in neonatal deaths in the past four decades has been attributed to improvements in the care provided in neonatal intensive care units (NICUs). These range from increased use of surfactant to improve immature lung functioning to newer modes of mechanical

ventilation of low birthweight babies.

Triage of newborn infants is important for determining which infants need care in the NICU. This high-volume, low-intensity process accounts for nearly 10 percent of total NICU costs. These issues were addressed in two recent studies.

Another study examined the seemingly common practice of using narcotics in the NICU for very-low-birthweight (VLBW) newborn infants who have not undergone surgery. Finally, it has been well documented that outcomes vary

continued on page 7

NICU practices

continued from page 6

substantially from one NICU to another. These variations have led to increased interest in illness severity measures to adjust for case mix in the NICU. A fourth study examined progress made to date in developing and testing neonatal risk scoring systems for use in the NICU.

All four studies, which are summarized here, were supported by the Agency for Health Care Policy and Research (HS06123 and HS07015), and led by Douglas K. Richardson, M.D., M.B.A., of Harvard Medical School.

Richardson, D.K., Gray, J.E., Gortmaker, S.L., and others. (1998, October). "Declining severity adjusted mortality: Evidence of improving neonatal intensive care." *Pediatrics* 102(4), pp. 893-899.

According to this study, neonatal deaths among infants weighing less than 3.3 pounds (1,500 grams) decreased nearly 50 percent from 1990 to 1995 in the same two NICUs. NICU deaths declined from 17.1 percent to 9.5 percent, and total deaths among these infants declined from 31.6 percent to 18.4 percent. This improved survival occurred despite inclusion of smaller, sicker infants at the border of viability.

One-third of the decline was attributable to improved condition of the infants on NICU admission (improved birthweight, higher Apgar scores, and better physiologic stability) that reflected improving obstetric and delivery room care during the 5-year period. Two-thirds of the decline was attributable to more effective newborn intensive care and aggressive respiratory and cardiovascular treatments, such as the use of surfactant, conventional and high-frequency mechanical ventilation, and continuous positive airway pressure.

According to the authors, this pattern of improved neonatal survival suggests a powerful effect of intensive care technologies both before and after delivery. They used models to estimate the changing odds of death between two groups of infants, in the same two NICUs, 5 years apart (1989 to 1990 and 1994 to 1995). They calculated odds of death based on birthweight and illness severity upon NICU admission and measured therapeutic intensity.

Zupancic, J.A., and Richardson, D.K. (1998). "Characterization of the triage process in neonatal intensive care." *Pediatrics* 102, pp. 1432-1436.

Neonatal triage involves the evaluation and short-term management of infants after delivery. The goal is rapid diagnosis and assignment of the infant to the appropriate level of neonatal care (regular nursery, intermediate care, or intensive care) based on triage findings. Triage is a time-intensive process that accounts for nearly 10 percent of total NICU costs, according to this study. The researchers collected data on 2,486 newborn infants who were admitted to two NICUs for less than 24 hours and subsequently discharged to routine care. They estimated daily NICU workload based on the number and labor intensity of NICU admissions. The researchers also correlated length of stay and costs for triage with diagnoses, perinatal descriptors, severity of illness, and markers of concurrent NICU workload.

The mean birthweight for triage infants was about 7 pounds, and the mean gestational age was 39 weeks. The major reasons for evaluation were exclusion of sepsis (34 percent); birth complications, including meconium aspiration, perinatal depression, and trauma (24 percent); and transitional respiratory distress (23 percent). Severity of

illness was minimal. The most frequent forms of resource use were antibiotic administration (34 percent), placement of a peripheral intravenous line (40 percent), cardiac monitoring (53 percent), and external warming (26 percent). The median NICU cost was \$870.

About 16 percent of all newborns undergo this type of triage, and they usually have low illness severity. Length of NICU stay and costs of care for the newborns in this study were affected not only by the infants' medical characteristics but also by nonmedical factors—such as workload of NICU staff or assignment of junior residents to make triage decisions—which may be amenable to change.

Kahn, D.J., Richardson, D.K., Gray, J.E., and others. (1998). "Variation among neonatal intensive care units in narcotic administration." *Archives of Pediatric and Adolescent Medicine* 152, pp. 844-851.

NICUs vary 29-fold in their use of narcotics for very-low-birthweight infants who have not undergone surgery, a variation that cannot be explained by birthweight or by illness severity. Furthermore, little is known about any major advantages or disadvantages to using narcotics for these infants. The lack of a common standard of care for administering narcotics to high-risk neonates is probably related to differing impressions about the hazards (for example, drops in heart rate and blood pressure) and benefits (for example, improved synchrony with the ventilator) of narcotic use.

The researchers examined the medical charts of neonates weighing less than 1,500 g (3.3 pounds) admitted to six major regional NICUs in New England and found no differences in weight gain or need for mechanical ventilatory support at 14 and 28 days after birth in infants

continued on page 8

NICU practices

continued from page 7

receiving and not receiving narcotics. Narcotic use was not associated with differences in blood pressure or heart rate or with increased length of hospital stay. However, it was associated with more than 33 g of fluid retention, a higher direct bilirubin level on day 3, and delayed resolution of illness. There were no associations between narcotic treatment and cardiovascular instability, chronic lung disease, growth, or discharge timing.

One reason for the variation in narcotic use may lie in the difficulty of recognizing pain in neonates that might lead to overprescription or underprescription of narcotics. Another possible explanation is that some clinicians view narcotics as the treatment of choice to sedate neonates breathing asynchronously against the ventilator. Others prefer

benzodiazepines or phenobarbital, simply stroking or talking to the infants, or adjusting ventilatory rates.

Richardson, D., Tarnow-Mordi, W.O., and Escobar, G.J. (1998). "Neonatal risk scoring systems: Can they predict mortality and morbidity?" (AH CPR grant HS07015). *Clinics in Perinatology* 25(3), pp. 591-611.

In this paper, Dr. Richardson and his colleagues evaluate progress in measuring and applying two neonatal risk scoring systems: the Score for Neonatal Acute Physiology (SNAP) and the Clinical Risk Index for Babies (CRIB), and discuss the future research and operational challenges facing the field. The authors suggest that widespread routine use of severity measures will occur only when data collection and scoring can be automated. The development, validation, and implementation of the next

generation of severity scores will require several years of development. Entirely new approaches to severity scoring will become possible, using on-line digital data analogous to electronic fetal monitoring but extending to respiratory and electroencephalogram patterns. Such data-intensive measures of physiologic status may substantially increase the sensitivity and specificity of severity indexes. As the authors note, physiology-based illness severity scores are proving their value through a wide variety of practical applications. While it has been shown that these scores can predict some morbidity and some mortality, this function is much less important than their application as a means of improving quality and lowering cost. Nevertheless, future development will depend to a large extent on commercially viable applications, concludes Dr. Richardson. ■

Expanding Medicaid prenatal support services reduces rate of low birthweight infants

Over 80 percent of U.S. States have expanded prenatal care services for Medicaid-insured women in an effort to reduce the high infant disease and death rates among low-income pregnant women. Washington State's expanded prenatal care program was associated with a significant reduction in the rate of low birthweight (LBW) infants among moderately high-risk women, from 18.0 percent to 13.7 percent from 1989 to 1992. In contrast, in Colorado, a control State without such a program, the rate of LBW infants among medically high-risk women increased slightly from 18.0 to 20.8 percent during the same period, according to a study supported by the Agency for Health Care Policy and Research (HS06846).

Researchers led by Laura-Mae Baldwin, M.D., M.P.H., of the University of Washington, used State vital records data linked with Medicaid files to examine the change in use of prenatal care and low birthweight rates among pregnant women in Washington who were enrolled in the Medicaid Aid to Families with Dependent Children (AFDC) program before and after initiation of expanded prenatal services. These data were then compared with AFDC-enrolled women in Colorado, where there was no similar program.

Washington's program provided assessment, education, intervention, and counseling by an interdisciplinary team of community health nurses, nutritionists, and social workers in either the home or office setting. The program also

funded childbirth education, transportation, and child care during medical care, as well as a targeted case management program for Medicaid-enrolled pregnant women who were under 18, used alcohol or drugs, or were otherwise at risk of poor birth outcomes.

While the decrease in low birthweight rates for Washington's study population was greatest among medically high-risk women, there was a clinically significant reduction in the overall low birthweight rate, from 7.1 percent in 1989 to 6.4 percent in 1992. The low birthweight rate for Colorado's study population overall increased slightly from 10.4 percent to 10.6 percent.

The decrease in LBW rates in Washington was most dramatic for high-risk women with preexisting

continued on page 9

Prenatal support services

continued from page 8

conditions, over 90 percent of whom had diabetes or chronic hypertension. Both of these conditions require frequent visits,

close monitoring, and compliance with treatment, all of which the case management and support service programs were designed to encourage.

See "The effect of expanding Medicaid prenatal services on birth outcomes," by Dr. Baldwin, Eric H.

Larson, Ph.D., Frederick A. Connell, M.D., M.P.H., and others, in the November 1998 *American Journal of Public Health* 88(11), pp. 1623-1629. ■

More than one-third of America's children lacked proper immunizations in the early 1990s

More than one-third of children from both urban and rural areas lacked the immunizations recommended for their ages in 1991 and 1993. Both groups of under-immunized children tended to come from families with lower incomes and fewer years of education, and they were more likely to belong to a minority group. Despite increased rural immunization rates since the early 1990s, pockets of need remain, concludes a study supported by the Agency for Health Care Policy and Research (contract 290-93-0039). Also, the unique characteristics of rural areas, such as fewer physicians and poorer families who are more likely to lack health insurance, may require that interventions be specially tailored to rural needs, according to the study.

Researchers from the University of Colorado Health Sciences Center and the Center for Health Policy and Services Research, Denver, calculated immunization rates of rural and urban 2-year-old boys and girls by analyzing two nationally representative surveys: the 1991 National Maternal and Infant Health Survey (NMIHS) of

4,425 children (966 in rural areas) and the 1993 National Health Interview Survey (NHIS) of 2,505 children (566 in rural areas). They found no significant differences in immunization rates between urban and rural children, with NMIHS rates of 63.3 percent versus 63 percent, respectively and NHIS rates of 65.5 percent and 67.8 percent, respectively.

However, low income, low family education, black or other minority race, unemployment, and female sex were associated with under-immunization in one or both surveys. These under-immunization figures did not change even for children residing in States that purchased and distributed vaccines for all children to reduce cost and improve access to immunization.

See "Rural childhood immunization: Rates and demographic characteristics," by N. Elaine Lowery, J.D., M.S.P.H., Elaine S. Belansky, Ph.D., Carol D. Siegel, M.D., M.S.P.H., and others, in the *Journal of Family Practice* 47(3), pp. 221-225, 1998. ■

Despite some concerns, most primary care doctors recommend early childhood hepatitis B vaccination

Vaccination against hepatitis B virus (HBV) has been recommended as part of routine early childhood immunizations since 1991. Although most primary care physicians (PCPs) believe HBV vaccination is important, some concerns remain as barriers to administering this vaccine in a timely manner, according to a study supported by the Agency for Health Care Policy and Research (HS08068). For example, some physicians prefer to administer the vaccine during adolescence instead of infancy, and others believe that

the low incidence of HBV among their patients doesn't warrant routine vaccination.

University of Pittsburgh researchers, Richard Kent Zimmerman, M.D., M.P.H., and Tammy A. Mieczkowski, M.A., conducted a telephone survey of 1,236 PCPs in 1995, most of whom practiced in urban areas. They asked the physicians to rate the importance of immunizing all young children against HBV. Most (78 percent) rated this immunization as important, 7 percent believed it unimportant, and 15 percent gave it an intermediate

rating. These ratings were not associated with practice location, since 70 percent of rural physicians and 78 percent of urban physicians gave immunization high ratings. However, specialty mattered. About 85 percent of pediatricians, 70 percent of general practitioners, and 65 percent of family physicians gave high ratings for the importance of early childhood HBV vaccination.

When asked the percentage of children younger than age 2 in their practices for whom they recommended HBV vaccine, 82

continued on page 10

Childhood hepatitis B vaccination

continued from page 9

percent of PCPs reported that they recommended it for all infants. However, the frequency and types of concerns about HBV vaccination during infancy varied by specialty. About 37 percent of physicians had no concerns; 26 percent were

concerned about unproven duration of vaccine efficacy; 18 percent thought it too expensive; 8 percent thought HBV had low prevalence in their practice population; 7 percent preferred administering it to adolescents, not infants; and 5 percent thought it just added up to too many injections. Finally, the percentage of PCPs who recommended HBV vaccination

ranged from 69 percent in mountain States to 91 percent in New England and mid-Atlantic States.

More details are in "How important is early childhood hepatitis B vaccination? A survey of primary care physicians," by Dr. Zimmerman and Ms. Mieczkowski, in the November 1998 *Journal of Family Practice* 47(5), pp. 370-374. ■

Half of Medicaid-insured children never visit a dentist, and many who do are not given needed care

States are required by Federal law to provide dental care to all Medicaid-eligible children from birth to 21 years of age. The children are supposed to receive an annual dental exam, prophylaxis and fluoride treatment, dental sealants, and other emergency, preventive, and restorative services. However, if a recent study of North Carolina's Dental Medicaid Program is any indication, half of Medicaid-insured children never use dental services, and of those who do, 43 percent do not receive needed dental care. This is partly because most Medicaid enrollees in North Carolina use dental services sporadically. For instance, nearly half (46 percent) of the children studied sought care for only 1 year.

Streamlining Medicaid administrative procedures (e.g., Medicaid eligibility, treatment approval) could contribute to better care for these children, according to the study, which was supported in part by the Agency for Health Care Policy and Research (HS06993 and National Research Service Award training grant T32 HS00032). For example, instituting a mechanism for prior approval of care once a child appears for his or her first dental visit would help to ensure that all needed

care could be completed quickly and without the need for further approvals.

The researchers analyzed data from 1986 and 1987 State-wide clinical records of treatment need, Medicaid dental claims data from 1984 through 1992 on treatment received, and Medicaid enrollment files from 1984 through 1992. They found that half of Medicaid-enrolled children never used dental services. Among users, 45 percent and 25 percent of children needed restorations in primary and permanent teeth, respectively. Among these children, 29 percent had all dental needs met, 28 percent had needs partially met, and 43 percent had no dental needs met. Despite Federal guidelines calling for the use of sealants in Medicaid-eligible children, dentists used sealants infrequently and only for a small number of children.

For more information, see "A longitudinal study of schoolchildren's experience in the North Carolina dental Medicaid program, 1984 through 1992," by Valerie A. Robison, D.D.S., Ph.D., M.P.H., R. Gary Rozier, D.D.S., M.P.H., and Jane A. Weintraub, D.D.S., M.P.H., in the November 1998 *American Journal of Public Health* 88(11), pp. 1669-1673. ■

Health Care Use and Access

Computerized guidelines reduce prescribing by hospital doctors of an expensive and overprescribed antibiotic

Overuse of the broad-spectrum antibiotic vancomycin, which is effective against many types of bacteria, has resulted in vancomycin-resistant bacteria as a major health threat in hospitals

throughout North America and Europe. There is no established antimicrobial therapy for vancomycin-resistant enterococci (VRE). Even more alarming is the possibility that vancomycin

resistance will emerge among staphylococci, the most common infection-causing pathogen among hospitalized patients. Computerized

continued on page 11

Computerized guidelines

continued from page 10

guidelines for vancomycin use may be a key to reducing physician use of this antibiotic, concludes a study supported by the Agency for Health Care Policy and Research (HS08297).

David W. Bates, M.D., M.Sc., and his colleagues at Brigham and Women's Hospital tested a computerized order-entry system at the hospital to determine whether this approach would reduce vancomycin ordering. The system displayed guidelines for the appropriate use of intravenous vancomycin once a physician keyed in a vancomycin order. The researchers randomly assigned physicians to the vancomycin

guidelines (intervention group) and compared their use of the drug with a control group of physicians who were not exposed to the guidelines.

Compared with the control group, intervention physicians reduced their overall use of vancomycin by 30 percent. They wrote 32 percent fewer vancomycin orders (11.3 vs. 16.7 orders per physician), had 28 percent fewer patients for whom they either initiated or renewed an order for vancomycin (7.4 vs. 10.3 orders per physician), and prescribed a 36 percent shorter duration of vancomycin therapy than did control physicians (26.5 vs. 41.2 days). In many instances, a different antibiotic may be chosen instead of the more costly vancomycin, such as first-generation cephalosporins like cefazolin. If cefazolin were

substituted for vancomycin in all cases in this study in which physicians chose not to order vancomycin, the projected cost savings from decreased vancomycin use—about \$90,000—would be partly offset. At a daily cost of \$12 for vancomycin and \$9 for cefazolin, the projected savings for this hospital would be about \$22,500 per year.

More details are in "Reducing vancomycin use utilizing a computer guideline," by Kaveh G. Shojania, M.D., Deborah Yokoe, M.D., M.P.H., Richard Platt, M.D., M.Sc., and others, in the December 1998 *Journal of the American Medical Informatics Association* 5(6), pp. 554-562. ■

Financial incentives and performance feedback to physicians may not increase cancer screening for Medicaid enrollees

Low-income women have lower survival times and higher death rates from breast, cervical, and colorectal cancer than other women. Their doctors need to follow cancer screening guidelines to improve cancer detection and prognosis among these women. Yet financial incentives and feedback on cancer prevention guideline adherence did not improve compliance among doctors in a Medicaid health maintenance organization (HMO), finds a study supported in part by the Agency for Health Care Policy and Research (HS07720). The cancer screening guidelines were adapted from national recommendations that women 50 years of age and older receive an annual breast examination, mammogram, Pap smear, and colorectal cancer screening.

Alan L. Hillman, M.D., M.B.A., and his colleagues at the University

of Pennsylvania randomly assigned 52 primary care sites to the intervention (semiannual written feedback and a financial bonus for performing these preventive procedures) and no intervention (usual care). From 1993 to 1995, cancer screening rates doubled overall from 24 percent to 50 percent, with no significant differences between intervention and control group sites. This dramatic increase in cancer screening at all sites mirrored national trends at the time. The financial incentives and feedback had no significant, additional impact on physician screening practices.

The financial incentive provided 10 to 20 percent additional capitation for each site's population of female members 50 years of age and older. These bonuses ranged from \$570 to \$1,260 per site, with an average of \$775 per audit. Because physicians participated in

many plans, the bonus for the HMO members alone may not have had the necessary impact on physicians' overall income, suggest the researchers. The second possible explanation is lack of physician awareness. Despite repeated mailings, awareness of the study was low (67 percent of intervention sites, with 30 percent not responding). Finally, the study many not have been long enough, in a setting of improving national trends, to have found a significant additional influence due to the intervention.

See "Physician financial incentives and feedback: Failure to increase cancer screening in Medicaid managed care," by Dr. Hillman, Kimberly Ripley, M.A.S., Neil Goldfarb, B.S., and others, in the November 1998 *American Journal of Public Health* 88(11), pp. 1699-1701. ■

Canada and the United States differ greatly in their hospital use for back and neck problems

Ontario, Canada, and Washington State vary dramatically in their use of hospitalization for back and neck problems, according to a study supported in part by the Agency for Health Care Policy and Research (HS08194). It shows that residents of Washington were three times as likely to undergo spinal surgery, both fusion and non-fusion, than residents of Ontario. These higher surgical rates were associated with both the greater availability of spinal surgeons and advanced noninvasive imaging technologies in Washington.

On the other hand, Ontario residents were more than twice as likely as residents of Washington to receive medical treatment in a hospital for their back and neck problems, perhaps as a substitute for

surgical care. However, this finding may reflect the lack of utilization review of medical back admissions in Ontario and the existence of such a program in Washington. Finally, Ontario residents had much longer lengths of hospital stay for both medical and surgical conditions, and lengths of stay varied more among counties in Ontario than in Washington State. This may be associated with different levels of managed care in different States, suggests principal investigator Richard A. Deyo, M.D., M.P.H., of the University of Washington.

The researchers conclude that the Ontario system, with its global controls on budgets and access to technology, can control overall levels of the use of expensive and controversial surgery but cannot

control levels of less technologically dependent medical care or lengths of stay. In contrast, Washington State, with utilization review efforts, reduced at least nonsurgical admission rates and lengths of stay. These findings were based on analysis of the Canadian Institute for Health Information database for fiscal year 1992-1993 and the 1992 Comprehensive Hospital Abstract Reporting System for Washington hospitalization data.

See "Hospitalizations for back and neck problems: A comparison between the province of Ontario and Washington State," by Victoria M. Taylor, M.D., M.P.H., Geoffrey M. Anderson, M.D., Ph.D., Brad McNeney, M.S., and others, in the October 1998 *Health Services Research* 33(4), pp. 929-945. ■

Managed Care/Primary Care

Managed care hospital report cards may not allow for differences among patients

Many managed care organizations (MCOs) now impose financial penalties on providers who appear to use excessive medical services in treating their patients. However, "excess" is difficult to define without assessing the severity of patient illness. In fact, when MCO hospital report cards don't take into account differences in patient severity of illness, such report cards may be misleading, concludes a study supported by the Agency for Health Care Policy and Research (HS07322). For example, a hospital that uses more blood transfusions for patients undergoing hip fracture surgery may have a higher proportion of severely anemic patients than another hospital that

uses fewer transfusions for otherwise similar patients.

MCO report cards that discount severity of illness may hurt hospitals that appear to have high use of health services but actually have low use (given the illness severity of their patients), while rewarding hospitals for use that appears low but is actually high (given the low illness severity of their patients), explains Jeffrey L. Carson, M.D., the study's principal investigator. Dr. Carson and his colleagues retrospectively studied the medical charts of 8,776 hip fracture patients 60 years of age and older who underwent surgical hip repair at 1 of 19 study hospitals located in four States between 1982 and 1993. The researchers examined transfusion rates among hospitals, which patient characteristics were

associated with transfusion, and whether those characteristics varied among hospitals.

The results showed that postoperative transfusion rates varied from 31 percent to 54 percent of hip fracture patients among study hospitals. Without adjustment for hospital differences in patient severity of illness, four of nine teaching hospitals and two of nine nonteaching hospitals had transfusion rates significantly higher than the reference hospital, while one nonteaching hospital had a lower rate. After adjusting for patient anemia and other clinical variables, one of nine teaching and four of nine nonteaching hospitals had rates higher than the reference hospital,

continued on page 13

Hospital report cards

continued from page 12

while four teaching hospitals and one nonteaching hospital had lower rates.

Details are in "How you look determines what you find: Severity of illness and variation in blood transfusion for hip fracture," by Roy M. Poses, M.D., Jesse A. Berlin, Sc.D., Helaine Noveck, M.P.H., and

others, in the *American Journal of Medicine* 105, pp. 198-206, 1998. ■

Several factors affect the variability of managed care penetration across health care markets

Enrollments in managed care organizations (MCOs) such as health maintenance organizations (HMOs) and preferred provider organizations (PPOs) have increased dramatically over the past 15 years. However, managed care penetration varies across markets and is influenced by the structure of hospital markets, prevalence of physician groups, and certain demographic and labor force characteristics, concludes a study supported by the Agency for Health Care Policy and Research (HS09210).

William D. White, Ph.D., of Yale University School of Medicine, and his colleagues used a simple supply and demand model to identify sources of geographic variation in managed care penetration. They used data from the Socioeconomic Monitoring System (SMS) of the American Medical Association to calculate the proportion of physician revenue coming from managed care contracts for nearly 300 metropolitan areas. They compared SMS revenue-based measures with measures based on individual enrollment using 1995 data on managed care penetration derived from a market research firm. Results showed that physicians in the

average metropolitan area received about one-fourth of their revenue from managed care payers.

Penetration was inversely related to the proportion of physicians in solo practice, hospital market concentration, and hospital occupancy. For example, a metropolitan area whose HERFINDAHL (index of hospital concentration) was one standard deviation above the mean in 1980 would have a 6 percent lower MC penetration in 1994 and 1995 than the average metropolitan area. Similarly, an area with a hospital occupancy rate that was one standard deviation above the mean in 1980 would have 1.5 percent lower MC penetration in 1994 and 1995. These were supply side factors. On the demand side, managed care penetration was inversely related to the proportion of the population that was minority, positively related to the proportion with a college education, and higher in more urbanized areas.

More details are in "Determinants of managed care penetration," by David Dranove, Ph.D., Carol J. Simon, Ph.D., and Dr. White, in the *Journal of Health Economics* 17, pp. 729-745, 1998. ■

Collaboration among competing clinics can enhance adult preventive care

Collaboration between clinics, health organizations, and communities can improve the delivery of adult preventive care services and bridge the gap among health care providers even in a very competitive market, concludes a recent study. The IMPROVE (Improving Prevention Through Organization, Vision, and Empowerment) study was a large randomized controlled trial using continuous quality improvement (CQI) to implement clinical systems based on preventive care guidelines. The goal was to improve the delivery of adult preventive services

in primary care settings. The 4-year project was funded by the Agency for Health Care Policy and Research (HS08091) and led by Leif I. Solberg, M.D., of HealthPartners Research Foundation.

The IMPROVE project began in 1993 as a collaboration between two health maintenance organizations (HMOs) in Minneapolis. Leadership support, training in CQI and prevention systems, and consultation and networking opportunities were provided to 22 of 44 clinics that had contracts with one or both of the HMOs. Ultimately, 57 clinics became involved in the project, with

multiple collaborations among clinics, leaders, and HMOs. Each IMPROVE clinic developed an interdisciplinary team charged by its own leadership to improve the delivery of at least eight preventive services, such as clinical breast exams and mammograms for women over age 49 and blood pressure and cholesterol tests for people over age 19.

There were regular training and networking meetings for the leaders of the teams from participating clinics. During meetings, clinic team members detailed what they had

continued on page 14

Collaboration among clinics

continued from page 13

done since the last session, for example, how they obtained consensus on the guidelines or what they had done to develop tools for prevention screening. Formal and

informal collaboration among clinics bridged multiple issues, including competition, leadership and system development needs, even clinic turmoil. For instance, when two-thirds of the IMPROVE clinics experienced a change in ownership or affiliation, the IMPROVE staff

were able to continue supporting and encouraging them.

See "IMPROVE: Bridge over troubled waters," by Sanne Magnan, M.D., Ph.D., Dr. Solberg, Thomas E. Kottke, M.D., and others, in the October 1998 *Joint Commission Journal on Quality Improvement* 24(10), pp. 566-578. ■

Hospital Issues

Community perceptions and commitment affect the survival of rural hospitals

Hospital mergers and closures have become a fact of life in the era of managed care, particularly in rural areas. However, because hospitals are socially embedded in their communities, they cannot abandon their mission without damaging links within the community. In fact, the viability of a rural hospital is affected by the community's perception of its importance and legitimacy, as well as commitment to its existence, contend William A. McIntosh, Ph.D., and Dianne Sykes of Texas A & M University. Their research on the survival of rural hospitals, which was supported by the Agency for Health Care Policy and Research (HS08247), is described in a recent book chapter and journal article, summarized here.

McIntosh, W.A., Sykes, D., Segura, C.B., and Alston, L.T. (1999). "Rural hospital survival: A case study of the shaping effects of community perceptions," in *Research in the Sociology of Health Care*, Greenwich, CT: JAI Press, pp. 34-56.

The researchers studied two rural Texas hospitals that participated in a project on the adoption and use of telecommunications for rural health care. They analyzed articles from local newspapers about the two hospitals over an 18-year period and

interviewed hospital administrators, physicians, and influential people in the two communities about the hospitals' mission, history, and reputation in the community.

Both rural hospitals serving these two communities suffered severe financial difficulties and lowered quality of care during the 1970s and 1980s. But the community commitment to the hospitals differed markedly, which in turn affected hospital survival. One hospital was viewed as the only local hospital and a necessary institution. This view overshadowed the very real quality of care issues and induced the community to commit itself to positive action on the hospital's behalf. The result was a hospital that now provides better care for the community and surrounding counties. In contrast, the other rural hospital was surrounded by counties with similar community hospitals and a divided medical community. This community paid relatively less attention to its hospital's plight, with the daily newspaper focusing more on its problems and failures than successes. Despite an innovative telecommunications outreach program, this hospital finally closed.

Sykes, D., and McIntosh, W.A. 1999. "Telemedicine, hospital viability and community embeddedness: A case study."

Journal of Health Care Management 44(1), pp. 59-71.

Like other hospitals, rural hospitals often struggle to remain competitive by adopting medical technology or expanding hospital services. However, innovation alone may not be sufficient for them to remain viable, according to this case study of one isolated, financially struggling rural hospital. In 1990, this West Texas hospital became the primary site of an innovative telecommunications project known as MEDNET.

Both satellite communications and special telephone lines were used to establish links with several rural West Texas hospitals. The goal of the 3-year project was to increase rural hospital viability by decreasing the isolation felt by rural physicians, helping health care professionals retain their certification without leaving the area, and providing physicians with support in diagnosis and treatment through access to specialists via interactive video. Despite the potential of telecommunications to improve the health of the community and help the hospital survive, the hospital's relationship with its local community remained tarnished by a history of financial problems and conflict that could not be overcome by MEDNET.

continued on page 15

Survival of rural hospitals

continued from page 14

Throughout the MEDNET years, the local newspaper presented the project as a program created and operated by Texas Tech University's Health Sciences Center. The role of

the local hospital and physicians was for the most part overlooked. This may have been a factor in the project's inability to stabilize hospital finances or alter community perceptions of the hospital. If lives were saved or doctors felt a little less isolated, such events were not recorded in the local newspaper.

Savings from expert consults were estimated to be nearly \$1,000 per patient, and summary reports indicated increased patient volume and local confidence in the hospital. Again, these accomplishments were not publicized and did not help the hospital survive, note Ms. Sykes and Dr. McIntosh. ■

Inappropriate ER visits may stem from social rather than medical needs

The problem of emergency department (ED) overuse and inappropriate use and their associated costs is commonly addressed by trying to improve access to primary medical care at sites outside the ED setting. Although access to medical care is a critical dimension of the problem, a focus on access as the sole solution to inappropriate ED use may obscure other, perhaps equally relevant issues from consideration, explains Ruth E. Malone, R.N., Ph.D., of the Institute for Health Policy Studies, University of California, San Francisco. This is because heavy ED users (four or more ED visits a year) typically have complex, chronic, and multifaceted psychosocial and/or economic problems in addition to their medical problems.

With support from the Agency for Health Care Policy and Research (HS08412), Dr. Malone conducted a 1-year ethnographic study of two inner city hospital EDs, interviewing both heavy ED users and ED clinicians to provide an in-depth look at this issue. At least 70 percent of the heavy ED users were homeless and/or sufficiently poor or disabled to qualify for some form of public assistance. A majority either had no

family or were estranged from their families, and most suffered from one or more chronic illnesses, such as alcoholism, opiate addiction, diabetes, hypertension, chronic pulmonary diseases, and/or mental disorders.

Patient interviews revealed that for many, the primary reasons for their ED visits were not medical. Instead, their medical problems represented a way to gain access to other kinds of low-tech care, including rest, shelter, safety, showers, food, clothing, and social interaction. The ED historically has always had a dual function, providing high-tech lifesaving measures while serving in a symbolic and practical role as "almshouse"—the caregiver of last resort for those who have nowhere else to go. By failing to address the ED's hidden role as public almshouse, we may inadvertently provide incentives to medicalize heavy ED users' complex social problems and efforts to contain costs.

See "Whither the almshouse? Overutilization and the role of the emergency department," by Dr. Malone in the October 1998 *Journal of Health Politics, Policy and Law* 23(5), pp. 795-832. ■

Health Care Costs and Financing

More expensive drugs, fewer deaths, and steady HIV infection rates mean costs of AIDS care continue to rise

There are now 11 antiretroviral drugs approved to treat people with human immunodeficiency virus (HIV) disease. Today, people with HIV disease typically are treated with a combination of three drugs, resulting in a dramatic drop in AIDS deaths in recent years. For instance, during the first 6 months of 1997, the death rate

from AIDS was 44 percent lower than it was during the first 6 months of 1996 (12,040 deaths vs. 21,460 deaths, respectively). However, the rate of new HIV infections continues unabated; between 40,000 and 80,000 people become infected with HIV each year. These three factors—better treatments, fewer deaths, and a steady infection rate—

have affected the costs of caring for people with HIV disease, according to a recent review of the topic by Fred J. Hellinger, Ph.D., of the Agency for Health Care Policy and Research.

Two cost trends have emerged: the proportion of costs for hospitalizing AIDS patients is falling, while the

continued on page 16

Costs of AIDS care

continued from page 15

proportion of costs for drug therapy is increasing. For instance, in New York State, hospital costs accounted for 88 percent of the monthly cost of treating a person with AIDS in 1990 but only 67 percent in 1994. At the same time, the cost of drug therapy rose from 6 percent of costs per month in 1990 to 16 percent in 1994. The monthly costs of combination therapy and viral load testing generally have been estimated as \$1,000 to \$1,500. The total cost of new combination drug

therapies and associated services may run as high as \$20,000 a year, notes Dr. Hellinger

AIDS care costs are bound to increase, since a growing number of people with HIV disease come from groups that are more likely to have public insurance (e.g., minorities, illicit drug users). Even privately insured people with HIV disease have plans that offer little or not coverage for outpatient drugs. As many State Medicaid programs compel people with HIV disease to join managed care plans, Dr. Hellinger believes it is essential that Medicaid plans establish special

rates for people with HIV disease so that they are not discriminated against by the plans.

For more information, see "Cost and financing of care for persons with HIV disease: An overview," by Dr. Hellinger, in the Spring 1998 *Health Care Financing Review* 19(3), pp. 1-14.

Editor's note: This journal issue is dated Spring 1998, however, it did not become available until December 1998. Reprints of Dr. Hellinger's article (AHCPR Publication No. 99-R028) are available from AHCPR.**



Lowering Medicaid coverage for anti-ulcer drugs reduced their use without increasing hospitalizations

Medicaid payments for prescription drugs increased from \$3 billion in 1987 to \$6.8 billion in 1992. To decrease these costs, many States have restricted reimbursement for certain classes of drugs they believe may be overprescribed or less cost-effective than alternative therapies. One targeted class of drugs is anti-ulcer medications, which accelerate ulcer healing and reduce ulcer recurrence, but also account for 10 to 13 percent of State Medicaid pharmacy budgets.

When the Florida Medicaid program restricted reimbursement for anti-ulcer medicine in 1992, it resulted in substantially less outpatient use of these drugs, but the rate of Medicaid ulcer-related hospitalizations did not rise, according to a study supported in part by the Agency for Health Care Policy and Research (National

Research Service Award fellowship F32 HS00083). Under the revised policy, Florida Medicaid paid for only one anti-ulcer drug prescription at a time; permitted only one refill per written prescription; and limited coverage to 60 days for high-dose prescription treatment for acute disorders, explains David M. Cromwell, M.D., of Johns Hopkins University in Baltimore, MD.

Dr. Cromwell and his colleagues used Medicaid anti-ulcer drug claims data, eligibility data, and hospital discharge abstract data from 1989 to 1993, as well as U.S. census data to compare anti-ulcer drug use and ulcer-related hospitalization rates both before and after policy implementation in Medicaid and non-Medicaid patients. They found that following policy implementation, the rate of Medicaid reimbursement for anti-ulcer drugs

decreased 33 percent (from 807,272 to 539,534 doses reimbursed per 100,000 Medicaid beneficiaries). However, there was no associated increase in the rate of Medicaid hospitalizations for complicated peptic ulcer disease (PUD), uncomplicated PUD, or non-ulcer peptic disease. This study was based on data prior to 1994, when a bacterial cause of ulcers and the use of antibiotics for this condition gained widespread acceptance, note the authors.

See "Can restrictions on reimbursement for anti-ulcer drugs decrease Medicaid pharmacy costs without increasing hospitalizations?" by Dr. Cromwell, Eric B. Bass, M.D., M.P.H., Earl P. Steinberg, M.D., M.P.P., and others, in the February 1999 *Health Services Research* 33(6), pp. 1593-1610. ■

A toll-free TDD number, 888-586-6340, is available at the AHCPR Publications Clearinghouse to support the telecommunication needs of the hearing impaired. TDD callers can communicate with Clearinghouse staff from 9 a.m. to 5 p.m., Monday through Friday (excluding holidays). After 5 p.m., callers may leave a message using the TDD recording device.

Even a small amount of choice in health plans might improve public confidence in health insurance

Compared with working-age people who are able to choose their own health plans, workers who do not have plan choice are substantially more dissatisfied with their coverage. This is especially true when they are enrolled in managed care. People without a choice also have more negative opinions about managed care in general, according to a 1997 survey that was supported in part by the Agency for Health Care Policy and Research (National Research Service Award training grant T32 HS00020).

Regulations that loosen managed care restrictions may not improve satisfaction unless they include measures to increase choice, notes lead author Atul A. Gawande, M.D., of the Harvard School of Public Health. The researchers analyzed responses from a random sample of

778 working-age people who responded to a telephone survey to assess the relationship between health plan choice and public opinion about managed care. Among insured respondents, 42 percent said that they were given no choice of health plan when they enrolled in their current plan. Even among those given a choice, one in five complained of not having enough plans to choose from. Overall, 63 percent of respondents had no choice of plan, had an insufficient variety of plans, or were forced to change plans.

Among respondents with plan choices, 29 percent had two options, and 34 percent had three plans to choose from. Almost 40 percent of those not given a plan choice gave their plan a “C” (average), “D” (poor), or “F” (failing) grade—nearly double the proportion of those with

plan choice who gave similar ratings. Half of those in managed care without choice gave their plan low grades compared with 29 percent of those in traditional fee-for-service insurance who had no choice. Those with two choices gave their health plan much better grades than people who had only one choice. However, having more than two choices did not significantly improve health plan grades. The authors conclude that increasing choice even slightly may help to restore public confidence in health insurance and health care.

For more details, see “Does dissatisfaction with health plans stem from having no choices?” by Dr. Gawande, Robert J. Blendon, Sc.D., Mollyann Brodie, Ph.D., and others, in *Health Affairs* 17(5), pp. 184-194, 1998. ■

Long-Term Care

Ownership type is an important factor in determining nursing home outcomes

Recent research offers new insights into the differences between nonprofit and for-profit nursing homes. Prior studies have shown that nonprofit nursing homes have higher staff-to-resident ratios and higher expenditures per resident generally. A study by researchers at the Agency for Health Care Policy and Research more directly compares the quality of care provided by for-profit and nonprofit nursing homes by using risk-adjusted outcome measures including number of infections, pressure ulcers, change in functioning, hospitalizations, and death. The authors also assessed whether different types of residents reside in nonprofit and for-profit

facilities. Finally, the authors assessed the impact of market factors on resident outcomes.

AHCPR researchers William D. Spector, Ph.D., Thomas M. Selden, Ph.D., and Joel W. Cohen, Ph.D., using data from the Institutional Population Component of the 1987 National Medical Expenditure Survey (NMES), determined that ownership type had a much greater effect on the outcomes of private-pay residents than Medicaid residents. For example, private-pay residents in nonprofit homes faced a 6.2 percent lower probability of death and 6.3 percent lower probability of infection than private-pay residents in for-profit homes. For Medicaid

residents, the effect of ownership type was negligible with the exception of lower hospitalization rates in for-profit facilities.

The authors also found that nonprofit nursing homes generally were most likely to attract residents who had the highest costs for monitoring quality, placed the greatest weight on quality, and faced the fewest constraints in their choice of nursing homes. Finally, the authors found little influence of market-level variables on outcomes. No evidence was found to support either the hypothesis that high nonprofit market share enables nonprofit facilities to maintain high quality levels, or the more recent

continued on page 18

Nursing home outcomes

continued from page 17

conjecture that increased nonprofit market share raises quality in the for-profit segment of the market.

The authors emphasize that there have been many changes in the nursing home market since these data were collected in 1987. In

particular, the researchers note that the passage of the Omnibus Budget Reconciliation Act of 1987—which imposed higher minimum staffing levels, among many other changes—may have reduced differences in quality of care between for-profit and nonprofit facilities since that time. They cite the need for further research with more current data to determine whether the results found

for 1987 hold in the current nursing home market.

For more details, see “The impact of ownership type on nursing home outcomes,” by Drs. Spector, Selden, and Cohen, in *Health Economics* 7, pp. 639-653, 1998.

Reprints (AHCPR Publication No. 99-R026) are available from AHCPR.** ■

Nursing home subsidies should be targeted to those who need them most

With nursing home care averaging over \$37,000 per year for private payers, most nursing home residents enter with Medicaid support or soon “spend down” to qualify for Medicaid support for this care. Nationally, 29 percent of Medicaid funds go to support nursing home care. If current political efforts succeed to both restrain Federal Medicaid spending and offer States greater flexibility in the design of their Medicaid programs, then States may be able to alter the basic structure of nursing home subsidies, probably restricting them to those most in need.

A new study suggests that nursing home subsidies targeted to people who lack informal care resources and those who have greater levels of disability will be more efficient. The demand for nursing home care appears to be relatively unresponsive to price in these cases. It has been feared that if the cost of institutional long-term care is lowered, families will abandon their caregiving role at expense of taxpayers. The results of this study suggest that many of these fears may be unfounded. Few people perceive nursing homes as a desirable place to live, and thus, most people prefer home- and community-based options over institutional options, explains James D. Reschovsky, Ph.D., of the Center for

Studying Health Systems Change, and formerly with the Agency for Health Care Policy and Research.

On the other hand, the financial and time burdens placed on family members to support a highly disabled elder in the community can become considerable and often untenable. When the family member’s disability becomes sufficiently severe, the family will seek nursing home care regardless of the price. In contrast, significant numbers of nursing home residents have levels of disability low enough to suggest that home and community settings might be more appropriate and cost effective. Findings from this study are based on data from the 1989 National Long-Term Care Survey, a nationally representative sample of community-based and institutionalized elderly people with disabilities. The survey data were merged with State- and county-level data on Medicaid policy and local market conditions.

For more details, see “The roles of Medicaid and economic factors in the demand for nursing home care,” by Dr. Reschovsky, in the October 1998 *Health Services Research* 33(4), pp. 787-813.

Reprints (AHCPR Publication No. 99-R005) are available from AHCPR.* ■

Nursing home residents and their families often have little input into end-of-life medical decisions

Discussions about end-of-life treatment between nursing home residents, their families, and physicians still occur rarely and remain narrow in scope. Thus, residents’ and families’ roles in medical decisionmaking in nursing homes may be limited, concludes a study supported in part

by the Agency for Health Care Policy and Research (National Research Service Award training grant T32 HS00052).

The 1990 Patient Self-Determination Act (PSDA) requires health care organizations to educate patients and staff about end-of-life treatment and to document patients’

wishes (advance directives). Since passage of the PSDA, nearly twice as many residents had documented discussions of future medical treatment in their medical records (20 percent pre-PSDA vs. 37 percent post-PSDA), according to the researchers.

continued on page 19

End-of-life decisions

continued from page 18

However, among those who did discuss these wishes with their physicians, 90 percent had only one discussion within the first year of nursing home admission, and 58 percent talked only about life-support systems, such as cardiopulmonary resuscitation, artificial nutrition and hydration, and artificial ventilation. Few residents discussed broader preferences for future treatment, such as pain management, hospitalization, or

proxy decisionmaking. Residents with cognitive impairment or poor functional status were more likely to have had at least one discussion.

Residents, families, and clinicians may be more likely to undertake such discussions when life-sustaining treatment decisions appear imminent, note the researchers who are from Yale University and the National Institute on Aging. They retrospectively examined medical records of 600 randomly selected residents at six large Connecticut nursing homes

who were admitted to the nursing homes from 1990 to 1994. They calculated the frequency of end-of-life care discussions among residents, their families, and physicians both before and after passage of the PSDA.

More details are in "Discussions about end-of-life care in nursing homes," by Elizabeth H. Bradley, Ph.D., Vasum Peiris, M.P.H., and Terrie Wetle, Ph.D., in the October 1998 *Journal of the American Geriatrics Society* 46, pp. 1235-1241. ■

Quality of Care

Parents can play an important part in developing and disseminating pediatric practice guidelines

Parents are high stakeholders in children's health and are in a good position to influence their doctors to adopt pediatric clinical practice guidelines. For that to happen, parents must be brought into the loop during guideline development, note Howard Bauchner, M.D., Professor of Pediatrics and Director of the Division of General Pediatrics at Boston University School of Medicine, and Lisa Simpson, M.B., B.Ch., Deputy Administrator of the Agency for Health Care Policy and Research.

Drs. Bauchner and Simpson reviewed the status of pediatric practice guidelines and examined key issues that may limit guideline effectiveness in improving quality of care for children. They point to a

recent survey of U.S. pediatricians which showed that 35 percent of the physicians surveyed regularly use guidelines, 44 percent sometimes use them, and 21 percent never use guidelines. Few groups have incorporated family preferences in the development of pediatric practice guidelines. Some studies have shown that parents and physicians have fundamental value differences with respect to diagnostic testing, diagnostic error, and medical risk. If development of pediatric guidelines continues with minimal input from parents, they may not be relevant and will fail to improve the quality and appropriateness of pediatric care, according to the authors.

They suggest that guidelines be written so that parents can understand them and that the

guidelines be made available to parents in physicians' offices; over the Internet; to parent groups for specific medical problems, such as attention deficit hyperactivity disorder; and in magazines aimed at parents. Targeting parents as agents of change, through the print and electronic media, may help to increase guideline acceptance and adoption, conclude the authors.

See "Specific issues related to developing, disseminating, and implementing pediatric practice guidelines for physicians, patients, families, and other stakeholders," by Drs. Bauchner and Simpson, in the October 1998 *Health Services Research* 33(4), pp. 1161-1177.

Reprints (AHCPR Publication No. 99-R003) are available from AHCPR.** ■

A new quality improvement tool is being developed for deriving benchmarks of clinical care

A new quality improvement tool for estimating data-driven benchmarks may soon provide an alternative to opinion-based approaches for identifying best medical care practices. This tool, which can be used in performance feedback to health care providers, is being developed and tested with support from the Agency for Health Care Policy and Research (HS09446).

Clinical care benchmarks serve as a standard of best clinical care practice against which other similar practices can be measured. Such benchmarks pervade the health care quality improvement literature. However, they usually are based on subjective assessments of providers, or arbitrarily chosen performance levels, rather than data-derived measurements. As such, benchmarks may not yield an achievable level of excellence that can be reproduced under specified conditions, notes Catarina I. Kiefe, Ph.D., M.D., of the University of Alabama at Birmingham.

Dr. Kiefe and her colleagues are developing a method to identify peer-group-based, objective, reproducible, data-driven performance measures called Achievable Benchmarks of Care (ABC) at the process-of-care indicator level. The ABC relies on two mathematical

concepts. The first, the pared-mean, applies quantitative techniques to determine "top performance," that is, the mean of the best care achieved for at least 10 percent of the population. The ABC also uses a Bayesian estimator technique to reduce the impact of providers with small numbers of eligible patients.

The researchers used the ABC in an initial benchmarking analysis in the Cooperative Cardiovascular Project (CCP), which focused on six specific process of care indicators for heart attack patients ranging from smoking cessation counseling to hospital administration of low-dose heparin. Pooling the patients eligible for smoking cessation counseling at 12 hospitals resulted in a benchmark performance level of 49 percent. Of these 12 benchmark contributors, 10 hospitals had rates above 49 percent, that is, were benchmark performers. Hospitals responded positively to their performance feedback.

See "Identifying achievable benchmarks of care (ABCs): Concepts and methodology," by Dr. Kiefe, Norman W. Weissman, Ph.D., Jeroan J. Allison, M.D., M.S., and others, in the October 1998 *International Journal for Quality in Health Care* 10(5), pp. 443-447. ■

Everyone should be concerned about health care quality

Problems in the U.S. health care system include underuse, overuse, and misuse of health care services. These problems occur in small and large communities alike, in all parts of the country, and with about equal frequency in managed care and traditional fee-for-service systems of care. Overall quality of care is the problem, not managed care, according to a recent report by the Institute of Medicine's National Roundtable on Health Care Quality. The report, supported in part by the Agency for Health Care Policy and Research (contract 290-95-2006), warns that current efforts to improve U.S. health care will not succeed without a major, systematic effort to overhaul the delivery of health care services, education and training of clinicians, and

assessment and improvement of care quality.

The report cites underuse, such as missed immunizations or missed opportunities to detect and treat diseases such as hypertension or depression; overuse, such as prescribing an antibiotic for a viral infection like a cold; and misuse, such as avoidable complications of surgery or adverse drug events. For instance, medication-related injuries occur at the rate of about 2,000 per year in each large teaching hospital; about 28 percent of these injuries are preventable. As noted in the report, underuse is not confined to managed care plans. Between 40 percent and 60 percent of patients in selected HMO and fee-for-service populations do not receive needed care or services known to be effective for specific conditions.

At present, quality improvement efforts are sporadic at best and usually are limited to single, large hospitals. Fee-for-service plans encourage overuse; capitation payments encourage underuse. No current payment system systematically rewards excellence in quality. The Roundtable concludes that everyone has a stake in improving health care quality, and they recommend that health care professionals take the lead and play an active role in quality improvement.

Details are in "The urgent need to improve health care quality," by Mark R. Chassin, M.D., M.P.P., M.P.H., Robert W. Galvin, and the National Roundtable on Health Care Quality, in the *Journal of the American Medical Association* 280(11), pp. 1000-1005, 1998. ■

Despite some differences, chiropractic and medical education have a lot in common

Both chiropractic and medical education programs are demanding in the number of hours devoted to basic sciences and the number of student contact hours per week. In fact, considerable commonality exists between these two educational programs, even though distinct differences remain, concludes a study supported by the Agency for Health Care Policy and Research (HS07915). For instance, chiropractic education devotes more time to the basic sciences than does medical education.

The authors compared the curriculum content of North American chiropractic and medical colleges. They also used in-depth data obtained through site visits with three chiropractic and three medical

schools. Results showed that the types of subjects taught varied between the two programs. Chiropractors spent more time on nutrition than did physicians, whereas physicians spent more time on public health. Medical students spent relatively little time studying the neuromusculoskeletal system and its health-related problems—subjects of great concern to chiropractors—and they received little or no education in alternative health care and no education in chiropractic care. Medical students received much more practical clinical education in both hospital and outpatient settings. Chiropractic clinical education took place in outpatient settings only.

A chiropractic program consists of 3.3 years of undergraduate education compared with 4 years for medical education and an additional 3 years of graduate education to meet the requirements for practice. Clinical clerkship for medical students spans many clinical conditions and is 3,467 hours compared with 1,405 for chiropractic clinical clerkship. Chiropractic training includes an additional 1,975 hours in chiropractic clinical sciences.

For more details, see “A comparative study of chiropractic and medical education,” by Ian Coulter, Ph.D., Alan Adams, D.C., Peter Coggan, M.D., M.S.Ed., and others, in *Alternative Therapies* 4(5), pp. 64-75, 1998. ■

AHCPR News and Notes

AHCPR names first Child and Adolescent Health Scholar

The Agency for Health Care Policy and Research has selected Joseph W. Thompson, M.D., M.P.H., as the Agency’s first Child and Adolescent Health Scholar. Dr. Thompson will conduct and publish research on the quality of child and adolescent health services and work on the Child Health Quality Measurement Initiative.

Dr. Thompson’s appointment at AHCPR will last 1 year, during which he will continue to serve as an Assistant Professor in the Department of Pediatrics at the University of Arkansas for Medical Sciences. Previously, he served as Assistant Vice President of Collaborative Research and New Measures Development at the National Committee for Quality Assurance (NCQA) where he conducted assessments of HEDIS results for Medicaid, Medicare, and commercial populations. He also led NCQA’s research support for consumer report card initiatives and quality measure development panels in pediatrics and in asthma.

Previously, Dr. Thompson served within the U.S. Department of Health and Human Services’ Office of Disease Prevention and Health Promotion as Chief of Clinical Affairs and Fifth Luther Terry Fellow in Prevention Medicine, and as Program Director of the Put Prevention Into Practice project in the Office of the Assistant Secretary for Health.

Dr. Thompson received his B.A. from Hendrix College. He completed his Master of Public Health at the University of North Carolina at Chapel Hill and earned his Doctor of Medicine from the University of Arkansas School of Medicine. AHCPR’s Child and Adolescent Health Scholar appointment was made in partnership with the Ambulatory Pediatric Association, the American Academy of Pediatrics, the Association of Medical School Pediatric Department Chairs, and the Society for Adolescent Medicine. The partners helped search for candidates and select Dr. Thompson as the scholar. ■

Applications due April 22 in response to three new RFAs

The Agency for Health Care Policy and Research recently announced the following three new grant programs. Applications in response to these announcements are due by April 22, 1999. Please visit AHCPR's Web site at <http://www.ahcpr.gov/> and click on "funding opportunities" for more information and application instructions. Or, you may contact AHCPR's contractor, Equals Three Communications, Inc., 7910 Woodmont Avenue, Suite 200, Bethesda, Md. 20814-3015; telephone 301-656-3100, to request copies of the announcements, instructions, and application forms.

Health care for children from low-income families. AHCPR and the David and Lucile Packard Foundation will work together to fund studies that will help purchasers and designers of health insurance and delivery systems improve health care for low-income children. The David and Lucile Packard Foundation is a private family foundation that was created in 1964. AHCPR and the Packard Foundation together plan to award up to \$2 million in fiscal year 1999 to support the first year of approximately five to eight projects under this Request for Applications (RFA). AHCPR and the Packard Foundation expect to spend \$6 million on the projects over the course of 3 years.

Most studies conducted so far on the impact of financing and delivery changes have not looked at the broader system-wide effects—for example, how changes in the Medicaid program might affect the provider network in a community and in turn affect health care for the entire population of low-income children and families in that

community. Studies to be funded under this RFA should provide information that will be useful in designing and modifying the Children's Health Insurance Program (CHIP) and other health care programs for low-income children.

CHIP, enacted as part of the Balanced Budget Act of 1997, represents the largest expansion in children's health coverage since passage of Medicaid over 30 years ago. CHIP is providing \$24 billion over 5 years, beginning with fiscal year 1998, to help States offer affordable health insurance to uninsured children in working families that earn too much for Medicaid but not enough to afford private coverage. Most participating States offer some form of managed care, and the features of such plans vary considerably.

Applicants under this announcement should focus on how the features of insurance programs (such as the scope of benefits packages and premium and cost-sharing requirements) and the organization of health care delivery systems associated with these programs (such as the network of providers, the procedures to access pediatric subspecialists, or the mechanisms to link to social services) affect access to services and the quality of care received by low-income children. Studies will fall into one or both of two categories: enrollee studies that examine the impact on low-income children enrolled in insurance programs, and community studies that examine the impact on a low-income community's health care delivery system and all children that it serves.

Because the awards will be cooperative agreements, awardees

are expected to work with each other and with Agency and Packard Foundation staff for the purpose of strengthening individual studies and generating generalizable results across projects, locations, and populations.

The RFA, "Health Care Access, Quality and Insurance for Low-Income Children" (RFA HS-99-005) was published January 20, 1999, in the *NIH Guide for Grants and Contracts*.

Assessing quality improvement strategies. AHCPR is seeking research proposals to assess health care quality improvement strategies, including education, the use of information systems, continuous quality improvement, behavioral interventions, academic detailing, and use of regulations. AHCPR will award up to \$2 million in fiscal year 1999 to support the first year of four to seven grants.

Applicants under this RFA should focus on evaluating strategies that target areas where the greatest improvements in health and functional status can occur, reliable and valid measures exist, and a variety of strategies are being employed. Moreover, applicants are encouraged to develop working partnerships with others now engaged in health care quality improvement efforts through established mechanisms, such as peer review organizations, quality improvement organizations, purchasers' groups, health plans, accrediting bodies, and academic researchers. Furthermore, awardees will be encouraged to collaborate with each other to examine issues

continued on page 23

New RFAs

continued from page 22

affecting generalizability, analyses of pooled data measures of the impact of interventions, and other cross-cutting questions.

The RFA "Assessment of Quality Improvement Strategies in Health Care" (RFA HS-99-002), was published in the January 22, 1999 issue of the *NIH Guide for Grants and Contracts*.

Therapeutics research centers. AHCPR is seeking applications from nonprofit organizations to serve as Centers for Education and Research on Therapeutics (CERTs) under a 3-year demonstration program. The goal of the program is to develop free-standing centers that conduct research and educate medical

practitioners and other health care decisionmakers. The program is aimed at increasing clinician and patient awareness of the benefits, risks, and effectiveness of new uses, existing uses, or combined uses of therapeutics—drugs, biologics, and medical devices.

AHCPR expects to award up to \$2 million in FY 1999 to support the centers, which were authorized by the Food and Drug Administration (FDA) Modernization Act of 1997 (P.L. 105-115). These cooperative agreements will be administered in consultation with FDA.

The new centers will evaluate therapeutics and conduct state-of-the-art clinical, laboratory, and health services research. In addition, one of the centers will be selected as

the coordinating center for the program.

AHCPR funds are intended to provide basic support for each center. Although research projects initially may be supported by these core funds, centers are ultimately expected to support research with funds obtained from sources other than the CERTs demonstration program. Potential funding sources include other AHCPR grants programs, as well as grant programs of other Federal agencies and other funding bodies, such as foundations.

This announcement, "Centers for Education and Research on Therapeutics (CERTs)" RFA HS-99-004, was published in the *NIH Guide for Grants and Contracts* on January 20, 1999. ■

AHCPR's Web-based National Guideline Clearinghouse is now online

The new National Guideline Clearinghouse (NGC) www.guideline.gov is an Internet-based source of information on clinical care that will help health professionals to improve the quality of care they provide to their patients. The NGC, a repository for evidence-based clinical practice guidelines, was developed by the Agency for Health Care Policy and Research in partnership with the American Medical Association (AMA) and the American Association of Health Plans (AAHP).

Thousands of clinical practice guidelines have been created by medical and professional societies, managed care organizations, hospitals, State and Federal agencies, and others. However, clinicians and other users often have had difficulty gaining access to a full range of guidelines and then identifying which guidelines are

based on scientific evidence. They also have had no efficient way of making comparisons to select the guideline that best meets the needs of their patients.

The NGC responds to a longstanding need by identifying and featuring evidence-based clinical practice guidelines and presenting them with standardized abstracts and tables that allow for comparison of guidelines on similar topics. The tables provide information on the major areas of agreement and disagreement among guidelines to help users make informed selections. The NGC also will feature topic-related electronic mail discussion groups where guideline users can exchange information about guideline development, content, and implementation.

To date, more than 500 clinical practice guidelines have been submitted to the NGC by physician

specialty groups, medical societies, managed care plans, State and Federal agencies, and others. The NGC criteria for selecting evidence-based guidelines were published in a *Federal Register* notice issued April 13, 1998. AHCPR has contracted with ECRI, a nonprofit health services research organization, to perform the technical work for the NGC.

The NGC will continue to receive guideline submissions on an ongoing basis. To submit a guideline, contact Vivian Coates, ECRI, NGC Project Director, 5200 Butler Pike, Plymouth Meeting, PA 19462-1298. For questions about guideline submissions, please contact Jean Slutsky, NGC Project Officer, at 301-594-4042 or via e-mail at jslutsky@ahcpr.gov. ■

AHCPR releases four new evidence reports/technology assessments

The Agency for Health Care Policy and Research recently released four new reports—drug therapy for alcohol dependence, testosterone suppression for prostatic cancer, evaluation of abnormal cervical cytology, and urinary complications in paralyzed people—from a new series of evidence reports/technology assessments sponsored by AHCPR to provide public- and private-sector organizations with comprehensive, science-based information on common, costly medical conditions and health care technologies. AHCPR awarded contracts to 12 Evidence-based Practice Centers (EPCs) in the United States and Canada to review all the relevant literature on designated topics related to prevention, diagnosis, treatment, and management of common diseases and clinical conditions and technology assessments of specific medical procedures or health care technologies.

Forthcoming AHCPR evidence reports/technology assessments examine treatment of depression with new drugs, treatment of attention deficit/hyperactivity disorder, diagnosis and treatment of acute sinusitis, and other topics. Recently assigned topics include management of acute chronic obstructive pulmonary disease, management of cancer pain, criteria for weaning from mechanical ventilation, and management of chronic hypertension during pregnancy.

Summaries of these four reports, as well as two earlier reports on sleep apnea and traumatic brain injury (see *Research Activities*, December 1998), were released recently via the World Wide Web. To access the summaries online, visit AHCPR's Web site at

<http://www.ahcpr.gov/> and click on "clinical information." Printed summaries of the reports are available from AHCPR,** and printed copies of the full reports* are expected to be available in the near future. See the back cover of *Research Activities* for ordering information.

Pharmacotherapies for alcohol dependence. Summary (AHCPR Publication No. 99-E003). Two relatively new medications, naltrexone and acamprosate, show promise for the treatment of patients with alcohol dependence, according to this evidence report, which was developed by the Research Triangle Institute (RTI) and the University of North Carolina (UNC) at Chapel Hill. The medications appear to reduce the urge to drink, decrease the frequency of a person's drinking, and, in some studies, improve abstinence. Naltrexone has been in use in the United States for the treatment of alcoholism only since 1994. Acamprosate is widely used in Europe and has been granted investigational drug status within this country by the Food and Drug Administration; clinical trials are currently underway.

Alcohol dependence or alcoholism is a chronic and progressive disorder that afflicts approximately 9.6 percent of men and 3.2 percent of women in the United States at some point in their lives. Alcoholism can develop as early as adolescence and continue in older age groups. Those at highest risk are men and women from 18 to 29 years of age.

About 100,000 Americans die each year from alcohol-related diseases such as cirrhosis of the liver and esophageal or stomach cancer, and from traumatic injuries such as overdose, suicide, homicide, and

traffic accidents. Alcohol dependence costs the Nation an estimated \$166 billion annually, mostly due to health effects, lost productivity, and treatment of alcohol-related diseases.

Naltrexone and acamprosate are used to treat the primary symptoms of alcohol dependence. Although they can diminish the frequency of drinking, enhance abstinence, and minimize relapse, the evidence indicates that these medications will not eliminate the problem of alcohol dependence. Many individuals continued to drink even while taking the medications.

The report suggests that future research address the effectiveness of long-term maintenance of patients on those medications proven to work alone, the effectiveness of combinations of medications, and the optimal combinations of drug and psychosocial therapies. Another suggested area of research is development of additional, more effective therapies for treating alcohol dependence.

The RTI-UNC researchers reviewed studies published from 1966 through 1997 in English, French, or German; on adults 18 years or older with alcohol dependence; with sample sizes of 10 or more subjects; and with a control group for comparison.

Testosterone suppression for advanced prostate cancer. Summary (AHCPR Publication No. 99-E011). Men with advanced prostate cancer who are given one of several different testosterone-suppressing drugs known as "luteinizing hormone-releasing hormone (LHRH) agonists" survive roughly the same length of time and experience roughly the same side effects, regardless of which drug

continued on page 25

Evidence reports/ technology assessments

continued from page 24

they use, according to this technology assessment. It shows that despite the substantial differences in costs among the different LHRH agonists, they all produce equivalent health outcomes.

The report, which was prepared for AHCPR by the Blue Cross and Blue Shield Association (BCBSA) Technology Evaluation Center, also states that a more aggressive form of therapy called “combined androgen blockade” may be of little added clinical benefit, only marginally increases survival, and causes more severe side effects. Furthermore, while it has been hypothesized that subpopulations of patients who have a good prognosis may benefit more from such aggressive treatment, the evidence does not support this hypothesis.

LHRH agonists are used to suppress the production of testosterone, the main androgen (male hormone). Produced primarily in the testicles, testosterone can promote the growth of prostate cancer cells. Combined androgen blockade uses either an LHRH agonist or surgical removal of the testicles, plus a second drug called a nonsteroidal anti-androgen, to block the action of testosterone. All LHRH agonists are as effective as surgical removal of the testicles, which was once considered the standard treatment for prostate cancer.

In preparing the technology assessment, the EPC also examined whether treating men early with testosterone suppression results in better outcomes than treating them later in the course of their disease. There was insufficient evidence to determine whether survival is improved by starting testosterone suppression as soon as advanced prostate cancer is detected. The

alternative—waiting until symptoms develop—may spare the patient years of living with the serious side effects of treatment, one of which is impotence.

Prostate cancer, the second leading cause of cancer deaths in American men, is primarily a disease of older men. Approximately 185,000 new cases of prostate cancer are diagnosed annually, and 39,000 men die of the disease each year.

The cost of treating prostate cancer is substantial. The direct hospital charges alone for prostate cancer treatment cost Medicare more than \$1.4 billion in 1994. Federal agencies that provide medical care to beneficiaries, such as the U.S. Department of Veterans Affairs and the U.S. Department of Health and Human Services’ Indian Health Service, as well as private health insurers, also incur expenses for prostate cancer treatment.

Evaluation of cervical cytology. Summary (AHCPR Publication No. 99-E009). The conventional Pap test is still the most effective tool available for detecting cervical cancer in adult women with average risk, according to this evidence report, which was produced by Duke University in conjunction with Health Economics Research, Inc., a Waltham, Massachusetts firm. The Duke study compared three new technologies—ThinPrep®, AutoPap®, and Papnet®—to the conventional Pap test, examining their overall effectiveness and accuracy in screening performance. The study found that the Pap test remains the most reliable test available, but that the new technologies may help strengthen diagnostic accuracy in the detection of cervical cancer.

The researchers found that the new screening technologies for Pap testing appear to reduce significantly the likelihood that premalignant and malignant cells will be misdiagnosed as normal, that is, false negatives.

However, little is known about the effect of these new technologies on diagnostic specificity, which is the likelihood of false positives.

Although the incidence of cervical cancer is decreasing, it is still one of the most common cancers in women. In 1998, an estimated 13,700 women developed invasive cervical cancer, and about 4,900 women died from the disease. More than 25 percent of invasive cervical cancer cases occur in women older than 65, and 40 to 50 percent of all women who die from cervical cancer are over 65 years of age. Highlights of the report include:

- The Pap test, while key in decreasing cervical cancer in women, is not as accurate in diagnosing disease as previously believed. The evidence reveals that a single Pap test may miss abnormal cells in nearly half of the women who have abnormal cell growth.
- Available data on the accuracy of the three technologies studied fail to describe reliable estimates for reducing false positives.
- Evidence related to the accuracy of the newer technologies is incomplete.
- When initial and rescreening intervals are lengthened to every 3 years or greater, the new technologies were more cost-effective than the traditional Pap test. These longer screening intervals result in lowering the costs per year of life saved.

Urinary tract infections in paralyzed people. Summary (AHCPR Publication No. 99-E007). There is insufficient evidence to recommend the regular use of oral antibiotics to prevent urinary tract infections (UTIs) in adults and adolescents who have abnormal bladder function because of spinal cord damage, according to this

continued on page 26

Evidence reports/ technology assessments

continued from page 25

evidence report. Although research does indicate that prophylactic antibiotics reduce the amount of bacteria present, their use can double the development of bacteria that are resistant to the drugs. The report was prepared by the Southern California EPC/RAND in collaboration with the University of California, Los Angeles. The report discusses

prevention and management of UTIs in the two populations most commonly affected—people with spinal cord injuries (SCIs) and people with multiple sclerosis (MS).

Diseases of the urinary system are the fifth most common cause of death for people with SCIs. Up to 90 percent of people with MS develop bladder dysfunction at some point, which increases their chance of urinary tract infection and other complications. Since the lifetime incidence of urinary tract infections among people with SCI and MS is

very high, every person with bladder dysfunction caused by problems of the central or peripheral nervous system should be considered at high risk for infection.

The EPC based its report on 1,278 studies, involving patients aged 13 years and older and published after 1985. In studies of patients with SCIs, the analysis focused on nonacute patients (more than 90 days after injury). However, for the evaluation of antibiotic prophylaxis, additional studies of acute SCI patients were included. ■

Research Briefs

Anderson, J.P., Kaplan, R.M., Coons, S.J., and Schneiderman, L.J. (1998). “Comparison of the Quality of Well-being Scale and the SF-36 results among two samples of ill adults: AIDS and other illnesses.” (AHCPR grants HS05617 and HS06912). *Journal of Clinical Epidemiology* 51(9), pp. 755-762.

This study compares the results of using two measures of health-related quality of life, the SF-36 and the Quality of Well-being Scale (QWB) with other scoring methods to characterize health outcomes over time in 201 adults with serious illnesses, including cancer and AIDS. The SF-36 includes nine dimensions of illness (morbidity). The QWB is a preference-based measure that combines morbidity and mortality into a single number. All patients received both measures at baseline and at 6-month intervals thereafter over a period of 2.5 years. The QWB captured outcomes that characterize the AIDS syndrome. The SF-36 differentiated between AIDS and other illnesses on some scales but without consistent direction. The QWB showed a decrease in quality of life over time for both patients with AIDS and

other illnesses, while the SF-36 did not. This is because many patients died, and these deaths were counted as outcomes by the QWB and as missing data by the SF-36. The QWB appears to better capture outcomes of serious illness over time than does the SF-36, conclude the researchers.

Berkey, C.S., Hoaglin, D.C., Antczak-Bouckoms, A., and others. (1998). “Meta-analysis of multiple outcomes by regression with random effects.” (AHCPR grant HS05936). *Statistics in Medicine* 17, pp. 2537-2550.

Earlier studies have shown how to perform fixed-effects meta-analysis of studies, when each study provides results on more than one outcome per patient, and these multiple outcomes are correlated. The fixed-effects, generalized-least-squares approach analyzes the multiple outcomes jointly within a single model, and it can include covariates, such as duration of therapy. However, unexplained differences often remain, even after taking into account known or suspected covariates. To address this problem, these authors propose two random-effects approaches for the regression

meta-analysis of multiple correlated outcomes in a meta-analysis of periodontal clinical trials.

Callahan, C.M., Wolinsky, F.D., Stump, T.E., and others. (1998). “Mortality, symptoms, and functional impairment in late-life depression.” (AHCPR grants HS07632 and HS07763). *Journal of General Internal Medicine* 13, pp. 746-752.

For this study, the researchers correlated physical decline and depressive symptoms among 300 patients aged 60 years and older who scored 16 or higher on the Centers for Epidemiologic Studies Depression Scale and 100 control patients who scored lower than this threshold during routine primary care office visits from 1990 to 1993. They followed the patients through 1996, documenting changes in depressive symptoms and functional impairment over time and calculating risk of death. Symptoms of depression were not associated with death. The strongest predictors of death in this group were smoking history, older age, male sex, and evidence of poor nutrition. Patients with depressive symptoms during

continued on page 27

Research Briefs

continued from page 26

the initial interview (baseline) reported nearly twice the functional impairment of those without depressive symptoms and were more likely to report depressive symptoms and functional impairment at subsequent interviews. Also, decline in physical functioning was independently correlated with a concurrent increase in depressive symptoms, even when accounting for patients' prior level of depressive symptoms.

Christakis, N.A., and Iwashyna, T.J. (1998). "Attitude and self-reported practice regarding prognostication in a national sample of internists." (NRSA training grant T32 HS00080). *Archives of Internal Medicine* 158, pp. 2389-2395.

A physician's assessment that a patient is "terminally ill" is critical to decisions such as withdrawal or withholding of life support and in qualifying patients for the Medicare hospice benefit. However, doctors vary in their definition of "terminal" illness and find such prognostication stressful, according to this study. The researchers analyzed the responses of 697 internists to a survey assessing their attitudes and practices with respect to predicting a patient's survival time. They also obtained comments from 162 physicians and interviewed 20 other physicians. Results showed that the physicians in this study disagreed on the meaning of "terminal." About 68 percent defined it as having less than 16 weeks to live, and 32 percent defined terminal as having 16 or more weeks to live. About 60 percent of these doctors said they find predicting a patient's survival time stressful and difficult, so much so that 44 percent wait to be asked by a patient before offering predictions. About 90 percent of the doctors said they avoid being too

specific in their predictions, and 57 percent reported inadequate training on prognostication.

Christiansen, C.L., Gortmaker, S.L., Williams, J.M., and others. (1998, November). "A method for estimating solid organ donor potential by organ procurement region." (AHCPR grant HS07118). *American Journal of Public Health* 88(11), pp. 1645-1650.

These authors sought to develop a method for estimating potential solid organ donors and measuring donation performance in a geographic region based on readily available data on the hospitals in that region. They reviewed the medical records of a random sample of 89 hospitals from three regions to attain a baseline of donor potential, as well as data on a range of hospital characteristics. They found that five hospital characteristics predicted donor potential: hospital deaths, hospital Medicare case-mix index, total hospital staffed beds, medical school affiliation, and trauma center certification. They aggregated hospital estimates to obtain regional estimates, which indicated that actual donations represented from 28 to 44 percent of the potential in the regions studied.

Deyo, R.A., Battie, M., Beurskens, A.J., and others. (1998). "Outcome measures for low back pain research: A proposal for standardized use." (AHCPR grant HS08194). *Spine* 23(18), pp. 2003-2013.

The measurement of patient outcomes in clinical studies of low back pain has been vexing for many investigators. Traditionally, they used physiologic measures such as range of motion and muscle strength. But in many cases, such measures are only weakly associated with outcomes that are more relevant to patients and society, such as symptom relief, daily functioning, and work status. In this study, an

expert panel considered reliability, validity, responsiveness, and practicality in recommending a standard battery of six questions. The questions addressed pain symptoms, function, well-being, disability, disability in a social role, and satisfaction with care. The questionnaire is short enough to be used in routine care settings for quality improvement and research purposes. An expanded outcome set includes measures of severity and frequency of symptoms, a measure of general health status, and questions about satisfaction with symptoms, three types of "disability days," and an optional single item on overall satisfaction with medical care.

Hoffman, J.R., Wolfson, A.B., Todd, K., and others. (1998). "Selective cervical spine radiography in blunt trauma: Methodology of the National Emergency X-Radiography Utilization Study (NEXUS)." (AHCPR grant HS07809). *Annals of Emergency Medicine* 32, pp. 461-469.

Because physicians don't want to miss cervical spine injury, which can produce catastrophic neurologic disability, they often make extremely liberal use of radiography in patients who have received blunt trauma. However, this practice exposes large numbers of patients to x-ray imaging at considerable expense while detecting injuries in a small minority. Clinical criteria that could identify patients at sufficiently low risk to decide that cervical spine radiography is unnecessary would help reduce costs and unnecessary radiation exposure. The National Emergency X-Radiography Utilization Study (NEXUS) is a very large, federally supported, multicenter study designed to define the sensitivity for detecting significant cervical spine injury of criteria previously shown to have

continued on page 28

Research Briefs

continued from page 27

high negative predictive value. NEXUS will be conducted at 23 different emergency departments across the United States and is projected to enroll more than 20 times as many patients with cervical spine injury as any previous study.

Horgas, A.L., Wilms, H.U., and Baltes, M.M. (1998). "Daily life in very old age: Everyday activities as expression of successful living." (NRSA fellowship F32 HS00077). *The Gerontologist* 38(5), pp. 556-568.

Adults 70 to 100 years of age spend about one-third of the waking day (16 hours) on chores such as shopping, paying bills, and doing housework. They spend about half of the day on leisure activities, mostly watching television and reading. Finally, they spend about 3 hours (19 percent of the day) resting. Most of the typical day is spent alone and at home, whether home is an apartment, house, or nursing home. Age and residence make a significant difference in how the day is spent, regardless of sex, education, or income. For instance, those older than age 90 and those in long-term care facilities perform fewer overall activities and spend more time resting. Elderly people spend about 3 hours of the day with their spouse or partner, 40 to 50 minutes a day with roommate(s) or groups of people and professional caregivers, and only 15 to 20 minutes a day with children, relatives, and friends. The researchers interviewed a representative sample of 516 people, 70 to 105 years of age and living in Berlin, Germany, about how they spent each day and then correlated activities with sociodemographic characteristics.

McDonald, C.J., Overhage, J.M., Dexter, P.R., and others. (1998).

"Canopy computing: Using the web in clinical practice." (AHCPR grants HS07719 and HS08759). *Journal of the American Medical Association* 280(15), pp. 1325-1329.

Physicians need tools that can easily join all the separate sources of clinical information under one umbrella, where they and other health care professionals can easily and quickly access patient information and other data. The World Wide Web offers most of the tools needed to create this ideal, according to the authors of this commentary. The Web tools they refer to range from e-mail addresses and browser displays to security measures that restrict access to confidential patient information. Armed with a Web browser, an authorized user could access all modes of clinical information, including text data, such as echocardiogram reports; graphic tracings, such as ECGs; images, such as x-rays; and sound recordings, such as physician dictation. Moreover, a user on a Web browser could access any Web-enabled clinical system to which he or she had access rights. A number of academic medical centers have wrapped their electronic medical record system in browser technology, enabling physicians to access a whole library of medical knowledge without leaving their workstation or losing their place in a patient's electronic chart.

Mendelson, D.N., Goodman, C.S., Ahn, R., and Rubin, R.J. (1998). "Outcomes and effectiveness research in the private sector." (AHCPR contract 290-96-0009). *Health Affairs* 17(5), pp. 75-90.

Outcomes and effectiveness research evaluates the impact of health care (for example, drugs, medical devices, and procedures) on health outcomes of patients and populations. The purpose of this study was to assess private-sector efforts in outcomes research and

examine whether these efforts duplicate or overlap Federal outcomes research. The researchers reviewed published and unpublished literature on the topic; interviewed more than 30 experts involved in private-sector outcomes and effectiveness research; and convened an expert panel on the topic. They concluded that the main priority for this research in the private sector is its potential financial impact for the sponsoring organization. The authors suggest that AHCPR and private-sector entities can work together to identify and promote complementary actions to address unmet national research priorities, such as lung reduction surgery for emphysema. Also, AHCPR may be able to increase visibility for private-sector outcomes studies of public concern that otherwise might not receive adequate exposure due to loss of sponsor interest.

Murray, M.D., Loos, B., Tu, W., and others. (1998). "Effects of computer-based prescribing on pharmacist work patterns." (AHCPR grant HS07763). *Journal of the American Medical Informatics Association* 5, pp. 546-553.

Computer-based prescribing results in major changes in the type of work done by hospital-based outpatient pharmacists, concludes this study. The researchers examined the impact of computer-based prescribing on the outpatient pharmacy of a health center. Total staff hours and prescriptions handled were similar before and after computer-based prescribing. But after implementation of computer-based prescribing, pharmacists spent about 13 percent more time correcting prescription problems, had 4 percent less idle time, and spent about 2 percent less time in discussions with others. Pharmacists also spent 34 percent less time filling prescriptions, 46 percent

continued on page 29

Research Briefs

continued from page 28

more time in problem-solving activities involving prescriptions, and 3 percent less time providing advice.

O'Dell, M.W., Hubert, H.B., Lubeck, D.P., and O'Driscoll, P. (1998). "Pre-AIDS physical disability: Data from the AIDS time-oriented health outcome study." (AHCPR grant HS06211). *Archives of Physical Medicine and Rehabilitation* 79, pp. 1200-1205.

This study shows that people who are infected with the human immunodeficiency virus (HIV) that causes AIDS demonstrate relatively low levels of physical dysfunction before they develop an AIDS-defining illness. The researchers studied a community-based sample of 531 asymptomatic and 345 symptomatic people with HIV infection, most of whom were white, well-educated, homosexual and bisexual men. The subjects were given an HIV health assessment questionnaire, which measured perceived disability in eight areas of mobility and activities of daily living. There were few differences between the asymptomatic and symptomatic groups. With few exceptions, less than 10 percent of the group perceived any physical limitations, and no more than 2 percent reported being "unable to perform" any given function. However, both groups demonstrated somewhat higher levels of physical dysfunction than an age-, race-, and education-matched comparison group of 2,567 adults without HIV infection.

Ozminkowski, R.J., White, A.J., Hassol A., and Murphy, M. (1998). "What if socioeconomic made no difference? Access to a cadaver kidney transplant as an example." (AHCPR grant HS07538). *Medical Care* 36(9), pp. 1398-1406.

To determine the influence of socioeconomic factors on organ allocation, the researchers used a telephone survey of 456 end-stage renal disease (ESRD) patients, the United Network for Organ Sharing's kidney transplant waiting list files, and Medicare data files. They examined both waiting list entry and receipt of a cadaver kidney transplant before and after adjusting for patients' attitudes about transplantation and their general health and functional status, factors that should influence transplant eligibility. Even after these adjustments, patients age 65 or younger were more likely than older patients to appear on a kidney transplant waiting list and to receive a transplant. Black patients were less than half as likely as white patients to receive a cadaver kidney transplant. Low-income patients were only about half as likely as middle-income patients to obtain a kidney transplant. High-income patients were about 1.5 times as likely as middle-income patients to be on a waiting list and nearly 3 times as likely to receive a transplant. According to the researchers, if socioeconomic factors did not affect organ allocation, 30 to 65 waiting list spots or transplants per 1,000 ESRD patients would shift from economically advantaged to disadvantaged people.

Payne, S.M., Thomas, C.P., Fitzpatrick, T., and others. (1998). "Determinants of home health visit length." (AHCPR grant HS06843). *Medical Care* 36(10), pp. 1500-1514.

Home health care expenditures grew more than 400 percent between 1985 and 1995, more than three times faster than total national health care expenditures. Visit length affects home health agency costs. The researchers studied factors influencing visit length in 4,426 home health visits provided by skilled nurses from 12

Massachusetts home health agencies during 1992 and 1993. They compared visit length across four categories of skilled nursing home health visits which reflect recent changes in home health case mix—AIDS-related, hospice/terminal (HT), intravenous therapy (IV), and maternal and child health (MCH)—with general adult medical/surgical (MS) visits. Skilled nurses classified visits into visit categories and correlated them with visit length. MS visits were the shortest (median of 30 minutes); HT visits were the longest (median of 59 minutes for HT only to 80 minutes for HT/AIDS). The remaining categories were intermediate in length (37 to 50 minutes). The three factors with greatest impact on visit length were visit type (hospital admission vs. other), terminal/caregiver factor, and clinical instability. Case coordination outside the visit was associated with longer visits. The researchers suggest that payers of home care consider adjusting per-visit reimbursement rates to reflect differences in visit length by category or consider incorporating functional limitations, clinical instability, and case coordination as classification variables.

Picken, H.A., Greenfield, S., Teres, D., and others. (1998). "Effect of local standards on the implementation of national guidelines for asthma." (NRSA training grant T32 HS00060). *Journal of General Internal Medicine* 13, pp. 659-663.

Primary care physicians (PCPs) tend to disagree with certain aspects of national asthma care guidelines, and thus only comply with some care recommendations, according to this study. For example, a group of 42 New England PCPs surveyed for this study typically relied on clinical signs, such as wheezing, to diagnose asthma rather than pulmonary

continued on page 30

Research Briefs

continued from page 29

function testing as recommended by National Asthma Education Program (NAEP) Guidelines for the Diagnosis and Management of Asthma. Also, 83 percent of PCPs recommended training only patients with difficult-to-assess symptoms for in-home peak flow meter use to monitor lung capacity. Yet NAEP guidelines call for routine peak flow monitoring of all asthma patients. Monitoring of a patient's peak flow rate tracks fluctuations in his or her condition that can signal the need to begin, increase, or decrease asthma medication. On the other hand, the PCPs agreed with NAEP recommendations for the use of inhaled corticosteroids. The authors conclude that modifying or customizing guidelines through field testing with local PCPs will improve acceptance of national guidelines and lead to improvements in care.

Sugar, C.A., Sturm, R., Lee, T., and others. (1998, October). "Empirically defined health states for depression from the SF-12." (AHCPR grants HS08349 and NRSA training grant T32 HS00028). *Health Services Research* 33(4), pp. 911-928.

When a medical intervention primarily improves quality of life, as in the case of depression, it is often difficult to assess its medical importance and cost-effectiveness. The authors of this study sought to define objectively and describe a set of clinically relevant health states that encompass the typical effects of depression on quality of life in an actual patient population. They used cluster analysis to group the patients according to appropriate dimensions of health derived from a health status questionnaire. The researchers found, on the basis of a combination of statistical and clinical criteria, that six states were optimal for summarizing the range of health

experienced by depressed patients. In all the models, the relationship between health state category and clinical diagnosis was highly significant. The models also were sensitive to changes in patients' clinical status over time.

Winston, F.K., Shaw, K.N., Kreshak, A.A., and others. (1998). "Hidden spears: Handlebars as injury hazards to children." (AHCPR grant HS09058). *Pediatrics* 102(3), pp. 596-601.

In apparently minor bicycle falls, handlebars can act as spears that cause serious abdominal injuries. This can happen even though the handlebars don't actually penetrate the skin. Handlebar impact has been associated with traumatic abdominal wall hernia, as well as kidney, intestinal, liver, splenic, and pancreatic injuries. The researchers studied the records of children 18 years and younger, who had been treated for serious bicycle-related injuries at an urban pediatric trauma center from 1995 to 1997. They also used on-site crash investigation to define the mechanism of serious bicycle handlebar-related injuries. Overall, 84 percent of serious injuries involved bicycle-motor vehicle collisions, and 16 percent resulted from landing on handlebars in apparently minor falls. About 77 percent of the handlebar-related injuries occurred as a result of five minor crash types: a loss of balance after hitting a different riding surface; sudden braking; the chain disengaging from the wheel; performance of a stunt; or a sudden turn of the front wheel. This type of injury could be avoided through bicycle redesign to both limit rotation of the front wheel and modify the ends of handlebars to make them softer or point them away from the rider. Also, knowing that seemingly minor bicycle falls can result in serious internal injuries may prompt doctors to make an earlier diagnosis.

Wolinsky, F.D., Wan, G.J., and Tierney, W.M. (1998). "Changes in the SF-36 in 12 months in a clinical sample of disadvantaged older adults." (AHCPR grant HS07632). *Medical Care* 36(11), pp. 1589-1598.

The SF-36 health status questionnaire is sufficiently sensitive for measuring changes in health outcomes during a 1-year period in older patients with debilitating disease, concludes this study. The researchers used the SF-36 at baseline and then 1 year later to evaluate 786 disadvantaged adults aged 50 to 99 who had participated in a clinical trial at a medical center. They analyzed changes in SF-36 scale scores over the study period. Mean baseline scores on the SF-36 scales were substantially below age-specific national norms. Internal consistency was unacceptable for the general health perception scale, adequate for the social function scale, and good for all the other SF-36 scales. ■

continued on page 31

Research Activities - 1998 Subject Index

The following is an alphabetical listing of research topics featured last year in *Research Activities*.

Month and page number(s) are given.

Access/Barriers to Care, Jan,1; May, 6, 8, 11, 16; Jun, 17; Jul, 2; Oct, 1, 2, 8, 9
 Adolescent Health, Jan, 1 2; May, 20; Oct, 11; Dec, 12, 29
 Advance Directives (see End-of-Life Issues)
 AIDS/HIV, Jan, 14, 15, 24; Mar, 10; May, 20, 27, 29, 30, 31; Jun, 16, 17, 18; Jul, 16; Aug, 16, 17, 25; Sep, 3, 16; Dec, 13, 30
 Alzheimer's Disease, Mar, 14
 Anemia, May, 5; Dec, 5
 Appropriateness of Care, Oct, 6
 Arthritis/Osteoarthritis, Feb, 8
 Asthma (see Respiratory Disease)
 Back Pain/Surgery, Jan, 14; Jun, 17; Jul, 7, 22; Nov, 3
 Blood Transfusions, Jan, 15; May, 5; Dec, 6
 Bowel Problems/Surgery, Sep, 2
 Breast Cancer (see Women's Health)
 Cancer, General (see also specific Cancers), Jul, 6, 12
 Cataracts, Nov, 18
 Catheter-Related Infections, May, 5
 Chest Pain, Feb, 9; Mar, 12; May, 4
 Chiropractic Care, Jan, 20; Aug, 7; Nov, 3
 Chronic Illness, Feb, 8; Mar, 6, 14; May, 10, 12; Jun, 13; Jul, 17; Aug, 2
 Clinical Decision Support Systems, Feb, 21
 Clinical Practice Guidelines
 Dissemination of, May, 23; Dec, 26
 Implementation of, Aug, 10, 24; Sep, 6; Dec, 26
 Low back pain, Jan, 14
 Pressure ulcers, Mar, 16
 Smoking cessation, Jan, 18; Mar, 3
 Cognitive Impairment, Mar, 15
 Computer Reminders, Jun, 7

Consumer Education/Views (see also Patient Education), Jan, 18; Feb, 1; May, 26; Dec, 1
 Cystic Fibrosis (see Infant and Child Health)
 Delirium, Sep, 2
 Dental Care, Feb, 20; Mar, 18
 Dentistry, Sep, 11
 Depression (see Mental Health)
 Diabetes, Feb, 7; Mar, 6; Jun, 12; Jul, 15; Nov, 2; Dec, 5, 29
 Dialysis (see Renal Dialysis/Disease)
 Diet/Nutrition, Feb, 23; Sep, 2
 Disability, (see also Rehabilitation) Sep, 10; Oct, 2, 8; Dec, 6
 Do-Not-Resuscitate Orders (see End-of-Life Issues)
 Drug Errors (see Medication)
 Elderly Health, Jan, 9, 10, 11; Feb, 9; Mar, 25; May, 5, 18; Jul, 1, 2, 5; Aug, 5, 8; Sep, 10, 11, 17; Oct, 4, 8; Nov, 1, 10
 Emergency Care, Feb, 9; May, 19; Jun, 3, 5; Jul, 13; Aug, 4, 8; Oct, 2; Dec, 2
 End-of-Life Treatment/Issues, Feb, 13, 21; Jun, 7, 15; Jul, 5; Sep, 4; Dec, 9
 Ethical Issues, Jul, 12
 Evidence-Based Practice Centers, Nov, 12
 Exercise, Jan, 20
 Genetic Screening/Testing, Jul, 12; Dec, 11
 Headache, Oct, 2
 Health Care Costs and Financing (see also Hospital Costs/Management), Jan, 1, 2, 3, 4; Feb, 4; Mar, 11, 26; May, 14; Jun, 9; Aug, 14, 24; Oct, 5, 15; Dec, 3, 11
 Health Care Marketplace, Feb, 2, 4; Mar, 20; May, 10, 27, 28, 30; Jul, 4; Aug, 23; Dec, 18
 Health Care Organization/Staffing, Mar, 10; May, 30; Sep, 10; Oct, 4; Dec, 7, 12, 26
 Health Care Policy, Feb, 20
 Health Care Technology, Feb, 3; Jun, 9; Aug, 20, 21
 Health Care Use (see also Hospital Use), Jan, 10; May, 18

Health/Functional Status, Feb, 12, 22; Mar, 15, 17, 25; Sep, 8, 17, 18; Nov, 1
 Health Insurance Plans/Status, Jan, 1, 2, 3, 7, 8, 21; Feb, 1, 3; Mar, 5, 11; May, 10, 15, 18, 26; Jul, 1, 10, 16, 22; Aug, 14, 21; Dec, 28
 Plan Choice, Jan 2, 3; Sep, 5; Dec, 1
 Treatment Coverage, Feb, 3; Jul, 10, 16; Dec, 17
 Heart Disease
 Acute myocardial infarction, Feb, 9; Mar, 6, 9, 12; Jul, 10; Oct, 2, 14; Nov, 7; Dec, 3
 Angiography, Oct, 6
 Angioplasty, Oct, 6
 Arrhythmia, Mar, 6; Dec, 8
 Cardiopulmonary resuscitation, Jun, 16; Jul, 13
 Coronary artery bypass graft surgery, Jan, 9; May, 17, 29; Aug, 26; Oct, 6
 Diagnosis, Mar, 12; May, 4; Sep, 13; Dec, 2
 Heart failure, Jan, 20; Mar, 6
 Ischemic heart disease, Feb, 9, Sep, 13
 Treatment differences, Sep, 13
 Hemochromatosis, Dec, 25
 Hip Fracture/Replacement, Jun, 14; Oct, 8
 HIV/AIDS (see AIDS/HIV)
 Home Care, Jan, 7
 Homeless, Dec, 15
 Hospitals
 Costs/Management, Jan, 4; Feb, 4, 5; May, 4, 14, 15, 24; Sep, 4; Dec, 2, 7
 Length of stay, May, 9; Jul, 6; Sep, 2; Dec, 8
 Quality of care, Feb, 5; May, 17; Jun, 9, 10; Aug, 9; Sep, 3; Dec, 7
 Rural, Feb, 6
 Use, May, 8, 10
 Hypertension, Feb, 7, 11; Oct, 10
 Incontinence (see Urinary Incontinence)
 Infant/Child Health
 Access to care, Mar, 12
 Asthma, May, 1
 Birth management, May, 6, 15

continued on page 33

Subject Index

continued from page 32

- Cystic fibrosis, Dec, 11
- Dental care, Mar, 18
- Diabetes, Aug, 5
- Immunization, May, 1; Sep, 6
- Jaundice, Jun, 14
- Low birthweight, Jan, 21; Aug, 26; Sep, 9; Nov, 4, Dec, 11
- Mental health, Dec, 22
- Neonatal intensive care, May, 15; Sep, 9, Nov, 7
- Neurological problems, Sep, 9
- Otitis media (ear infections), Mar, 7
- Preterm birth, Sep, 9; Oct, 10; Nov, 4
- Respiratory problems, May, 6
- Intensive Care, May, 15; Aug, 24; Sep, 3; Nov, 7; Dec, 8
- Knee-Replacement Surgery, Sep, 9; Nov, 7
- Laboratory Tests/Reports, Feb, 4; May, 3, 9; Jun, 4; Jul, 20; Sep, 1; Oct, 5; Nov, 9
- Leukemia, Mar, 8
- Long-Term Care, Jan, 9, 11; Feb, 9, 10, 21; Mar, 14, 15; May, 12, 18; Jun, 14; Jul, 4, 5; Aug, 25; Sep, 10; Nov, 19; Dec, 12, 13, 27
- Low Birthweight (see Infant/Child Health)
- Lyme Disease, Mar, 26; May, 3
- Malpractice Insurance/Suits, Mar, 13; May, 28; Jul, 11; Sep, 6, 11
- Managed Care (see also Health Insurance Plans/Status), Jan, 2, 3, 4, 7; Feb, 1, 2, 15; Mar, 5, 23; May, 9, 10, 13, 28; Jun, 8; Jul, 9; Aug, 8, 12; Sep, 5; Oct, 2; Nov, 8; Dec, 15, 26
- Medicaid, Mar, 18; May, 14, 19; Jun, 11; Aug, 8, 14; Sep, 5; Nov, 8; Dec, 10
- Medical Informatics/Telecommunications, Feb, 14, 21; Mar, 19, 25; Jun, 5; Aug, 23, 24
- Medical Technology (see Health Care Technology)
- Medicare, Jan, 7; Feb, 1; May, 14; Jun, 10; Aug, 15; Sep, 10; Oct, 8
- Medication
 - Amiodarone, Mar, 6
 - Antibiotics, Mar, 7; May, 3, 6; Jul, 6; Aug, 6; Dec, 3
 - Antiplatelet/Anticoagulant agents, May, 5
 - Antipsychotics, Mar, 1
 - Anti-seizure agents, Jan, 13
 - Chemotherapy, Jul, 6; Aug, 3
 - Corticosteroids, May, 6
 - Errors, Aug, 3
 - Growth hormone therapy, Jul, 10
 - Guidelines, Dec, 16
 - HIV-related therapies, Jan, 14; May, 31; Sep, 16
 - Hypnotics, Dec, 16
 - Insulin, Feb, 7
 - Interferon, May, 30
 - Management, Jul, 8
 - Muscle relaxants, Jul, 7
 - Non-steroidal antiinflammatory drugs, Jul, 7
- Mental Health, Feb, 15; Mar, 1, 15; Aug, 5; Sep, 10; Oct, 11
- Minority Health
 - Blacks, Feb, 9, 22; Mar, 11, 17; May, 6, 8, 18, 19; Jul, 14; Aug, 1; Oct, 8, 10, 11; Nov, 18; Dec, 5
 - Chinese, Sep, 17
 - Ethnic attitudes/differences, Mar, 17; May, 29; Jun, 12; Jul, 14; Nov, 18; Dec, 5
 - Hispanics, Mar, 11, 17; May, 6, 16, 18; Jun, 12; Jul, 14, 15; Aug, 5; Oct, 9, 10; Nov, 18
 - Treatment/access differences; May, 6, 18; Oct, 8, 9
 - Women, Feb, 22; May, 6; Jul, 14; Oct, 10
- Multiple Sclerosis, May, 30
- Neonatal Intensive Care (see Infant/Child Health)
- Nurses/Nursing Care, Mar, 10; Oct, 14; Dec, 7, 12, 26
- Nursing Homes (see Long-Term Care)
- Occupational Therapy, Jan, 9
- Organ System Failure/Transplants, Mar, 8; Sep, 7, 17
- Outreach Programs, Aug, 8; Dec, 8
- Pain, Sep, 2; Oct, 2
- Patent Ductus Arteriosus, Aug, 24
- Patient Education/Counseling, Jan, 18; Feb, 8, 13; Mar, 2, 3; Jun, 5; Jul, 8; Sep, 4; Oct, 9; Dec, 29
- Patient Preference/Satisfaction, Feb, 13; Jun, 6; Sep, 10; Oct, 10; Nov, 10; Dec, 9
- Pharmacists, Dec, 25
- Physical Restraint Use, Mar, 14; Sep, 10
- Physicians
 - Factors affecting practice, Jan, 5; Feb, 4, 22; May, 2, 17, 29; Jun, 8; Jul, 12; Aug, 15; Sep, 6; Nov, 9, 10, 19; Dec, 15, 16
 - Relationship to patient/community, Mar, 17; Jun, 6; Aug, 10; Nov, 10
 - Satisfaction, Aug, 9
 - Specialists/Specialty, Mar, 5, 9; May, 29; Jun, 10; Dec, 3, 4
 - Training, Jan, 6; Aug, 11
- Pneumonia (see Respiratory Disease)
- Poverty (see Socioeconomic Factors/Status)
- Practice Variations, Jan, 14; Sep, 3, 13; Nov, 2, 10
- Pregnancy/Childbirth (see Women's Health)
- Pressure Ulcers, Mar, 16; Jun, 13
- Preventive Care/Programs, Jan, 12, 18; Feb, 13; Mar, 2, 3; May, 20, 22; Jul, 8, 11, 19; Aug, 2, 5; Sep, 13; Oct, 9, 11; Dec, 12
- Primary Care, Jan, 5, 6, 7, 21; Mar, 6; May, 28; Jul, 7, 8; Aug, 10; Sep, 17; Oct, 1, 3, 4, 11, 14; Nov, 10; Dec, 15, 16
- Prognostication (see End-of-Life Treatment/Issues)
- Prostate Disease
 - Benign prostatic hyperplasia, Mar, 8; Jul, 22; Oct, 7; Nov, 5
 - Prostate cancer, Mar, 8; Jun, 5; Jul, 11; Aug, 6; Nov, 5
 - Prostatitis, Aug, 6
- Quality Improvement, Jan, 7; Feb, 20; Mar, 6; Sep, 6; Oct, 3; Dec, 16
- Quality of Care, Jan, 4, 7; Feb, 4, 21; Mar, 14, 15, 16; May, 17; Jun, 8, 13; Jul, 10; Aug, 10; Sep, 4, 12; Nov, 19; Dec, 10, 16
- Quality of Life, Feb, 12; May, 30; Jun, 17; Sep, 11; Nov, 2
- Radiology, Jan, 14; Feb, 4, 22; Nov, 9
- Referral Patterns, May, 28; Jul, 9
- Rehabilitation, Jan, 25; Jun, 17; Jul, 22; Dec, 20
- Renal Dialysis/Disease, May, 17; Sep, 7, 17; Dec, 5
- Research Methods/Issues, Jan, 16, 21, 23; Feb, 11, 21, 22; Mar, 19, 20, 25; May, 13, 14, 21, 29; Jul, 22; Aug, 22; Sep, 16, 17, 18; Oct, 6, 14; Nov, 11, 18, 19; Dec, 18, 29
- Respiratory Disease
 - Asthma, May, 1, 19, 30; Jun, 3; Aug, 4;
 - Pneumonia, Jan, 14; May, 6, 31; Jul, 6; Aug, 9; Nov, 2; Dec, 30

continued on page 34

Subject Index

continued from page 33

- Rural Health/Practice, Jan, 8; May, 3, 20, 27; Jun, 15; Aug, 26; Nov, 8; Dec, 8, 29
- Satisfaction with Care (see Patient Preference/Satisfaction)
- Schizophrenia (see Mental Health)
- Seizures, Jan, 13
- Sexually Transmitted Diseases, Dec, 12
- Sinusitis, Dec, 3
- Sleep Apnea, Dec, 19
- Smoking Cessation, Jan, 18; Feb, 2; Mar, 2, 3, 4; May, 1; Jun, 1; Jul, 14; Aug, 1
- Socioeconomic Factors/Status, Jan, 14; Feb, 22; Mar, 11; May, 8, 16; Oct, 9; Dec, 9
- Stroke, Feb, 11; May, 7; Jun, 2, 13; Aug, 4; Dec, 4
- Thyroid Problems, Jun, 4
- Trauma, Jan, 13; Jun, 5, 17; Sep, 8; Dec, 6; Dec, 19, 27
- Tube Feeding (see Diet/Nutrition)
- Tuberculosis, Jan, 25; Mar, 26; May, 29; Oct, 5
- Urinary Incontinence, Feb, 9; Jun, 6; Sep, 11
- Variations in Care (see Practice Variations)
- Violence, Impact on Health, Oct, 11; Dec, 25
- Women's Health
- Breast cancer, May, 9; Jul, 14; Aug, 2
 - Cervical cancer, Aug, 2
 - Hormone replacement therapy, Jan, 12
 - Hysterectomy, Jun, 14; Oct, 6
 - Pregnancy/childbirth, Feb, 22; May, 6, 20; Jun, 3, 11; Jul, 20; Oct, 10; Nov, 4; Dec, 9, 10, 11
 - Treatment/access differences, May, 6, 8, 9; Nov, 9
 - Uterine problems/cancer, Jan, 17

Research Activities - 1998 Author Index

The following is an alphabetical listing of the first authors of journal articles, book chapters, and reports summarized in *Research Activities* during 1998. Month and page number(s) are given.

- Ackerman, SJ, Jan, 14
- Aiken, LH, Mar, 10
- Allison, JJ, Nov, 9
- Alonso, J, Nov, 18
- Anderson, G, Dec, 17
- Arnett, R, Sep, 16
- Asch, DA, Feb, 21
- Atkins, D, Oct, 12
- Ayanian, JZ, Mar, 9; Oct, 6
- Bailit, MH, Jan, 5
- Baine, WB, Oct, 7
- Balas, A, May, 17
- Ballantyne, JC, Aug, 22
- Barak, N, Nov, 18
- Barkan, SE, Aug, 17
- Barron, WM, Jul, 20
- Barry, MJ, Mar, 8
- Bates, AS, Aug, 9
- Bates, DW, Feb, 4, 21; Sep, 1
- Benesch, C, Jan, 23
- Bennett, CL, Jan, 14
- Bennett, T, May, 20
- Berlin, JA, Jan, 21
- Bertakis, KD, Nov, 10
- Bierman, A, Jul, 2
- Binstock, RH, May, 12
- Blixen, C, May, 19
- Blumenthal, D, Aug, 12
- Boult, C, Aug, 8
- Bozzette, SA, Dec, 14
- Bradley, EH, Feb, 21
- Branas, CC, Dec, 27
- Brewer, TF, Oct, 5
- Bronstein, JM, May, 6
- Brown-Peterside, P, Jan, 12
- Broyles, SR, Jan, 21
- Burns, LR, Jan, 6; Dec, 26
- Butler, PA, Aug, 8
- Carson, JL, May, 5
- Castle, NG, Feb, 10; Mar, 14; Jul, 5; Sep, 10
- Chaisson, RE, May, 29
- Cebul, RD, Aug, 4
- Chen, C-S, Aug, 3
- Cherkin, DC, Jan, 20; Jun, 15; Jul, 7; Nov, 3
- Cho, MK, Dec, 18
- Christiansen, CL, Mar, 19
- Clancy, CM, Mar, 5, 14; Aug, 11; Oct, 4
- Clark, F, Jan, 9
- Clarke, JR, Feb, 21
- Clarke, LL, Dec, 10
- Clement, JP, Jan, 5
- Cohen, RA, May, 29
- Cohen, SB, Aug, 22; Sep, 16
- Colby, DC, Jan, 6
- Collins, MM, Mar, 9; Jul, 11; Aug, 6
- Connor, RA, Jan, 4
- Conrad, DA, Sep, 12
- Cook, DJ, Sep, 16
- Cooper, JK, Oct, 11
- Cooper, PF, Jan, 2
- Cowper, PA, Jan, 9
- Crall, JJ, Mar, 18
- Cromwell, J, Mar, 3
- Culpepper, L, Mar, 7
- Cunningham, WE, Jun, 17; Jul, 16
- Curtis, JR, Sep, 3
- deFerranti, SD, Dec, 3
- DeFries, GH, Jun, 15
- DeLong, E, Sep, 13
- Dexter, PR, Jun, 7
- Diehl, M, Mar, 25
- Dillingham, TR, Jun, 17
- Doeksen, GA, Aug, 23
- Dolin, RH, Jul, 22
- Dugan, E, Sep, 11
- Durham, ML, May, 13
- Eisenberg, JM, Jan, 16; Mar, 20; May, 21
- Elixhauser, A, Jan, 3, 23; May, 24
- Ellis, RP, May, 26
- Engels, EA, Jul, 7
- Escarce, JJ, Jan, 4
- Ettner, SL, May, 15
- Feinglass, J, Sep, 16
- Feldman, S, Aug, 13
- Ferris, TG, Jul, 8
- Finkelstein, BS, Jul, 10; Dec, 9

continued on page 35

Author Index

continued from page 34

- Fiscella, K, Aug, 23
Fischer, LR, Dec, 16
Fitzmaurice, JM, Aug, 23
Fix, AD, May, 3
Flanigan, RC, Oct, 7
Fleishman, JA, Jul, 16; Aug, 17
Flood, AB, Aug, 14
Ford, ME, Dec, 5
Forrest, CB, Dec, 24
Fowler Jr, FJ, Nov, 5
Fox, N, Oct, 8
Frank, RG, Aug, 12
Fraser, I, Jan, 1; May, 11; Sep, 5
Freed, GL, Sep, 6
Freedberg, KA, May, 21
Freedman, VA, Jan, 7
Freiman, MP, Nov, 18
Friedman, BS, Aug, 12; Sep, 4
Friedman, RH, Mar, 25
Garrard, J, Aug, 5
Gergen, PJ, May, 1
Gertner, AS, Jun, 5
Gilbert, K, May, 6
Goldberg, HI, Jan, 20; Sep, 6
Goldenberg, RL, Nov, 4
Gray, DT, Aug, 24
Grembowski, DE, Jul, 9
Grey, M, Oct, 14
Gutierrez, B, Nov, 7
Hadley, J, Jan, 6; May, 9, 27
Halamka, JD, Mar, 25
Hall, JA, Jun, 6
Halm, E, Jul, 6
Haltiner, AM, Jan, 13
Handler, A, Oct, 10
Hannan, EL, May, 29
Harmata, R, Feb, 6
Harpole, LH, Feb, 22
Harrington, C, Dec, 12
Harris, DR, May, 8
Hayward, RA, Feb, 7
Hazuda, HP, May, 29
Heck, DA, Sep, 9
Hedberg, A-M, Sep, 2
Hellinger, FJ, Jun, 8; Dec, 18
Hemingway, H, Feb, 22
Hendryx, MS, Dec, 9
Hermann, RC, Sep, 10
Hersey, JC, May, 26
Heymann, SJ, Mar, 26
Hirth, RA, May, 30
Hlatky, MA, Oct, 14
Hogan, AJ, Mar, 26
Holbrook, TL, Sep, 8
Holloway, RG, May, 8
Holman, HR, Feb, 8
Homan, RK, Jun, 11
Howard, DL, Jul, 14
Hsia, DC, Jun, 1
Hunt, LM, Jul, 15
Hupcey, JE, Aug, 24
Hurley, RE, May, 11
Hwang, SW, Dec, 15
Iezzoni, LI, May, 17
Ioannidis, JP, Feb, 11
Jackson, ME, Jan, 11
Jamason, PF, May, 30
Jensen, G, Aug, 7
Jha, AK, Nov, 9
Joffe, MM, Sep, 16
Johnson, TM, Feb, 10
Jollis, JG, Jul, 10
Justice, AC, Dec, 18
Kapur, K, Jan, 21; May, 15
Katz, A, Feb, 20
Kaufman, JS, Dec, 5
Keating, NL, Dec, 15
Keeler, EB, Jan, 23
Kiefe, CI, Feb, 11; Aug, 2
Kienzle, MG, May, 27
Klerman, LV, Nov, 4
Kovner, C, Dec, 7
Kravitz, RL, Mar, 13
Kuperman, GJ, May, 9
Kurowski, B, Aug, 13
Laine, C, Aug, 16
Larme, AC, Dec, 29
Larson, CO, Mar, 17
Lau, J, Feb, 22
Lawlor, EF, May, 27
Lee, SJ, Mar, 8; Dec, 6
Levey, AS, Sep, 17
Levinson, W, Nov, 11
Li, X, Oct, 11
Lipscomb, J, Aug, 24
Lipton, RB, Jun, 12
Litvak, E, Jan, 15
Lorenz, JM, Sep, 8
Lurie, N, May, 11
Lynch, EP, Sep, 2
Magnan, S, Jan, 7
Mangione, CM, Feb, 12
Matchar, DB, Mar, 19
Maynard, C, Feb, 9
McCarren, M, Jun, 3
McCoskey, SK, Oct, 15
McDonald, CJ, Mar, 19
McIlvain, H, Nov, 19
McKenzie, SB, Aug, 5
Meigs, JB, Nov, 5
Meyer, J, Feb, 4
Miller, JE, Mar, 4
Minogue, MF, Aug, 9
Mischler, EH, Dec, 11
Mitchell, PH, Mar, 11
Morath, J, Dec, 26
Morishita, L, Nov, 10
Morrisey, MA, May, 28
Morrison, RS, Oct, 8
Mortimer, JD, Jul, 21
Moy, E, Oct, 1
Mueller, KJ, Jan, 8
Negggers, YH, Feb, 22
Nelson, AF, May, 13
Nelson, EC, May, 10
Netzer JK, Jan, 10
Nichol, G, May, 4
Noel, PH, Oct, 9
Nordyke, RA, Jun, 4
Normand, S-L, Nov, 19
Nyman, JA, Dec, 27
Oka, R, Jan, 20
Ommaya, AK, Jul, 13
Onel, E, Jun, 5
Owens, DK, Aug, 24
Ozminkowski, RJ, Sep, 7
Palmer, H, Feb, 20
Paltiel, AD, Aug, 25
Parmigiani, G, Jan, 24
Pastore, LM, Jul, 20
Pathman, DE, Aug, 11
Patrick, DL, Feb, 13; May, 30
Patterson, JA, Jul, 2
Pearce, KA, Feb, 7
Peckova, M, Nov, 7
Peek, CW, Jan, 10

continued on page 36

Author Index

continued from page 35

- Perez-Stable, EJ, Mar, 17; Jul, 14; Aug, 1
Petty, GW, May, 7; Dec, 4
Phatak, PD, Dec, 25
Phelan, ST, Nov, 4
Picken, HA, Oct, 2
Polanczyk, CA, Dec, 8
Porell, F, Dec, 13
Poses, RM, Aug, 25
Preisser, JS, Jan, 24
Rainwater, JA, Jun, 9
Ramsey, PG, Jul, 8
Ramsey, SD, Feb, 3
Randolph, AG, May, 5; Sep, 4
Ray, WA, Mar, 20
Reilly, CA, May, 30
Remler, DK, Feb, 2
Ren, XS, Sep, 17
Reschovsky, JD, Aug, 25
Revicki, DA, Jun, 18
Rhoades, J, Aug, 25
Riley, AW, Dec, 29
Roberts, R, Mar, 12
Robinson, D, Jun, 6
Robison, VA, Mar, 18
Rogowski, J, Dec, 11
Roper, WL, May, 14
Rosenblatt, RA, Jun, 10
Rothweiler, B, Dec, 6
Russell, LB, Mar, 26
Ryddman, RJ, Aug, 4
Sachs, B, Aug, 26
Safran, DG, Sep, 17
Sage, WM, Jan, 6
Sales, AE, Dec, 26
Samadi, AR, Oct, 10
Scanlon, DP, Jan, 3
Scharfstein, JA, Jan, 24
Schmid, CH, Dec, 25, 29
Schone, B, Nov, 1
Schulman, KA, Jan, 22
Schuster, MA, Dec, 12
Schwartz, May, 30
Selden, TM, Aug, 14
Selim, AJ, Jul, 22
Selker, HP, Dec, 2
Shapiro, MF, May, 27; Jun, 16
Shekelle, PG
Silber, JH, Feb, 5
Sim, I, Mar, 6
Simon, CJ, Jan, 5
Simpson, L, Aug, 10
Singer, JD, Dec, 29
Slade, GD, Feb, 20
Slifkin, RT, May, 3; Nov, 8
Sloan, FA, Jul, 1
Smith, DH, Dec, 16
So, AD, Jul, 12
Solberg, LI, Mar, 6; Oct, 3; Dec, 17
Soumerai, SB, Jun, 10
Spector, WD, Mar, 15, 16; Nov, 19
Splaine, M, Jul, 3
Stafford, RS, Jan, 12
Stang, P, Oct, 2
Starfield, B, May, 28
Steiner, CA, Jun, 9
Stineman, MG, Jan, 25; Jul, 22
Strickland, GT, Mar, 26
Taira, DA, Feb, 13
Tai-Seale, M, Aug, 15
Talcott, JA, Aug, 6
Tamura, T, Jun, 3
Testa, M, Nov, 2
Thompson, RS, Dec, 25
Thorndike, AN, Mar, 2
Tierney, WM, Jun, 15; Dec, 25
Tilford, JM, Nov, 6
Todd, KH, Jun, 16; Jul, 13
Tu, JV, Aug, 26
Turner, BJ, May, 31
Vistnes, JP, May, 18
Wagner, EH, May, 12
Wallace, SP, May, 18, 19
Walston, SL, Dec, 26
Weigers, ME, Mar, 11
Weinick, RM, Mar, 12; May, 16
Welch, G, Jul, 22
Weycker, DA, May, 28
White, AJ, Sep, 7
Whittle, J, Nov, 2
Wholey, DR, Jan, 6
Wilfond, BS, Jul, 12
Willison, DJ, Dec, 3
Wilt, TJ, Nov, 6
Wolinsky, FD, Sep, 18
Wynia, MK, Dec, 30
Young Jr, RC, Jan, 25
Zimmerman, RK, May, 2 ■

Ordering Information

AHCPR makes documents available free of charge through its publications clearinghouse and AHCPR InstantFAX. Other AHCPR documents are available from the National Technical Information Service (NTIS) or the Government Printing Office (GPO). To order AHCPR documents:

(*) Available from the AHCPR Clearinghouse:

Call or write:

AHCPR Publications Clearinghouse
Attn: (publication number)
P.O. Box 8547
Silver Spring, MD 20907
800-358-9295
410-381-3150 (callers outside the
United States only)
888-586-6340 (toll-free TDD service;
hearing impaired only)

() Available from the AHCPR Clearinghouse and from AHCPR InstantFAX:**

For instructions on using InstantFAX, call 301-594-2800. You must call from a fax machine with a telephone handset. Use the key pad on the receiver when responding to prompts. AHCPR InstantFAX operates 24 hours a day, 7 days a week.

(*) Available from NTIS:**

To purchase documents from NTIS, call or write:

National Technical Information Service
(NTIS)
Springfield, VA 22161
703-605-6000, local calls
800-553-6847

Available from GPO:

Call the GPO order desk for prices and ordering information 202-512-1800.

Note: Please use publication numbers when ordering

U.S. Department of Health and Human Services

Public Health Service
Agency for Health Care Policy and Research
2101 East Jefferson Street, Suite 501
Rockville, MD 20852



AHCPR Pub. No 99-0019

February 1999