



Research Activities



U.S. Department of Health and Human Services • No. 271, March 2003

Highlights

Departments

- 2 Children's Health**
- 4 Heart Disease**
- 6 Clinical Decisionmaking**
- 9 Elderly/Long-Term Care**
- 10 Health Care Quality**
- 14 Health Care Delivery**
- 16 Health Care Costs and Financing**
- 19 HIV/AIDS Research**

Regular Features

- 20 Agency News and Notes**
- 22 Announcements**
- 25 Research Briefs**

Outpatient prescription drug-related injuries are common in older patients, but many can be prevented

Medicare patients treated in outpatient settings may suffer as many as 1.9 million drug-related injuries a year because of medical errors or adverse drug reactions not caused by errors, according to a recent study that was cosponsored by the Agency for Healthcare Research and Quality and the National Institute on Aging (AG15979). About 180,000 of these injuries are life-threatening or fatal, and more than half are preventable, according to the researchers. They based their estimates on a study of over 30,000 Medicare enrollees followed during 1999-2000.

The researchers identified 1,523 drug-related injuries or "adverse drug events." Nearly 38 percent of the adverse drug events were characterized as serious, life-threatening, or fatal. About 28 percent of all the drug injuries were considered preventable by a panel of physician reviewers, as were

42 percent of the serious, life-threatening or fatal injuries. Examples of more severe adverse drug events included falls with associated fractures, bleeds requiring transfusion, hypoglycemia, and deterioration of kidney function. Cardiovascular drugs, followed by diuretics, analgesics, hypoglycemic agents, and anticoagulants were the most common medication categories associated with preventable adverse drug events.

When the researchers analyzed why the preventable adverse drug events occurred, they found that 58 percent involved errors made in the prescribing of medications, such as ordering the wrong drug or dose, not educating the patient adequately about the medicine, or prescribing a medication for which there was a known interaction with another drug the patient was already taking. The investigators also found 61 percent of preventable adverse drug events involved mistakes made in monitoring medications, such as inadequate laboratory

Attention readers: See page 20 for exciting news about AHRQ's new quality measures resource.

continued on page 2

Drug-related injuries

continued from page 1

monitoring or a delayed response to symptoms of drug toxicity in the patient. However, the failure of patients to adhere to medication instructions contributed to over 20 percent of the preventable drug-related injuries.

The study was led by Jerry H. Gurwitz, M.D., executive director of the Meyers Primary Care

Institute, a joint endeavor of the Fallon Foundation and the University of Massachusetts Medical School. According to Dr. Gurwitz, computerized prescribing of medications in the office setting may provide the potential to prevent the prescribing of drugs with known interactions, as well as an opportunity to warn the prescriber to intensify monitoring of the patient. Efforts to enhance patient knowledge about their

medication regimens are also essential to reducing the risks of drug-related injuries.

Details are in "Incidence and preventability of adverse drug events among older persons in the ambulatory setting." By Dr. Gurwitz, Terry S. Field, D.Sc., Leslie R. Harrold, M.D., M.P.H., and others, in the March 5, 2003, *Journal of the American Medical Association* 289(9), pp. 1107-1116. ■

Children's Health

Increasing nutritional intake, especially protein, among extremely premature infants in the NICU could improve their growth rate

Achieving adequate growth in extremely premature infants being cared for in neonatal intensive care units (NICUs) is very difficult, but it is critical for their later growth and cognitive development. Unfortunately, 97 percent of infants who weigh less than 3.3 pounds at birth are discharged weighing less than the 10th percentile for corrected gestational age (GA).

The nutritional intake of these vulnerable premature infants in many NICUs could be improved, according to a study supported in part by the Agency for Healthcare Research and Quality (HS07015). The researchers, who were led by Douglas K. Richardson, M.D., M.B.A., of the Harvard School of Public Health, examined the weight growth velocity of 564 extremely premature infants at six NICUs who were less than 30 weeks' GA at birth and stayed in the NICU at least 16 days.

The researchers used case mix (for example, GA, race, and illness severity), exposure to medical practices/complications (for example, respiratory support, postnatal steroids for lung support, and infection), and nutritional intake (kcal/kg/day and protein in g/kg/day) to predict weight growth velocity between day 3 and day 28 (or discharge, if transferred early). Weight growth velocities varied significantly among the six NICUs. However, none of the NICUs provided infants (on average) with the recommended levels of nutrition with respect to calories and protein (ideally 130-150 kcal/kg/day and 3.5-4 g protein/kg/day), and only one NICU approximated intrauterine growth standards of 15 g/kg/day.

Adjustment for case mix and medical factors explained little of this variability, but additional control for calorie and especially protein intake accounted for much of the variability among NICUs. For the average infant, adjusted growth velocity ranged from 10.4 to 14.3 g/kg/day among the sites studied. The model

Research Activities is a digest of research findings that have been produced with support from the Agency for Healthcare Research and Quality. *Research Activities* is published by AHRQ'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 Healthcare Research and Quality, the Public Health Service, or the Department of Health and Human Services. For further information, contact:

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

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

continued on page 3

Nutritional intake of infants

continued from page 2

predicted that adding 1 g/kg/day of protein to the mean intake for this sample would increase growth by 4.1 g/kg/day.

See “Intersite differences in weight growth velocity of extremely premature infants,” by Irene E. Olsen, Ph.D., R.D., Dr. Richardson, Christopher H. Schmid, Ph.D., and others, in the December 2002 *Pediatrics* 110(6), pp. 1125-1132. ■

AHRQ study links secondhand smoke to tooth decay in children

Young children who are exposed to secondhand smoke have a much higher rate of tooth decay than children who do not grow up around smokers, according to a recent study that was supported in part by the Agency for Healthcare Research and Quality. The study is the first in the United States to associate secondhand, or passive, smoking with tooth decay, a public health problem that costs an estimated \$4.5 billion annually.

Although the occurrence of dental cavities in children has declined dramatically in the United States, little headway has been made in reducing cavities in children living in poverty, who generally have less access to dental care and appear to be more vulnerable to dental decay. Based on data from household interviews and health examinations of approximately 4,000 children ages 4 to 11 years, the study found that children had an increased risk of tooth decay if they had high levels of cotinine, a by-product of nicotine that is consistent with secondhand smoke exposure.

About 32 percent of the children with cotinine levels consistent with secondhand smoke exposure had decayed surfaces in their baby (deciduous) teeth, compared with 18 percent of children with lower levels of

cotinine. The higher risk of cavities in tobacco-exposed children persisted after controlling for other factors such as poverty and frequency of dental visits. However, the study did not find a similar association between secondhand smoke exposure and cavities in permanent teeth.

Previous research has shown that nicotine promotes the growth of the bacteria that can cause tooth decay, so when mothers or others who smoke kiss children, they would tend to pass on these germs. According to the study's lead author, C. Andrew Aligne, M.D., of Pediathink, a child health think tank in Rochester, NY, who worked in conjunction with researchers from the University of Rochester and the Center for Child Health Research of the American Academy of Pediatrics, the results provide further evidence that passive smoking is harmful and that all children should be allowed to grow up in a smoke-free environment.

For more information, see “Association of pediatric dental caries with passive smoking,” by Dr. Aligne, Mark E. Moss, D.D.S., Ph.D., Peggy Auinger, M.S., and Michael Weitzman, M.D., in the March 12, 2003 *Journal of the American Medical Association* 289(10), pp. 1258-1264. ■

Also in this issue:

Angioplasty vs. thrombolytic therapy for high-risk heart attack patients, see page 4

Outcomes of CABG surgery and angioplasty, see page 5

Screening for Down syndrome, see page 6

Transplant surgeons' decisions to accept or reject organs, see page 8

Adult children helping elderly parents with personal care, see page 9

Focus on health care quality, see page 10

Relationship of nurse staffing and hospital quality of care, see page 12

Long-term posttraumatic stress disorder after major trauma, see page 14

Career satisfaction among physicians, see page 15

Impact of drug cost-sharing on physicians' prescribing practices, see page 16

State regulation of health insurers, see page 17

Costs associated with genital herpes, see page 18

Problems with inpatient care for HIV, see page 19

Whenever possible, heart attack patients at high risk of death should receive angioplasty, not thrombolytic therapy

Despite growing evidence that heart attack patients who receive coronary angioplasty fare better than those who simply receive thrombolytic (clot-busting) medication, many hospitals don't have the facilities to perform angioplasty, sophisticated surgery that opens up blocked heart vessels. Treating patients at high risk of death from heart attack with thrombolytic medication may be difficult to justify, if nearby primary angioplasty is available. However, for most patients, thrombolytic therapy is an effective alternative, concludes a study supported in part by the Agency for Healthcare Research and Quality (HS10280 and HS10064).

Early identification of high-risk patients may allow most of the

benefits of angioplasty to be captured without necessitating a massive restructuring of cardiac services, according to researchers from Tufts-New England Medical Center. They examined the results of 10 randomized controlled trials of a community-based sample of 1,058 patients who received reperfusion therapy for heart attack and estimated the benefits of angioplasty across different baseline individual risks.

The researchers calculated that even if all patients achieved the same relative risk reduction regardless of their baseline risk, 68 percent of the benefit of population-wide angioplasty could be captured by treating just the highest risk quartile of patients, and 87 percent of the possible

population-wide benefit could be captured by treating the higher risk half of patients. In this sample, there were no deaths in the lowest risk half of patients, and 80 percent of all deaths occurred in the highest risk quartile of patients. Assuming a constant relative risk reduction, the researchers calculated that treating only the 39 percent of patients with the highest risk would result in no more deaths than population-wide angioplasty.

See "Is primary angioplasty for some as good as primary angioplasty for all?" by David M. Kent, M.D., M.S., Christopher H. Schmid, Ph.D., Joseph Lau, M.D., and Harry P. Selker, M.D., M.S.P.H., in the December 2002 *Journal of General Internal Medicine* 17, pp. 887-894. ■

Imaging of coronary blood flow improves ED triage decisions for patients who have symptoms of acute cardiac ischemia

Every year more than 6 million patients arrive at the hospital emergency department (ED) with chest pain or other symptoms that suggest acute cardiac ischemia (i.e., heart attack or unstable angina). Most patients without obvious ischemic electrocardiogram (ECG) changes who are hospitalized or observed in special ED units, ultimately prove not to have acute ischemia. However, a few patients who actually have acute ischemia are

mistakenly sent home from the ED. Fortunately, imaging coronary blood flow in the ED can reduce unnecessary hospitalization of some patients without reducing appropriate hospitalization of patients with acute cardiac ischemia, according to a study that was supported in part by the Agency for Healthcare Research and Quality (HS09110).

continued on page 5

Get AHRQ news fast—Subscribe to the Agency's electronic newsletter!

If you want the latest information from AHRQ on new RFAs, research findings, conferences, and more, just subscribe to AHRQ's electronic newsletter. All you need is a computer and an e-mail address. Here's how:

1. Send an e-mail message to: listserv@list.ahrq.gov
2. In the subject line type: Subscribe
3. In the body of the message type: sub public_list-L your full name
4. That's it. You will receive an e-mail confirmation.

Questions? Please send an e-mail to Howard Holland in AHRQ's public affairs office at hholland@ahrq.gov

Coronary blood flow imaging

continued from page 4

Researchers led by Harry P. Selker, M.D., of Tufts-New England Medical Center, randomized 2,475 ED patients at 7 hospitals who were suspected of having acute cardiac ischemia but who had normal or nondiagnostic initial ECG changes of acute ischemia, to one of two evaluation strategies: the usual ED evaluation or the usual evaluation supplemented with results from a resting single-photon-emission computed tomography (SPECT) myocardial perfusion imaging with injection of 20 to 30 mCi of Tc-99m sestamibi. This provides imaging of myocardial blood flow at the time of ED evaluation, giving the ED physician quick information.

The researchers examined the effect of each strategy on the appropriateness of the triage decision either to admit a patient to the hospital for observation or to

discharge the patient directly home. Among patients with acute cardiac ischemia, there were no differences in ED triage decisions between those receiving standard evaluation and those who also had sestamibi scan. Among patients with a heart attack, 97 vs. 96 percent (with scan) were hospitalized, and among those with unstable angina, 83 vs. 81 percent (with scan) were hospitalized. However, among patients who did not have acute cardiac ischemia, only 42 percent of scanned patients were unnecessarily hospitalized compared with 52 percent of usual care patients.

More details are in "Myocardial perfusion imaging for evaluation and triage of patients with suspected acute cardiac ischemia," by James E. Udelson, M.D., Joni R. Beshansky, R.N., M.P.H., Daniel S. Ballin, M.D., and others, in the December 4, 2002 *Journal of the American Medical Association* 288(21), pp. 2693-2700. ■

Cardiac bypass surgery patients have better 1-year outcomes than similar patients who have coronary angioplasty

Percutaneous transluminal coronary angioplasty (PTCA) and coronary artery bypass graft surgery (CABG) are coronary revascularization techniques with similar clinical outcomes, with PTCA gaining favor as first-line treatment for most patients with coronary artery disease. However, 1 year after the procedures, bypass patients have better physical function and quality of life and greater relief from angina than PTCA patients, according to a study supported in part by the Agency for Healthcare Research and Quality (HS11282).

The PTCA-related diminished quality of life and limited functioning were in most cases attributed to the adverse impact of restenosis (a renarrowing or constriction of the affected artery) that affected one-fourth of PTCA

patients, explains John A. Spertus, M.D., M.P.H., of Saint Luke's Hospital. He and other Missouri researchers used the Seattle Angina Questionnaire (SAQ) to analyze the health status and functioning of 475 patients (252 who underwent PTCA and 223 who underwent CABG) before the procedure, then monthly for 6 months, and again at 1 year. During PTCA, a catheter is threaded into the blocked artery, and the balloon on its tip is inflated to flatten plaque against the arterial wall to open up the artery.

In-hospital, 6- and 12-month survival rates were not different between the two groups. However, 25 percent of PTCA patients required at least one reintervention (due to reblocking of the affected artery) during the study period, compared with only 1 percent of CABG patients. Although physical

function decreased for CABG patients at 1 month, it improved and was better than the PTCA group by 12 months. Relief of angina was greater for CABG than PTCA patients when analyzed over time, principally due to the adverse effects of restenosis in the PTCA group. After 1 year, the quality of life of CABG patients had improved to a greater extent than it had for PTCA patients, even after controlling for differences between the two groups that existed before the procedures.

More details are in "A comparison of the recovery of health status after percutaneous coronary intervention and coronary artery bypass," by A. Michael Borkon, M.D., Gregory F. Muehlebach, M.D., John House, M.S., and others, in the November 2002 *Annals of Thoracic Surgery* 74, pp. 1526-1530. ■

Note: Only items marked with a single (*) or double (**) asterisk are available from AHRQ. Items marked with a single asterisk (*) are available from AHRQ's clearinghouse. Items with a double asterisk (**) are also available through AHRQ InstantFAX. Three asterisks (***) indicate NTIS availability. See the back cover of *Research Activities* for ordering information. Consult a reference librarian for information on obtaining copies of articles not marked with an asterisk.

First trimester ultrasound identifies more cases of Down syndrome than amniocentesis and is more cost effective

If a fetus has a greater-than-normal amount of swelling at the back of the neck (nuchal translucency), there is a high likelihood that the baby will have Down Syndrome. The current invasive second trimester screening for Down syndrome via amniocentesis identifies only 50 to 60 percent of Down syndrome fetuses. First trimester ultrasound screening for nuchal translucency (NT), either alone or with serum markers of the condition, can identify more Down syndrome fetuses with fewer procedure-related losses and is more cost effective than the currently used second trimester amniocentesis. That's the conclusion of a study supported in part by the Agency for Healthcare Research and Quality (National Research Service Award training grant T32 HS00086).

However, if the combined first trimester ultrasound and blood screening strategy were recommended today, there would

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

These calculations were based on a screening decision model the researchers developed to apply to the entire population of the United States and the 4 million infants born here each year. They designed a decision tree to compare four possible screens for Down syndrome: current second-trimester

expanded AFP test during amniocentesis (low AFP levels correlate with Down syndrome); first trimester NT screen; first trimester serum screen; and combined first trimester NT and serum screen. The combined screen identified 3,833 Down syndrome fetuses, the NT screen alone 3,413, and the first-trimester serum screen, 2,993 compared with 2,446 identified by the currently used expanded AFP screen.

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

Removal of axillary lymph nodes substantially reduces quality of life for many elderly women with localized breast cancer

It has been standard practice to remove lymph nodes in the armpit (axillary) during mastectomy (removal of the entire breast) or after lumpectomy to find out if the cancer has spread to the lymph nodes. This usually requires a 4 to 6 inch incision, removal of 10 to 30 lymph nodes, and insertion of a drainage tube.

Although this lymph node surgery creates arm pain and function problems for some women, which in turn can affect mental outlook, it does not lessen fears about cancer recurrence, according to a new study. This suggests that the risks may outweigh the potential benefits of axillary lymph node dissection for these women, concludes lead author, Jeanne S. Mandelblatt, M.D., M.P.H., of Georgetown University.

In the study supported in part by the Agency for Healthcare Research and Quality (HS08395), Dr. Mandelblatt and her colleagues examined the quality of life of 571 elderly women who were diagnosed with stage 1 and 2 breast cancer between 1995 and 1997 from 29 hospitals in five regions. They interviewed the women 3 months after surgery and again 12 and 24 months after surgery. They asked the women about problems with arm functioning (for example, chronic swelling or loss of arm movement), physical and mental functioning, overall impact of breast cancer on their lives, and worry about cancer recurrence.

continued on page 7

Breast cancer

continued from page 6

Sixty percent of women reported arm problems at some time in the 2 years after surgery (83 percent of those who underwent axillary surgery and 17 percent who did not). Women who reported arm problems in the 2 years after surgery also reported using significantly more physical therapy services (22 vs. 6 percent) and received slightly more family help (23 vs. 17 percent) than women without arm problems. Arm problems also were the primary determinant of reduced physical and mental functioning, after

controlling for other factors. The authors conclude that the role of axillary surgery should be reexamined in older women. They may benefit from newer sentinel lymph node biopsy of only a few nodes, which is associated with less pain and fewer complications.

See “Sequelae of axillary lymph node dissection in older women with stage 1 and 2 breast carcinoma,” by Dr. Mandelblatt, Stephen B. Edge, M.D., Neal J. Meropol, M.D., and others, in the December 15, 2002 *Cancer* 95(12), pp. 2445-2454. ■

Paget-Schroetter syndrome should be considered whenever a person with repetitive arm motion has pulmonary hypertension

When patients with repetitive arm motion, such as tennis players or hairdressers, have pulmonary hypertension, thrombosis of the axillary veins under the clavicle—also called Paget-Schroetter syndrome—should be suspected. This syndrome has been associated with exertion of the arms and is also called “effort thrombosis.” Sanjay Saint, M.D., M.P.H., of the University of Michigan, and colleagues describe the case of a 17-year-old athlete—a discus thrower on his school’s track team—whose athletic efforts could certainly have contributed to compression of the subclavian vein and thrombosis (blood clots) in his arms that traveled to his lungs (pulmonary embolism).

The researchers point out that these diagnoses are not easy, especially in seemingly robust adolescents. The diagnosis in this case was most likely delayed because a physically robust patient had atypical signs and an uncommon disease. Pulmonary embolism is rare in children and adolescents (7.8 per 10,000 hospital admissions for adolescents or young adults). Most patients have symptoms of venous obstruction such as pain, swelling, and bluish discoloration. Nonocclusive thromboses, as seen in this patient, may not have local symptoms, instead becoming symptomatic only after pulmonary embolization.

For example, this patient had no jugular venous distention even at

the time when his right ventricular and pulmonary arterial pressures were markedly elevated. Catheter-directed thrombolytic therapy followed by decompression of the thoracic outlet has become the standard of care for Paget-Schroetter syndrome. Outcomes are better with early thrombolytic therapy, according to Dr. Saint, whose research is supported in part by the Agency for Healthcare Research and Quality (HS11540).

See “The unusual suspect,” by Sandra Bliss, M.D., Steven Weinberger, M.D., Mark Meider, M.D., and Dr. Saint, in the December 5, 2002 *New England Journal of Medicine* 347(23), pp. 1876-1881. ■

Gastric bypass can dramatically improve the health of severely obese individuals at a reasonable cost

The prevalence of severe obesity among nonelderly U.S. men and women increased by 114 percent between 1991 and 1999. Dietary therapy, even together with exercise and behavior therapy, is rarely successful in these patients, who typically have a body mass index (BMI) of more than 40 kg/m². BMI is body weight in kilograms divided by height in meters squared. A person who has a BMI of 25 or less is considered to be at normal weight.

Given the numerous health risks of severe obesity, gastric bypass (which divides the stomach to form a small gastric pouch) has the potential to improve health dramatically at a reasonable cost, concludes a study supported by the Agency for Healthcare Research and Quality (National Research Service Award training grant T32 HS00083).

continued on page 8

Gastric bypass surgery

continued from page 7

Benjamin M. Craig, M.S., of the University of Wisconsin, and Daniel S. Tseng, M.D., M.S., of Washington Hospital Center, performed a cost-effectiveness analysis of gastric bypass versus no treatment for relatively healthy women and men (aged 35 to 55 years) with a BMI between 40 and 50 kg/m², for whom conservative therapies such as diet, exercise, behavior therapy, and medication, had been unsuccessful. Although gastric bypass was associated with the risk of postoperative death and complications, it was also estimated to result in a mean 58 percent loss of excess weight (above a BMI of 22) 5 years later.

In all risk subgroups, the cost-effectiveness ratios of gastric bypass versus no treatment were favorable, at

less than \$50,000 per quality-adjusted life year (QALY). The ratios ranged from about \$5,000 to \$16,000 per QALY for women and from about \$10,000 to \$35,600 per QALY for men, depending on age and initial BMI. However, because the reduction in lifetime medical cost was no greater than the cost of treatment in any subgroup, gastric bypass was not cost-saving from the payer perspective. This study did not include severely obese patients with chronic medical conditions for whom the surgical risks, as well as the benefits of weight loss, would be greater.

More details are in "Cost-effectiveness of gastric bypass for severe obesity," by Mr. Craig and Dr. Tseng, in the October 15, 2002 *American Journal of Medicine* 113, pp. 491-498. ■

Transplant surgeons sometimes reject a poor quality liver in hopes of getting a better organ later

When an organ is obtained from a cadaveric donor, patients on the transplant waiting list are ranked (with the sickest patients placed at the top of the list in their respective regions), and the organ is offered by phone to patients with matching blood type and their doctors in descending order. Despite the scarcity of organs suitable for transplant, 45 percent of livers and similarly high percentages of other types of organs are rejected by the first surgeon to whom they are offered. It appears that surgeons reject low quality organs (for example, from patients who die of stroke versus trauma) for organs from relatively healthy patients in the hope that they will be offered a better organ in the future, explains David H. Howard, Ph.D., of Emory University.

For the study, which was supported in part by the Agency for

Healthcare Research and Quality (National Research Service Award training grant T32 HS00055), Dr. Howard used data from the U.S. national transplant registry to develop a model of the surgeon's decision to accept or reject organs. He specifically analyzed data on all liver transplants performed between April 1994 and the end of 1997, excluding pediatric patients, previously transplanted patients, and multiple organ recipients. During this period, the United Network for Organ Sharing used a three-level status system to rank patients on the waiting list, with status 1 being the sickest patients (expected to live less than a week without a transplant) and status 3 being the least sick.

The author used this system to characterize the health status of patients at the time they were transplanted in order to capture surgeons' subjective judgment

about patients' level of time-varying health. Status 3 patients, who are placed at the bottom of regional lists, received fewer low-quality organs (38 vs. 43 percent) than status 1 and 2 patients, reflecting the propensity of their surgeons to reject poor quality organs. Dr. Howard suggests that surgeons may have an incentive to reject organs that would lower their hospitals' survival rates. However, he notes that the problem may be self-remedying, since an ever-growing waiting list provides new incentives to accept poor quality organs.

See "Why do transplant surgeons turn down organs? A model of the accept/reject decision," by Dr. Howard, in the *Journal of Health Economics* 21, pp. 957-969, 2002. ■

Chiropractic and medical care for low back pain are comparable in their effectiveness over 6 months of followup

Chiropractic care, the most commonly used alternative therapy for back problems, is as effective as medical care alone for reducing disability and pain in patients with low back pain. Adding physical therapy to medical care may be marginally more effective than medical care alone for reducing disability, but the benefit is small, according to Hal Morgenstern, Ph.D., and his colleagues from the University of California, Los Angeles, and the Southern California University of Health Sciences. Their research was supported in part by the Agency for Healthcare Research and Quality (HS07755).

The researchers randomly assigned 681 low back pain patients who visited a large managed care facility from late 1995 through late 1998 to four treatment groups: medical care with and without physical therapy and chiropractic care with and

without physical modalities (heat or cold therapy, ultrasound, and electrical muscle stimulation or EMS). Medical care included proper back care instructions; strengthening and flexibility exercises; prescriptions for pain medicine, muscle relaxants, and antiinflammatory agents; and recommendations about bed rest, weight loss, and physical activities. Chiropractic care included spinal manipulation or another spinal-adjusting technique and instruction in proper back care. Physical therapy could consist of heat or cold therapy, ultrasound, EMS, soft-tissue and joint mobilization, traction, supervised therapeutic exercise, and strengthening and flexibility exercises.

Based on questionnaire responses at 2 weeks, 6 weeks, and 6 months, most patients in all treatment groups had 2-point or greater reductions (on a 0 to 10 point scale) in their most severe

pain by 6 months, with the greatest relief occurring in the first 2 weeks. All groups had more than a 3-point reduction (on a 0 to 24 point scale) in disability by 6 months. Patients in the medical and chiropractic care-only groups had similar mean changes in low back pain intensity and disability during each followup evaluation.

More details are in "A randomized trial of medical care with and without medical therapy and chiropractic care with and without physical modalities for patients with low back pain: 6-month follow-up outcomes from the UCLA low back pain study," by Eric L. Hurwitz, D.C., Ph.D., Dr. Morgenstern, Philip Harber, M.D., M.P.H., and others, in the October 15, 2002 *Spine* 27(20), pp. 2193-2204. ■

Elderly/Long-Term Care

Regular help with personal care from adult children substantially reduces the likelihood of nursing home use by the elderly

One-third of people aged 70 and older with physical limitations receive regular help from their children with basic personal care, such as eating, bathing, dressing, or maneuvering around their home, although only 7 percent receive help most of the time. About 11 percent receive both personal care and help with shopping and chores, according to a new study. These numbers may dwindle further, with more divorces, more women working, and couples having fewer children, which limit the number of family members available to provide informal care to frail elders at home.

The study findings underscore the importance of family caregiving. For example, the researchers found that disabled Americans aged 70 and older who received help from their adult children with basic personal care were 60 percent less likely to use nursing home care over a subsequent 2-year period than similar elders who did not receive family assistance. Help with activities such as preparing meals or shopping did not significantly reduce their use of nursing home services. The likelihood that frail elders would receive help increased with the number of adult children. Black and Hispanic elders were

continued on page 10

Personal care for elders

continued from page 9

substantially more likely than whites to receive help from their children.

Initiatives such as respite care, tax breaks for family caregivers, and requirements that employers offer time off or flexible schedules for workers with caregiving responsibilities could reduce costly nursing home admissions (\$36,000

a year in 1996, with 30 percent paid out of pocket) by encouraging more families to provide care for elderly Americans, conclude Anthony T. Lo Sasso, Ph.D., of Northwestern University, and Richard W. Johnson, Ph.D., of the Urban Institute. With support from the Agency for Healthcare Research and Quality (K02 HS11294), they analyzed data on elderly health, assistance from family members, characteristics of

adult children, and nursing home admissions from a nationally representative longitudinal survey of over 7,000 Americans aged 70 and older living in the community. The survey was conducted in 1993 and again in 1995.

See "Does informal care from adult children reduce nursing home admissions for the elderly?" by Drs. Lo Sasso and Johnson, in the fall 2002 *Inquiry* 39, pp. 279-297. ■

Health Care Quality

Four AHRQ-funded studies focus on health care quality

Four new articles, featured in the March/April 2003 issue of *Health Affairs*, focus on different aspects of health care quality. The articles are authored by researchers at the Agency for Healthcare Research and Quality. They examine a range of issues: hospital procedure volume used as a proxy for quality; patient safety indicators as a way to benchmark performance and target opportunities for improvement; the role of insurance coverage in explaining racial and ethnic disparities; and high-cost priority conditions identified as areas of focus for improving quality of care. Reprints of articles are available from AHRQ. See the back cover of *Research Activities* for ordering information.

Staffing linked to different outcomes at low- and high-volume hospitals. Death rates were significantly higher at hospitals that performed fewer of certain complex procedures, such as coronary artery bypass graft or esophageal cancer surgery, than at hospitals that performed a larger number of those procedures.

AHRQ researchers Anne Elixhauser, Ph.D., Claudia Steiner, M.D., M.P.H., and Irene Fraser, Ph.D., examined data from 2000 on 10 procedures using the Nationwide Inpatient Sample, part of AHRQ's Healthcare Cost and Utilization Project, to provide a nationwide view of the link between death rates and how often a hospital performs a procedure.

Although the majority of U.S. patients received their procedures in high-volume hospitals, for 7 of 10 procedures examined, over 75 percent of hospitals would be considered low volume. The researchers also found that low-volume hospitals tended to have lower numbers of residents and registered nurses (RNs) than high-volume hospitals. However, for two procedures, heart transplants and pediatric heart surgery, death rates were the same at high- and low-volume hospitals, and low-volume hospitals had RN and resident staffing equal to or higher than high-volume hospitals.

The researchers found that low-volume hospitals tended to be small, urban non-teaching, or rural institutions that had for-profit

ownership, or they were located in the southern region of the United States.

Details are in "Volume thresholds and hospital characteristics in the United States," by Drs. Elixhauser, Steiner, and Fraser, in the March/April 2003 *Health Affairs*, 22(2), pp. 167-177. Reprints (AHRQ Publication No. 03-R026) are available from AHRQ.**

Patient safety indicators based on hospital data can identify potential safety-related problems.

A test of AHRQ's soon-to-be released Patient Safety Indicators (PSIs) demonstrates that, in general, the number of potential safety-related events measured by most non-obstetric PSIs decreased between 1995 and 2000. The PSIs, developed by AHRQ's Evidence-based Practice Center at the University of California-Stanford, use diagnosis codes to detect potential adverse events in patients who have undergone medical or surgical care. The test of the 20 PSIs, led by Patrick S. Romano,

continued on page 11

Health care quality

continued from page 10

M.D., M.P.H., of the University of California at Davis, provides a national profile of patient safety. The PSIs were designed for use with hospital administrative data and were applied in this study to AHRQ's Nationwide Inpatient Sample, part of the Agency's Healthcare Cost and Utilization Project, to identify trends in potential patient safety problems.

The study found that most technical complications, such as postoperative hemorrhage or reopening of a wound, decreased between 1995 and 2000, except for a 7 percent rise in the number of accidental punctures and lacerations. Also during that time, obstetric trauma decreased about 3 percent, foreign bodies left during procedures decreased 7 percent, anesthesia complications decreased 18 percent, and transfusion reactions decreased 40 percent.

The PSIs will provide a portion of the analysis for AHRQ's National Healthcare Quality Report, which is due out later this year. They will be useful primarily as screening tools for hospitals and hospital systems, medical groups, health plans, and purchasers to identify potential patient safety problems that merit further investigation. Providers may use them to screen for preventable complications and to identify opportunities for quality improvement on the system level.

Details are in "A national profile of patient safety in U.S. hospitals," by Dr. Romano, Jeffrey J. Geppert, Sheryl Davies, and others, in the March/April 2003 *Health Affairs*, 22(2), pp. 154-166. Reprints (AHRQ Publication No. 03-R027) are available from AHRQ.**

Insurance coverage alone cannot explain racial and ethnic disparities in care. Racial and ethnic minority groups continue to have poorer access to quality health care services and different patterns of health care use relative to whites, according to 1996-1999 data from AHRQ's Medical Expenditure Panel Survey (MEPS). To try to identify the reasons for these disparities, AHRQ researchers Samuel H. Zuvekas, Ph.D., and Gregg S. Taliaferro, Ph.D., examined the role that insurance coverage, the delivery system, and external factors play in explaining persistent disparities in access to health care among racial and ethnic groups of all ages. They found that variations in health insurance coverage are not the only source of disparities in access and actually may provide only a small part of the explanation.

Their findings indicate that while health insurance coverage is important, differences in coverage explained only about one-third of disparities between Hispanics and whites and two-fifths of disparities between blacks and whites. External factors, such as employment, job characteristics, marital status, income, and education are key reasons why minorities are less likely than whites to have private health insurance. However, disparities exist even among well-insured racial and ethnic minority groups, and large portions of disparities remain unexplained. The researchers conclude that health care policies that simply seek to increase insurance coverage may not be sufficient to eliminate racial and ethnic disparities in health care.

Details are in "Pathways to access: Health insurance, the health care delivery system, and racial/ethnic disparities, 1996-

1999," by Drs. Zuvekas and Taliaferro, in the March/April 2003 *Health Affairs*, 22(2), pp. 139-153. Reprints (AHRQ Publication No. 03-R028) are available from AHRQ.**

High-cost conditions identify areas of focus to improve quality of care. The most expensive conditions in the United States are primarily chronic diseases, such as heart disease (\$58 billion per year), cancer (\$46 billion per year), and mental illness (\$30 billion per year), according to a new analysis of data from AHRQ's 1997 MEPS examining the 15 most expensive conditions in the United States. However, AHRQ analysts Joel W. Cohen, Ph.D., and Nancy Krauss, also found that several of the top 15 conditions were acute conditions, such as trauma, pneumonia, and infectious diseases.

Their findings indicate that most individuals with at least one of the top 15 conditions had more than one, with costs incurred by the affected individuals dramatically increasing as the number of coexisting conditions increased. In general, the people who used the most hospital inpatient services had the highest expenses. Private insurance and Medicare were the primary sources of payment for most of the top 15 conditions. The findings highlight factors, such as complex financing arrangements and coexisting conditions, that are likely to complicate efforts to reform the current health care system.

Details are in "Spending and service use among people with the fifteen most costly medical conditions, 1997," by Dr. Cohen and Ms. Krauss, in the March/April 2003 *Health Affairs*, 22(2), pp. 129-138. Reprints (AHRQ Publication No. 03-R029) are available from AHRQ.** ■

Hospitals that had a lower proportion of licensed nurses in the 1990s had higher rates of patient bed sores and pneumonia

Hospital cost concerns during the 1990s led to reductions in nurse staffing and less use of licensed nurses for patient care. At the same time, the patients being hospitalized were sicker and needed more intensive nursing care. The result was heavy patient loads for nurses, nurse burnout and dissatisfaction, and alarm about declining quality of hospital care. A new study of Pennsylvania hospitals confirms increased patient load among licensed nurses in the 1990s as well as a greater incidence of bed sores and pneumonia in hospitals with a lower proportion of licensed nurses, that is, registered nurses (RNs) and licensed practical nurses (LPNs).

Ensuring adequate licensed nurse staffing should be an area of major concern to hospital management, according to Lynn Unruh, Ph.D., R.N., of the College of Health and Public Affairs in Orlando, FL. Her work was supported in part by the Agency for Healthcare Research and Quality (HS09991). Dr. Unruh used a sample of all Pennsylvania acute care hospitals from 1991 to 1997 to examine the changes in licensed nursing staff and to assess the relationship of licensed

nursing staff with hospital patient problems that are sensitive to nursing care: lung collapse, decubitus ulcers (pressure sores or bed sores), falls, pneumonia, post-treatment infections, and urinary tract infections.

Because hospital patient acuity increased 21 percent from 1991 to 1997, licensed nursing staff per 1,000 acuity-adjusted patient days of care fell nearly every year, for a total of 14.2 percent. Thus, the intensity of nursing care increased, while at the same time the proportion of licensed nurses to total nursing staff fell 2 percent. Hospitals with more licensed nurses had significantly lower incidences of lung collapse, decubitus ulcers, falls, and urinary tract infections. Hospitals with a greater proportion of licensed nurses/total nursing staff had significantly lower rates of decubitus ulcers and pneumonia. These results support the use of team nursing when there is an adequate number of licensed nurses.

More details are in "Licensed nurse staffing and adverse events in hospitals," by Dr. Unruh, in the January 2003 *Medical Care* 41(1), pp. 142-152. ■

Researchers examine efforts to improve primary care for depression

Despite the availability of effective treatments for depression, rates of appropriate treatment for depression remain low nationally, particularly in primary care, where only about one-fourth of depressed patients receive appropriate care. Primary care patients often resist psychiatric labeling and treatment, and primary care doctors typically have little training in depression care and may face barriers to referring patients to specialty mental health services.

Three recent studies on primary care for depression are summarized here, and all provide some indication that there is hope that the high rate of unmet need for depression treatment can be relieved. The first study demonstrates the effectiveness of quality improvement programs,

even for depressed patients with comorbid medical illness; the second documents the effectiveness of guideline-concordant care; and the third shows that over time, primary care clinicians have gained increased confidence in their ability to provide such treatment.

All three studies were supported in part by the Agency for Healthcare Research and Quality. The first two studies (HS08349), which were led by Kenneth B. Wells, M.D., M.P.H., of RAND, examined the effects of two Partners in Care (PIC) quality improvement programs on primary care for depression. PIC was a randomized trial of practice-initiated QI interventions versus usual care and an observational study of outcomes of appropriate treatment. The third study (HS07649), which was led by

Jonathan B. Brown, M.P.P., Ph.D., of the Kaiser Permanente Center for Health Research, examined primary care physicians' confidence in their ability to treat depression.

Koike, A.K., Unutzer, J., and Wells, K.B. (2002, October).

"Improving the care for depression in patients with comorbid medical illness." *American Journal of Psychiatry* 159(10), pp. 1738-1745.

Patients who are depressed and have other medical problems such as severe headaches, arthritis, diabetes, or major paralysis, may have a more difficult time than other patients in dealing with their depression. The good news is that these patients can benefit from

continued on page 13

Depression

continued from page 12

managed primary care quality improvement (QI) programs for depression that increase access to antidepressant medications and psychotherapy. However, they still are more likely to have a depressive disorder 6 and 12 months later than those who are depressed but do not have other illnesses. Care management programs that integrate the management of medical illnesses and depression may be an effective approach to treat depression in these complex patients, suggest the researchers.

They compared treatment and outcomes for 1,356 patients with mild to major depression from 46 managed primary care clinics and assessed the impact of two QI programs on their outcomes. They randomly assigned clinics to usual care or one of two QI programs for depression. Clinics in the usual care group received only written depression treatment guidelines by mail. Both QI programs included trained experts and nurse specialists to provide patient education and assessment; one also provided nurse specialists as case managers for medication followup, and the other had psychotherapists who offered individual or group cognitive behavior therapy at a reduced copayment rate. Patients in either QI program could choose treatment with antidepressant medication, psychotherapy, or no treatment.

At both 6 and 12 months, QI patients who were only depressed and depressed patients with other medical problems had less probable depressive disorders than similar usual care patients. Nevertheless, at 6 and 12 months, probable depressive disorders were significantly more likely in patients with one or more comorbid medical conditions (over 43 percent still had probable depressive

disorder) than patients with depression only, even though there were no significant differences in antidepressant use or specialty counseling between the two groups.

Schoenbaum, M., Unutzer, J., McCaffrey, D., and others. (2002, October). "The effects of primary care depression treatment on patients' clinical status and employment." *Health Services Research* 37(5), pp. 1145-1158.

In this study, depressed primary care patients who received appropriate care for their depression were less likely to be depressed 6 months later and were more likely to be employed and have a better quality of life than depressed patients who didn't receive appropriate care. The investigators analyzed data from the PIC study on quality improvement for care of depressed primary care patients. The study included 938 adults with depressive disorder or with depressive symptoms and a lifetime history of major depression in 46 managed primary care clinics in five States. They examined the impact of appropriate depression care (that is, medication and/or psychotherapy) compared with no care or insufficient care on health outcomes and employment 6 months later.

Overall, 44 percent of patients received appropriate care during 6 months of followup. Patients in usual care practices were less likely than those in QI practices to have appropriate care. At 6 months, patients with appropriate care had lower rates of depressive disorder (24 vs. 70 percent), that is, they were less likely to still suffer from problems with sleep, fatigue, and weight; had better mental health-related quality of life; and had higher rates of employment (72 vs. 53 percent), compared with patients who did not receive appropriate care.

These findings inform public policy debates about the desirability of parity of coverage for mental health and physical health care by demonstrating the real-world effectiveness of appropriate depression care. The results of depression care on employment status may be particularly useful, since this outcome has not been examined in clinical trials. Strikingly, the estimated increase in employment due to treatment was very similar to the estimated decrease in employment due to depression reported in other studies.

Shye, D., Brown, J.B., Mullooly, J.P., and Nichols, G.A. (2002, November). "Understanding changes in primary care clinicians' satisfaction from depression care activities during adoption of selective serotonin reuptake inhibitors." *American Journal of Managed Care* 8(11), pp. 963-974.

A newer class of antidepressants, the selective serotonin reuptake inhibitors (SSRIs), first came into the U.S. market in 1988. They were shown to have fewer side effects and reduced risk of overdose compared with earlier antidepressants. They also were widely accepted by patients due to publicity centered on the effectiveness of Prozac and other drugs in this class. Adoption of SSRIs in a large HMO was associated with greater confidence by the HMO's primary care clinicians in their ability to successfully treat depression (especially using medication) and in their overall satisfaction from depression care activities, according to this study.

Using before and after surveys, the researchers prospectively studied change in 196 primary care

continued on page 14

Depression

continued from page 13

clinicians' (internal medicine and family practice physicians, physician assistants, and nurse practitioners) level of satisfaction from treating depressed patients from mid-1993 to early 1995, the period when their HMO adopted use of SSRIs for primary care treatment of depression. The questionnaires addressed depression-related attitudes and

self-reported practices (recognition of depression, feasibility of primary care treatment of depression, effectiveness of drug treatment, depression care self-efficacy perceptions, and depression care therapeutic activity levels).

Overall satisfaction showed a small (6 percent) but significant improvement over the study period. Satisfaction in 1995 was a function of improved perceptions about the feasibility of primary care treatment of depression (3.7 percent increase),

which in turn, were related to improved perceptions about the effectiveness of drug treatment (7.3 percent increase). The significant (10 percent) decrease in self-reported referral activity levels was complemented by a 3.7 percent increase in reported treatment activity levels. This suggests that by 1995, clinicians were more willing to treat depressed patients themselves instead of referring them to mental health specialists. ■

Health Care Delivery

Women are more likely than men to experience long-term posttraumatic stress disorder after major trauma

Long-term posttraumatic stress disorder (PTSD) afflicts 35 percent of trauma victims. Regardless of the type or severity of traumatic injury, women are more than twice as likely as men to suffer from PTSD, according to a study supported by the Agency for Healthcare Research and Quality (HS07611). Trauma care providers need to be alert to those at risk for developing PTSD, including the higher risk of women, in order to improve the outcomes of trauma victims, suggests Troy L. Holbrook, Ph.D.

Dr. Holbrook and colleagues at the University of California, San Diego, enrolled 1,048 adult trauma patients triaged at four trauma center hospitals between 1993 and 1996. The researchers measured patients' quality of life (QOL) after injury using a Quality of Well-being (QWB) scale that measured mobility, physical activity, and social activity; early symptoms of acute stress reaction (SASR) at discharge using the Impact of Events Scale (score over 30 equals SASR); and PTSD at 6, 12, and 18 months after discharge.

PTSD affected 30 percent of trauma victims at 6 months and 35 percent by 18 months (prolonged

PTSD). Women were at more than double the risk of men for PTSD. The association of the patient's sex with PTSD was independent of the mechanism of injury and injury event-related factors such as perceived threat to life.

Prolonged PTSD was associated with significantly reduced quality of life (lower QWB scores) in both men and women, with women having markedly lower QWB scores at each followup than men. Normal healthy adults usually score in the range of 0.830 to 0.900 with 1.000 representing asymptomatic full function. The mean discharge QWB score in these patients was 0.401 and the mean 6-month followup score was 0.633. The researchers conclude that these trauma victims need not only sophisticated clinical care, but also rehabilitative and support services for the immense emotional fallout that follows trauma.

See "Gender differences in long-term posttraumatic stress disorder outcomes after major trauma: Women are at higher risk for adverse outcomes than men," by Dr. Holbrook, David B. Hoyt, M.D., F.A.C.S., Murray B. Stein, M.D., and William J. Sieber, Ph.D., in the November 2002 *Journal of Trauma, Injury, Infection, and Critical Care* 53, pp. 882-888. ■

Up to one-half of patients seeing complementary and alternative medicine providers are also seeing conventional physicians

A new study supported in part by the Agency for Healthcare Research and Quality (HS09565 and HS08194) describes the types of patients who visit complementary and alternative medicine (CAM) providers in the United States, the reason for visits, and insurance coverage for them. The study was led by Daniel C. Cherkin, Ph.D., of Group Health Cooperative, Richard A. Deyo, M.D., M.P.H., of the University of Washington, and David M. Eisenberg, M.D., of Harvard University.

The investigators collected data on 20 consecutive visits to randomly sampled licensed acupuncturists, chiropractors, massage therapists, and naturopathic physicians (providers of health care emphasizing natural therapeutics) practicing in four States. They were able to collect data on more than 1,800 visits and at least 99 practitioners in each profession.

More than 80 percent of visits to CAM providers were by young and middle-aged adults, and roughly two-thirds were by women. Children accounted for 10 percent of visits to naturopathic physicians but only 1 to 4 percent of visits to other CAM providers. Only 4 to 12 percent of visits were the result of conventional physician referrals (mostly to acupuncturists).

Chiropractors and massage therapists primarily saw musculoskeletal problems, while acupuncturists and naturopathic physicians saw a broader range of conditions. Typical reasons for visits to CAM providers were back or neck symptoms, anxiety or depression, fatigue, and headache.

About half of visits to acupuncturists and one-third to one-half of visits to naturopathic physicians were for problems that the CAM practitioners believed were concurrently being cared for by conventional physicians. Yet, CAM practitioners had discussed

the care of their patients with a conventional physician in only 5 to 15 percent of visits, raising concerns about the coordination and safety of concurrent care. For instance, acupuncturists and naturopathic physicians might prescribe herbs that interact with medications prescribed by conventional physicians. Most visits to chiropractors and naturopathic physicians, but less than one-third of visits to acupuncturists and massage therapists, were covered by insurance.

See "Characteristics of visits to licensed acupuncturists, chiropractors, massage therapists, and naturopathic physicians," by Dr. Cherkin, Dr. Deyo, Karen J. Sherman, Ph.D., M.P.H., and others, in the November 2002 *Journal of the American Board of Family Practice* 15, pp. 463-472. ■

Clinical autonomy seems to be the key to career satisfaction among both primary care and specialist physicians

Satisfaction among U.S. primary care and specialist physicians declined only marginally between 1997 and 2001. However, physicians practicing at some sites were far more likely to be dissatisfied than others. This decline in satisfaction was usually associated with less clinical autonomy, especially the ability to obtain medical services for patients. Managed care penetration within physicians' practices had little apparent effect on changes in satisfaction, according to a survey supported in part by the Agency for Healthcare Research and Quality (HS10803) and conducted by researchers at the Center for Studying Health Systems Change.

These differences in satisfaction may be related to subtle or unmeasured differences in managed care

organizations in different communities or in how physicians' organizations respond to managed care, suggests lead author, Bruce E. Landon, M.D., M.B.A., of Harvard Medical School. Dr. Landon and his colleagues analyzed a nationally representative survey of U.S. primary care and specialist physicians in 60 U.S. sites in three rounds, 1996-1997, 1998-1999, and 2000-2001. Overall levels of career satisfaction among physicians during this time period did not change dramatically.

Among primary care physicians (PCPs), 42.4 percent were very satisfied in 1997, as were 43.3 percent of specialists, compared with 38.5 percent and

continued on page 16

Clinical autonomy

continued from page 15

41.4 percent, respectively, in 2001. However, there was significant variation in local markets.

Among 12 sites selected for more intensive study, the proportion of physicians who were somewhat or very dissatisfied ranged from 8.8 percent of those in Lansing, MI (1999) to 34.2 percent in Miami, FL (1997). Rather than declining income, threats to physicians' autonomy, their ability to manage their

day-to-day patient interactions and their time, and their ability to provide high quality care were most strongly associated with variations in satisfaction.

More details are in "Changes in career satisfaction among primary care and specialist physicians, 1997-2001," by Dr. Landon, James Reschovsky, Ph.D., and David Blumenthal, M.D., M.P.P., in the January 22, 2003 *Journal of the American Medical Association* 289(4), pp. 442-449. ■

Health Care Costs and Financing

Researchers examine impact of drug cost-sharing on prescribing practices

Medication costs have continued to escalate, prompting many countries to consider a variety of cost-containment strategies. In one strategy, reference-based pricing (RP), patients who use high-priced medications must pay out-of-pocket for the difference in price between that drug and the lower-cost alternative drug within the same class. The introduction of RP in British Columbia in 1995 and 1997 was expected to save money and to contain the increasing costs for drugs borne by the province's publicly funded drug-benefit plan, Pharmacare. Two recent studies that were supported in part by the Agency for Healthcare Research and Quality (HS10881 and HS09855) and led by Sebastian Schneeweiss, M.D., Sc.D., of Brigham and Women's Hospital, examine the use of RP and income-based deductibles to address rising medication costs.

The first study found differences in drug prescribing policies among female and male physicians following the start of the RP policy. The second study demonstrated that evaluating the consequences of income-based deductibles for prescription drugs is more

complicated than evaluating other drug cost-containment measures. The two studies are summarized here.

Duetz, M.S., Schneeweiss, S., Maclure, M., and others. (2003). "Physician gender and changes in drug prescribing after the implementation of reference pricing in British Columbia." *Clinical Therapeutics* 25(1), pp. 273-284.

These authors examined differences between male and female physicians in prescribing angiotensin-converting enzyme (ACE) inhibitors, which are used to treat hypertension, after implementation of RP for ACE inhibitors in January 1997. They conducted the analysis by linking pharmacy and medical service claims data on 927 female and 2,922 male physicians treating 47,680 Pharmacare Plan A elderly enrollees, who were prescribed a high-priced ACE inhibitor before the implementation of RP. If a higher-cost drug was chosen or continued, the amount of shared cost ranged from \$2 to \$62 (Canadian dollars) per monthly supply. Physicians could request an exemption from the RP policy

through prior authorization for frail elderly patients or in cases of drug intolerance or treatment failure.

The patients of female physicians were 25 percent more likely to receive a written physician-requested exemption from copayment, and they were 43 percent more likely to stop antihypertensive drug therapy (for example, captopril, quinapril, and ramipril). These slightly different patient management strategies may suggest a higher degree of responsiveness of female doctors to their patients' requests. However, since there are few female doctors in British Columbia, these management differences were unlikely to have meaningful clinical or economic consequences, conclude the authors.

Although not a significant finding, patients seen by female physicians were somewhat more likely than patients seen by male physicians to discontinue antihypertensive treatment. However, this difference was unrelated to the introduction of the drug cost-sharing policy because it was observed to the same extent in the year before the policy change.

continued on page 17

Drug cost-sharing

continued from page 16

Rather, it suggests a difference between male and female physicians in the treatment of hypertension independent of reference pricing.

Schneeweiss, S., Maclure, M., and Dormuth, C. (2002). "On the evaluation of drug benefits policy changes with longitudinal claims data." *Disease Management Health Outcomes* 10(12), pp. 763-769.

Drug cost-containment policies often involve cost-sharing for higher cost medications as well as an annual deductible for prescription drugs. Evaluating the clinical and economic consequences of drug cost-containment policies is critical to ensure that these policies do not adversely affect patient health. However, in contrast to standard studies of one-time drug policy

interventions, designs for studies of the impact of income-based deductibles are more complex because individual patients reach the deductible at different times. Also, some patients will never reach their annual deductible. The duration of each patient's uncovered period before reaching the deductible—and therefore the time at risk for increased rates of unintended outcomes—depends on the amount of the deductible and on individual drug use. Both of these are functions of income and health status, according to these researchers.

In this paper, they develop a causal model of the consequences of income-based deductibles, which includes outcomes such as health status, health care use, and expenditures. In the model, reduced drug use is a direct consequence of deductibles and available income. Using longitudinal claims data, they propose testing the impact of

income-based deductibles by comparing the experience of a group of patients during the uncovered period versus the hypothetical experience (based on the population's prior experience) of the same group of patients if the policy had not been introduced. They conclude that the evaluation of complex drug coverage changes with observational data can be subject to subtle sources of bias.

The evaluation of the consequences of income-based deductibles for prescription drugs is more complicated than the evaluation of other drug cost-containment measures. For example, the duration of exposure to an uncovered period cannot be assumed to be independent of patient characteristics, including income and health status. The validity of an evaluation therefore depends on the ability to measure and adjust for such factors. ■

States vary widely in how they regulate private health insurers and managed care organizations

Individual States vary considerably in how they regulate private health insurers and managed care organizations (MCOs), according to the results of two surveys on the topic. Robert J. Buchanan, Ph.D., of the Texas A&M University System Health Sciences Center, and his colleagues sent the surveys to State insurance commissioners in 2000. The surveys, which focused on policies regulating conventional health insurance and managed care organizations (MCOs), were returned by 49 States and the District of Columbia. This study was supported by the Agency for Healthcare Research and Quality (HS09819).

Survey analyses revealed differences in State insurance regulation in several areas. For example, 39 States do not require conventional private health insurers to offer prescription drug coverage. However, 10 States and the District of Columbia require individual, small-group, and/or standard plans to provide such coverage. Almost all States allow conventional health insurers to impose annual dollar limits on the amount of prescription drugs that beneficiaries may receive. None of the States have

protections from these annual dollar limits for beneficiaries with terminal illnesses, including AIDS. Most States allow insurers to have restrictive drug formularies and lifetime drug prescription limits.

In more than 20 States, patients have a right to bring a legal claim against an insurer if harmed by denial of care. Twelve States allow patients to sue their MCOs for damages if harmed by denial of care. By early 2000, a total of 32 States had enacted laws requiring some form of internal or external appeals or grievance procedures. Only five States have laws pertaining to the payment of routine costs or medications associated with experimental treatments. Most States do not require MCOs to pay routine health care costs associated with experimental medications and treatments.

See "State regulation of private health insurance: Prescription drug benefits, experimental treatments, and consumer protection," by Jane Nelson Bolin, Ph.D., J.D., R.N., Dr. Buchanan, and Scott R. Smith, Ph.D., in the November 2002 *American Journal of Managed Care* 8(11), pp. 977-985. ■

New prospective payment system for inpatient rehabilitation facilities considers patients' severity of disability

The Centers for Medicare and Medicaid Services has implemented an inpatient rehabilitation facility prospective payment system (IRF-PPS) based on case-mix groups (CMGs). The CMGs, now almost identical in structure to the Functional Independence Measure-Function-Related Groups (FIM-FRGs), will measure patients' functional severity by the FIM instrument. Inpatient rehabilitation admission decisions will become more equitable with Medicare payments based on CMGs because admission will be driven more by clinical need, according to Margaret G. Stineman, M.D., of the University of Pennsylvania. Her work was supported in part by the Agency for Healthcare Research and Quality (HS07595).

In a recent commentary, Dr. Stineman points out that, because current payments based on TEFRA (Tax Equity and Fiscal Responsibility Act of 1982) account for neither diagnoses nor severity of disability, there

are strong economic incentives against admitting patients with complex diagnoses or severe disabilities. By adjusting for patients' primary impairments, medical complexity, and functional severity, payments based on CMGs will enhance access to care by providing greater levels of reimbursement to facilities caring for patients with greater clinical needs.

Continuous quality improvement, monitoring, and program evaluation strategies developed for the FIM-FRGs can be easily adapted to CMGs. The CMGs are distinct from the DRGs (diagnosis-related groups) and from the Resource Utilization Groups' measures for acute- and long-term care, respectively. From a policy standpoint, this delineates rehabilitation efforts as separate from the other aspects of care.

More details are in "Prospective payment, prospective challenge," by Dr. Stineman, in the December 2002 *Archives of Physical Medicine and Rehabilitation* 83, pp. 1802-1805. ■

Costs associated with genital herpes are expected to rise swiftly over the next 10 years

More than one in five adult Americans (22 percent) has genital herpes caused by infection with the herpes simplex virus type 2 (HSV-2). Without intervention, the prevalence of HSV-2 infection among individuals aged 15 to 39 years is projected to increase to 39 percent among men and 49 percent among women and to cost \$2.5 billion by 2015, according to a study supported by the Agency for Healthcare Research and Quality (National Research Service Award training grant T32 HS00020).

This predominantly sexually transmitted disease, which can also be transmitted from mother to baby during childbirth, can cause primary and recurrent genital ulceration, problems in relationships, and depression. Infected women often undergo cesarean sections to avoid infecting their babies, who can

suffer from serious disability or death if infected.

Given the projected economic burden that is likely to be imposed on society by the HSV-2 epidemic, substantial investment in HSV-2 prevention strategies makes economic sense, concludes David N. Fisman, M.D., M.P.H., F.R.C.P., of McMaster University.

Dr. Fisman and his colleagues constructed a mathematical model to project future increases in HSV-2 seroprevalence in the United States using data reported by the National Health and Nutrition Examination Survey. They calculated per-infection expected costs (\$620 for men and \$510 for women) based on data from published research studies.

The researchers projected the annual incidence of HSV-2 to increase steadily between 2000 and 2025, from 9 to 26 infections per 1,000 men and from 12 to 32

infections per 1,000 women in this age group. They also projected an incidence of neonatal HSV-2 infection of 29 cases per 100,000 live births by 2025. They predicted the cost of infection to rise from \$1.8 billion in 2000 to \$2.5 billion by 2015 and \$2.7 billion by 2025. Prevention programs currently being formulated to slow the spread of genital herpes include blood screening to identify asymptomatic infected individuals, programs to increase use of condoms, suppressive antiviral therapy to prevent viral shedding, and promising new vaccines.

More details are in "Projection of the future dimensions and costs of the genital herpes simplex type 2 epidemic in the United States," by Dr. Fisman, Marc Lipsitch, D.Phil., Edward W. Hook III, M.D., and Sue J. Goldie, M.D., M.P.H., in the October 2002 *Sexually Transmitted Diseases* 29(10), pp. 608-622. ■

People who have HIV experience more problems with inpatient than outpatient care

Caring for patients infected with the human immunodeficiency virus (HIV) that causes AIDS can be challenging, since they often have complex medical problems and associated treatments. A new study shows that these patients consistently report more problems with hospital care than outpatient care. For instance, 39 percent complained that their hospital clinicians communicated different things to them, and 28 percent said that their pain could have been dealt with more promptly. Most of the hospital problems reported by these patients could have been addressed by better provider-patient communication, according to the study, which was supported in part by the Agency for Healthcare Research and Quality (HS08578).

Outpatient care involves multiple types of interactions over time, giving patients and caregivers opportunities to make adjustments if patients experience problems. Also, patients can change providers until they find someone with whom they are happy. In contrast, hospital stays are often one-time experiences associated with acute and serious illness in which a great deal of diagnostic and therapeutic activity is compressed into a relatively short time period, explains Martin F. Shapiro, M.D., Ph.D., of the

University of California, Los Angeles, School of Medicine. Dr. Shapiro and Samuel A. Bozzette, M.D., Ph.D., of the University of California, San Diego, were co-principal investigators of the HIV Cost and Services Utilization Study (HCSUS), which provides data on a national probability sample of people in care for HIV.

Overall, 1,074 patients provided ratings of an inpatient stay, and 2,204 patients rated an outpatient visit; 818 rated both inpatient and outpatient care. Mean problem rates were 21 percent for inpatient care and 8 percent for outpatient care. The mean global rating score for inpatient care was 65 (significantly lower than a national sample of hospitalized patients without HIV infection) and 75 for outpatient care (on a 0-100 scale, with 100 being the best care). Since site characteristics explained more of the variance in HIV care than patient characteristics, site processes of care and providers should be the focus of quality improvement efforts, according to the authors.

More details are in "HIV patients' experiences with inpatient and outpatient care: Results of a national survey," by Ira B. Wilson, M.D., M.Sc., Lin Ding, Ph.D., Ron D. Hays, Ph.D., and others, in the December 2002 *Medical Care* 40, pp. 1149-1160. ■

Title I funds from the Ryan White Act help many people with HIV/AIDS, but there are waiting lists for some services

About 900,000 people in the United States are infected with the human immunodeficiency virus (HIV) that causes AIDS. More than half of new infections occur among blacks (54 percent), 19 percent among Hispanics, and 26 percent among whites. Title I of the Ryan White Comprehensive AIDS Resources Emergency (CARE) Act, enacted by Congress in 1990, provides emergency assistance to eligible metropolitan areas (EMAs) disproportionately affected by HIV/AIDS to provide health care each year for low-income,

uninsured, and under-insured people infected with HIV.

A survey conducted in 2000 and 2001 of 51 Title I Planning Councils (which set priorities and allocate funds) revealed that EMAs are serving significant numbers of female patients, with blacks and Hispanics constituting a majority of people served in 33 EMAs. Difficult-to-serve populations include substance abusers, people with chronic mental illness, and the homeless.

The survey was conducted by Robert J. Buchanan, Ph.D., of Texas A&M University System

Health Science Center with support from the Agency for Healthcare Research and Quality (HS09819). It showed further that Title I programs received about \$604 million in CARE Act funding during FY 2001. During that year, fund allocation ranged from \$807,157 in one New Jersey EMA to \$119,256,891 for the New York City EMA. Priority services included primary care/medical care, case management, medications, dental care, substance abuse treatments, mental health

continued on page 20

Ryan White Act

continued from page 19

services, and support services such as housing assistance, emergency financial assistance, home-delivered meals, and food-nutrition programs.

At least 15 EMAs used waiting lists in 1999 for some services,

with numbers ranging from five to seven people and a 5-day wait in Austin, TX, up to as many as 300 people and an 18-month wait for Section 8 housing in Seattle, WA. Congress appropriated over \$1.9 billion for the CARE Act programs for FY 2002 (\$620 million for Title I), an increase of \$11 million (or 6.1 percent) over FY 2001.

Unfortunately, this increased funding is still not sufficient to allow the CARE Act programs to adequately serve people with HIV disease, conclude the researchers.

See "Ryan White CARE Act and eligible metropolitan areas," by Dr. Buchanan, in the Summer 2002 *Health Care Financing Review* 23(4), pp. 149-157. ■

Agency News and Notes

AHRQ launches new Web-based quality measures resource

The Agency for Healthcare Research and Quality has launched the new Web-based National Quality Measures Clearinghouse (NQMC) at www.qualitymeasures.ahrq.gov. The NQMC contains the most current evidence-based quality measures and measure sets available to evaluate and improve the quality of health care.

The site is designed to be a "one-stop shop" for physicians, hospitals, health plans, and others who may be interested in quality measures. Users can search the NQMC for measures that target a particular disease/condition, treatment/intervention, age range, sex, vulnerable population, setting of care, or contributing organization. Visitors can compare attributes of two or more quality measures side by side to determine which measures best suit their needs. The site also provides material on how to select, use, apply, and interpret a measure.

The NQMC builds on AHRQ's previous initiatives in quality measurement and will be part of a larger Web site now in the planning stage. This expanded site will comprise quality, clinical information, and decision tool components, as well as the National Guideline Clearinghouse (NGC) at www.guideline.gov. The NQMC and NGC will be linked for those who wish to coordinate their search for both quality measures and guidelines.

Measures to be considered for inclusion in the NQMC can be submitted on an ongoing basis but must meet a set of criteria that can be found at the NQMC web site noted above. Organizations interested in contributing quality measures should contact NQMC by sending an e-mail to info@qualitymeasures.ahrq.gov. ■

New AHRQ evidence reports are available on treatment of bronchiolitis in young infants and other topics

A new evidence report says that although doctors commonly use a wide array of medications to treat bronchiolitis—the most common lower-respiratory tract disease among infants and toddlers—there currently is no compelling evidence to support these treatments. The report was requested by the American Academy of Pediatrics and the American Academy of

Family Physicians and prepared for the Agency for Healthcare Research and Quality by the Research Triangle Institute-University of North Carolina Evidence-based Practice Center (contract 290-97-0011).

Bronchiolitis is part of a family of diseases that affect airways in the lungs. It differs significantly from the more commonly diagnosed bronchitis, which can

affect adults as well as children, and is usually a complication of a viral infection, such as a cold or influenza or in chronic cases is found mostly in smokers. Bronchiolitis typically occurs in winter, starting in November and peaking in January or February. Common symptoms include runny nose, rapid or noisy breathing,

continued on page 21

AHRQ evidence reports

continued from page 20

wheezing, cough, fever, and irritability. The disease, which is usually caused by the respiratory syncytial virus, is especially rampant in day care centers and among hospitalized children.

Physicians often use medications such as inhaled, oral, or intravenous corticosteroids, inhaled epinephrine, and nebulized bronchodilators to treat bronchiolitis because they are inexpensive and generally considered to be safe. But whether the medications actually work will not be known until they are studied in well-designed, adequately sized randomized clinical trials, according to the researchers, who also said that because of adverse events found in previous research, doctors should be cautious about using inhaled budesonide and alpha-2-interferon to treat bronchiolitis.

In addition, the researchers found no evidence that laboratory tests, complete blood counts, or chest x-rays—which are sometimes used to diagnose bronchiolitis—are superior to a carefully conducted medical history and physical examination. However, they did find evidence that supports the use of palivizumab as a preventive medicine, administered once a month intramuscularly, to protect high-risk infants and children who were born prematurely and are under 6 months of age or have underlying bronchopulmonary dysplasia, a chronic lung disease.

Although most cases of bronchiolitis are mild and short-

term, severe cases account for 90,000 hospital admissions a year and 4,500 deaths, mostly among infants younger than 6 months of age. For the most part, seriously affected infants and young children have coexisting illnesses that increase the risk of complications.

A summary of the report, *Management of Bronchiolitis in Infants and Children*, Evidence Report/Technology Assessment No. 69, is available online at <http://www.ahrq.gov/clinic/epcsums/bronsum.htm> and also from the National Guideline Clearinghouse at www.guideline.gov (select NGC Resources). Printed copies of the summary (AHRQ Publication No. 03-E009)** and full report (AHRQ Publication No. 03-E014)* are available from AHRQ. See the back cover of *Research Activities* for ordering information.

Other evidence reports and summaries published recently by AHRQ include:

- *Systematic Review of the Current Literature Related to Disability and Chronic Fatigue Syndrome*, Evidence Report/Technology Assessment No. 66. Summary (AHRQ Publication No. 03-E006)** and full report (AHRQ Publication No. 03-E007).*
- *Criteria for Determining Disability in Infants and Children: Low Birth Weight*, Evidence Report/Technology Assessment No. 70. Summary (AHRQ Publication No. 03-E008)** and full report (AHRQ Publication No. 03-E010).*
- *Management of Allergic Rhinitis in the Working-Age Population*, Evidence Report/Technology Assessment No. 67. Summary (AHRQ Publication No. 03-E013)** and full report (in press).
- *Diagnosis and Treatment of Deep Venous Thrombosis and Pulmonary Embolism*, Evidence Report/Technology Assessment No. 68. Summary (AHRQ Publication No. 03-E012)** and full report (AHRQ Publication No. 03-E016).*
- *Vaginal Birth After Cesarean Section*, Evidence Report/Technology Assessment No. 71. Summary (AHRQ Publication No. 03-E017)** and full report (AHRQ Publication No. 03-E018).*
- *Ephedra and Ephedrine for Weight Loss and Athletic Performance Enhancement: Clinical Efficacy and Side Effects*. Evidence Report/Technology Assessment No. 76. Summary (AHRQ Publication No. 03-E021)** and full report (Volume 1, Evidence Report and Evidence Tables, and Volume 2, Appendixes, AHRQ Publication No. 03-E022).*

Editor's note: All evidence reports and summaries are available online at the AHRQ Web site. Go to www.ahrq.gov and click on "Evidence-Based Practice" under "Clinical Information" for an index. ■

Proceedings now available from conference on alcohol problems in emergency department patients

Researchers, practitioners, and other stakeholders participated in a March 2001 conference focused on current knowledge about alcohol problems among emergency department (ED) patients and ED-based screening and intervention methods. The conference resulted in a list of recommendations to enhance research and clinical practice in EDs. The proceedings include these recommendations, as well as presentations and summaries of participants' discussions.

The conference proceedings are available in accessible PDF format (PDF Help) from the Web site of the National Center for Injury Prevention and Control, Centers for Disease Control and Prevention. Go to: http://www.cdc.gov/ncipc/publications/alcohol_proceedings/alcohol_proceedings.htm. ■

Clarification: The January 2003 issue of *Research Activities* (page 12) included an article on a possible link between cigarette smoking and excessive television viewing among adolescents. During the timeframe of the study (1990-1992), the prevalence of cigarette smoking among adolescents was increasing, as noted by the authors of the study. However, we now have more recent information on trends in teen smoking. Statistics posted on the Centers for Disease Control and Prevention Web site in May 2002, indicate that teen smoking prevalence has been declining since 1996-1997. These data show that 28.5 percent of high school students currently smoke cigarettes, down from 36.4 percent in 1997 and 34.8 percent in 1999. ■

New MEPS data products now available from AHRQ

The Agency for Healthcare Research and Quality recently released data and public use files from the Agency's Medical Expenditure Panel Survey (MEPS), the third in a series of nationally representative surveys of medical care use and expenditures sponsored by AHRQ. MEPS is cosponsored by the National Center for Health Statistics. The first survey, the National Medical Care Expenditure Survey (NMCES) was conducted in 1977, and the second survey, the National Medical Expenditure Survey (NMES), was carried out in 1987. MEPS began in 1996 and is ongoing.

MEPS collects detailed information on health care use and expenses, sources of payment, and insurance coverage of individuals

and families from 24,000 individuals and 10,000 households in the United States. MEPS comprises four component surveys: the Household Component, the Medical Provider Component, the Insurance Component, and the Nursing Home Component.

The following MEPS products are now available online and can be accessed from the MEPS Web site at www.meps.ahrq.gov.

Differentials in Employment-Related Health Insurance Coverage, 2000. Statistical Brief 10. During the first half of 2000, more than 60 percent (71 million) of working Americans under 65 years of age had health insurance they obtained through their primary place of employment, according to

this new statistical brief. Other details on characteristics of workers and health insurance include:

- In the first half of 2000, among occupational groups, managers and administrators were most likely to be insured (73.3 percent). Farm laborers were least likely to have insurance through their own workplace (28.4 percent).
- Higher hourly earnings were associated with a greater likelihood of workers having health insurance coverage through their primary place of employment. While only one-third of workers making less than minimum wage (\$5.15 per hour) had insurance coverage

continued on page 23

MEPS data products

continued from page 22

from their primary employer in the first half of 2000, 83.2 percent of workers making more than \$21 per hour had insurance.

- Employees who belonged to a labor union were much more likely to be covered by health insurance through their main job than nonunion workers (88 percent of union workers vs. 57.6 percent of nonunion workers).
- Government employees had higher rates of health insurance coverage through their own workplace in 2000 than employees in private industry.

Details can be found in the Statistical Brief “Differentials in Employment-Related Health Insurance Coverage 2000,” at www.meps.ahrq.gov.

Health Insurance Status of U.S. Workers, 2001. Statistical Brief 11. Data from the 2001 MEPS indicate that nearly two-thirds (65.2 percent) of Americans under 65 years of age had job-related health insurance during the first half of 2001. However, employment does not necessarily lead to health insurance coverage for many working Americans. Slightly more than a sixth (17.7 percent) of working Americans ages 16-64 were uninsured during the first half of 2001 (approximately 23 million people). These workers represented half (51 percent) of the total uninsured population. Data are available for download only. The full Statistical Brief is available from the MEPS Web site.

Children’s Access to Necessary Health Care, Fall 2001. Statistical Brief 12. This MEPS Statistical

Brief summarizes an access and quality of care measure pertaining to the health care received by noninstitutionalized U.S. children. It presents preliminary findings based on the data obtained from the 2001 MEPS child supplement. All of the questions refer to events experienced in the last 12 months. Only differences that are statistically significant at the 0.05 level are discussed in the text. These data are available for download only. The full Statistical Brief is available from the MEPS Web site.

Asthma Treatment: Use of Medications and Devices, 2000. Statistical Brief 13. More than 25 million Americans have been told by a physician or other health care provider that they have asthma, according to MEPS data collected in 2000. In the 12 months prior to their interview, 6.5 million adults and 3.2 million children had an asthma attack. Asthma attacks can vary from mild to life-threatening. This is the first time that MEPS has collected comprehensive data on asthma treatments for adults and children in the United States. The detailed findings include:

- Among people who had an asthma attack in the last 12 months, more than half of adults reported using inhaled corticosteroids, compared with over 40 percent of children. Females were more likely than males to use inhaled steroids.
- Children between ages 0-17 were more likely (91.2 percent) than adults ages 18 and over (84.3 percent) to use asthma medication other than inhaled steroids.
- Nearly one-third of the population who reported an asthma attack in the last 12 months also reported having a

peak flow meter in the home. A peak flow meter is a hand-held device used to measure the user’s ability to expel air from the lungs.

- Among children, boys were more likely than girls to report having an asthma attack in the last 12 months. However, among adults, women were more than twice as likely as men to report an asthma attack in the last 12 months.

Beginning in 2000, MEPS was enhanced to collect data from people about selected chronic conditions and the preventive services or treatments they use. These new measures will enable researchers to perform in-depth analyses on the quality of health care received by Americans.

To access the MEPS data on asthma treatments, see the statistical brief, which is available on the MEPS Web site.

Update to the MEPS Table Compendium. The MEPS Household Table Compendium now includes 1999 medical expenditure data and a new feature that allows users to customize the medical expenditure tables. The following customizations can be made: record selection, age group selection, health insurance status groups, and perceived health status group selection. After making the choices above, users will be able to view the newly customized tables. Due to the complex survey design of MEPS, appropriate statistical tests are needed to make accurate statistical inferences. Therefore, a table of standard errors accompanies each table of estimates. Additional sets of tables for other years are forthcoming. The 1999 medical expenditure table is available on the MEPS Web site.

continued on page 24

MEPS data products

continued from page 23

MEPSnet/Household

Component; 1999 Data. The 1999 MEPSnet Household Component file is a subset of the recently released 1999 Full Year Consolidated Data File (i.e., HC-038). The MEPSnet/HC file also has been augmented with some supplementary variables. The data source selection tab in MEPSnet allows users to select a data year to use in their analysis. Currently, 1999, 1998, 1997, and 1996 full-year, person-level files are available that contain detailed data on survey administration, demographics, employment, health status, health insurance, income, and health care use and expenditures. Beside each file is the image of a lower case letter “i” with a circle around it, which is linked to a page where users can obtain documentation and a codebook for this data file. The 1999 MEPSnet Household Component file is available on the MEPS Web site.

MEPS HC-044: 1999

Supplemental Public Use File.

This data release is available for download only. It is intended to supplement MEPS variables previously released for 1999. It is a person-level file containing health insurance variables. In order to use these variables, this file should be linked to the 1999 Consolidated Full-Year Use and Expenditure File (HC-038), which contains all previously released 1999 person-level data including demographic and socioeconomic information. This file is available on the MEPS Web site.

MEPS HC-048: Panel 3

Longitudinal Public Use File.

This is a 2-year longitudinal file derived from the respondents to the

MEPS Panel 3 1998 sample. The individuals on this data set represent those who were in the MEPS population for all or part of the 1998-1999 period. The file contains a weight variable (LONGWTP3) that, when applied to the people who participated in both 1998 and 1999, will enable the user to make national estimates of person-level changes in selected variables (e.g., health insurance, health status, utilization and expenditures). In addition, LONGWTP3 can be used to develop cross-sectional estimates for the civilian noninstitutionalized population in each year based on only the Panel 3 sample. To obtain analytic variables, the records on this file must be linked to the 1998 and 1999 MEPS public use data files using the sample person identifier (DUPERSID). This file is available for download only from the MEPS Web site.

MEPS HC-51B: 2000 Dental

Visits. This public use data file is one in a series of event-level public use data files drawn from the 2000 MEPS Household Component. Released as an ASCII file with SAS format statements and in SAS transport format, the dental visits file provides detailed information on dental events for a nationally representative sample of the civilian, noninstitutionalized population of the United States during the 2000 calendar year. The file includes the date of the dental event, type of provider seen, whether the visit was due to an accident, the reason for the dental event, and whether or not medicines were prescribed. This file is available for download only on the MEPS Web site.

MEPS HC-51C, 2000: Other

Medical Expenses. This public use data file is one in a series of event-

level public use data files drawn from the 2000 MEPS Household Component. Released as an ASCII file with SAS format statements and in SAS transport format, this public use file provides information on the purchase of and expenditures for medical equipment, supplies, glasses, and other medical items for a nationally representative sample of the civilian noninstitutionalized population of the United States. It can be used to make estimates of the use and expenditures associated with medical items during the 2000 calendar year. This file is available for download only on the MEPS Web site.

MEPS HC-51H: 2000 Home

Health File. This public use data file presents household-reported information on expenditures for home health visits, including the type of provider, type of services received, length of the visit, reason for the visit, expenditures, and sources of payment. Released as an ASCII file with SAS format statements and in SAS transport format, this public use file can be used to make estimates of the use and expenditures associated with home health care during the 2000 calendar year. This file is available for download only on the MEPS Web site.

MEPS Projected Data, 2000-

2008. The MEPS Projected Data Web site has been updated (February 2003) to reflect the recent public release of the HC-038 1999 Full Year Consolidated Data File. Projected data files are now available from 2000-2008. The projected figures in documentation tables 4 through 6 for 1999 have been replaced with actual estimates from the recently released 1999

continued on page 25

MEPS data products

continued from page 24

MEPS. These files, which are available for download only on the MEPS Web site, provide projected health expenditures for each year between 2000 and 2008 by type of service and payment source for the civilian, noninstitutionalized household population and subgroups therein defined by

selected demographic characteristics. The data have been projected from the 1996 MEPS data by reweighting the population using vital statistics data on demographic, mortality, and fertility changes in the U.S. population and census predictions for changes into the future. Projected household health expenditures have been aligned to

adjusted national health expenditures for each year from the National Health Accounts provided by the Centers for Medicare and Medicaid Services. Documentation for these files includes statistical tables with various trends from the true MEPS between 1996 and 1999 and projected MEPS between 2000 and 2008. ■

Research Briefs

Brunner, E.J., Hemingway, H., Walker, B.R., and others. (2002, November). “Adrenocortical, autonomic, and inflammatory causes of the metabolic syndrome.” (AHRQ grant HS06516). *Circulation* 106, pp. 2659-2665.

This study provides the first evidence that chronic stress may be a cause of metabolic syndrome, which may be a precursor of coronary disease. The authors conducted a double-blind case-control study of working men aged 45 to 63 years drawn from a study of British government workers. They compared 30 patients with metabolic syndrome (elevated glucose, cholesterol, and blood pressure, and BMI above 26) with 153 healthy controls. The researchers measured several stress indicators and obtained cardiac autonomic activity (CAA) from power spectral analysis of heart rate variability (HRV) recordings. They found that 24-hour cortisol metabolite and normetanephrine outputs were higher among cases than controls. HRV and total power were lower among cases, while serum interleukin-6, plasma C-reactive protein (an indicator of inflammation), and viscosity were higher among cases. Psychosocial factors accounted for 37 percent of

the link between metabolic syndrome and normetanephrine output, and 7 percent and 19 percent for CAA. The researchers conclude that neuroendocrine stress axes are activated in metabolic syndrome, but these changes may be reversible.

Califf, R.M., Peterson, E.D., Gibbons, R.J., and others. (2002). “Integrating quality into the cycle of therapeutic development.” (AHRQ grant HS10548). *Journal of the American College of Cardiology* 40, pp. 1895-1901.

Debate about the role of evidence-based medicine has raised questions about the value of applying randomized trial results in practice. These authors provide a perspective on this issue by describing a model that integrates quantitative measures of quality and performance into the development cycle of existing and future therapeutics in cardiovascular medicine. The ultimate goal is the best possible patient outcomes. For most cardiovascular problems, survival, freedom from major cardiovascular events such as stroke and heart attack, and improved symptoms are the cornerstones of outcomes measurement. The model uses clinical research networks and

practice databases as a convenient mechanism to tie together the quality cycle. After a concept has been developed and undergone basic testing, a network could conduct clinical trials and measure incorporation of the findings (in the form of recommendations) into practice. Multiple practice registries could provide feedback about performance for individual practices while also validating the relation between greater adherence to guidelines and improved patient outcomes in the whole registry.

Ferrie, J.E., Shipley, M.J., Smith, G.D., and others. (2002). “Change in health inequalities among British civil servants: The Whitehall II study.” (AHRQ grant HS06516). *Journal of Epidemiology and Community Health* 56, pp. 922-926.

This study of London-based white collar civil servants, 6,895 men and 3,413 women, found little evidence of an increase in socioeconomic differences in disease and cardiovascular risk factors. The researchers screened the employees from 1985 to 1998 for self-rated health, longstanding illness, minor psychiatric problems, cholesterol, blood pressure, body mass index, alcohol intake, and

continued on page 26

Research briefs

continued from page 25

smoking. They also assessed these twice at a mean of 5.3 and 11.1 years. They compared employment grades (an indicator of socioeconomic status) of the workers at each phase. There was little evidence of an increase in inequality for most measures over the 11 years to 1998. However, the gap between those in the lowest employment category and those in the highest category widened considerably for minor psychiatric problems for both sexes and for cholesterol level in men. The increased likelihood of physical illness over time among the lower grade workers may explain the greater psychiatric problems over time.

Fishman, P.A., Goodman, M.J., Hornbrook, M.C., and others. (2003). "Risk adjustment using automated ambulatory pharmacy data: The RxRisk model." (AHRQ grant HS11314). *Medical Care* 41(1), pp. 84-99.

Medical risk assessments are used to adjust capitated health plan payments, as a case-mix adjuster for clinical and health services research, and as a tool for profiling health plans and providers. The Hierarchical Coexisting Conditions (HCCs) and Ambulatory Clinical Groups (ACG) are risk assessment measures based on disease codes available on automated information systems or from claims. These researchers developed an RxRisk model, a risk assessment instrument that classifies prescription drug fills into chronic disease classes in order to predict future health care costs. They compared its ability to predict cost with a demographic-only model and with the ACG and the HCC diagnosis-based risk assessment instruments. Costs were predicted for all individuals enrolled in five

HMOs from different U.S. regions. HCCs produced more accurate forecasts of total costs than either RxRisk or ACGs, but RxRisk performed similarly to ACGs. The researchers conclude that the pharmacy-based RxRisk is an alternative risk assessment instrument that, depending on the nature of the application, may be a more appropriate option for medical risk analysis.

Forrest, C.B., Shipman, S.A., Dougherty, D., and Miller, M.R. (2003, January). "Outcomes research in pediatric settings: Recent trends and future directions." *Pediatrics* 111(1), pp. 171-178.

Pediatric outcomes research examines the effects of health care delivered in everyday medical settings on the health of children and adolescents. It is a rapidly growing area of inquiry that is acquiring breadth, but so far, it has achieved little depth in any single content area, according to this review of the issue. The authors, including AHRQ's Senior Advisor for Child Health, conducted a systematic review of articles published from 1994 to 1999. They found that the number of pediatric outcomes research articles doubled during the 6-year period. Hospitals and primary care practices were the most common service sectors, accounting for more than half of the articles. Common clinical categories included neonatal conditions, asthma, psychosocial problems, and injuries. Remarkably few studies examined the health effects of preventive, diagnostic, long-term management, or curative services delivered to children and adolescents. The authors call for more research to evaluate the effects of services delivered to children and adolescents in everyday settings. Reprints (AHRQ

Publication No. 03-R018) are available from AHRQ.**

Hays, R.D., Hahn, H., and Marshall, G. (2002, December). "Use of the SF-36 and other health-related quality of life measures to assess persons with disabilities." (AHRQ grant HS08578). *Archives of Physical Medicine and Rehabilitation* 83, pp. S4-S9.

The authors evaluated the appropriateness of existing approaches to assessing health-related quality of life (HRQOL) for people with disabilities. They compared the conceptual model of HRQOL from the Medical Outcomes Study with the World Health Organization's International Classification of Functioning, Disability and Health. They also examined the attitudes toward disease "burden" that arise from these two models, noting that the importance attached to domains of health can change with fluctuations in physical health. For example, a person who has a disability may still feel healthy, thus distinguishing health from disability. However, this would not be captured in the HRQOL models. The authors note that users of standard HRQOL measures need to be aware of their limitations for assessing people with disabilities. They suggest developing targeted measures for people with disabilities, including aspects such as the discrimination they may encounter.

Hsia, D.C. (2003, January). "Medicare quality improvement: Bad apples or bad systems?" *Journal of the American Medical Association* 289(3), pp. 354-356.

The current U.S. system of medical discipline assumes that error derives from failure of an incompetent or careless individual,

continued on page 27

Research briefs

continued from page 26

i.e., that adverse events identify bad apples for removal. In contrast, the continuous quality improvement (CQI) model assumes that most adverse events represent system failures, and that design of work processes should detect and eliminate the human error. This is the approach of medical quality improvement organizations (QIOs) led by the Quality Improvement Group at the Centers for Medicare & Medicaid Services, which use 24 quality indicators that have strong evidence to support them. This approach led to an increase from 70 to 73 percent in the proportion of Medicare patients receiving appropriate care between 1999 and 2001, although this rate varied widely across States and by indicator. The QIOs (formerly the peer review organizations) aggregate data at the hospital level. To secure hospitals' cooperation, the QIOs do not publish hospital-level results. Rather, these results guide the QIOs in targeting technical assistance to improve quality. Reprints (AHRQ Publication No. 03-R016) are available from AHRQ.

Kaplan, R.M. (2002, December). "Quality of life: An outcomes perspective." (AHRQ grant HS09170). *Archives of Physical Medicine and Rehabilitation* 83, pp. S44-S50.

The traditional biomedical model emphasizes disease pathology and treatment. According to this model, the function of health care is to detect problems by identifying pathology. Once identified, treatment is initiated. The outcomes model focuses on the impact of detection and treatment. Often, identification of pathology and subsequent treatment result in improved patient

outcomes. However, there may be cases in which identifying disease does not result in better patient outcomes, notes this author. For example, there are many circumstances in which disease, if left undetected, has no impact on life expectancy or quality of life. As a result of this ambiguity, providers and patients must face difficult decisions about which treatments should or should not be initiated. The outcomes model has been widely applied in rehabilitation research. However, few studies in rehabilitation represent outcomes in terms of quality-adjusted life years (QALYs). Use of QALYs could help prioritize demands on limited health care resources and allow for the comparison of rehabilitation in relation to other areas of medicine and health care.

Lin, H.M., Lyles, R.H., and Williamson, J.M. (2002). "Bias in placebo-controlled study due to mismeasurement of disease status and the regression effect." (AHRQ grant HS11452). *Controlled Clinical Trials* 23, pp. 497-501.

Recruitment criteria for patients enrolled in randomized controlled trials often require a diagnosis of the disease being investigated prior to intervention. When the diagnostic test is subject to uncertainty, the mismeasurement of disease status prior to a medication intervention can create problems in comparing the effectiveness of the medication with placebo, assert these authors. They conclude that additional information on the validity of the diagnostic test is needed in order to provide an accurate portrayal of a treatment's effectiveness.

Longenecker, J.C., Klag, M.J., Marcovina, S.M., and others.

(2002, November). "Small apolipoprotein(a) size predicts mortality in end-stage renal disease: The CHOICE study." (AHRQ grant HS08365). *Circulation* 106, pp. 2812-2818.

The contribution of atherosclerotic cardiovascular disease (ASCVD) to the very high mortality in end-stage renal disease (ESRD) has generated interest in non-traditional ASCVD risk factors also prevalent in ESRD, such as lipoprotein(a). This study concludes that small apolipoprotein(a) [apo(a)] size, but not Lp(a) level, independently predicts total mortality risk in dialysis patients. The investigators prospectively followed 864 dialysis patients. They measured Lp(a) by an apo(a) size-independent ELISA test and apo(a) size by Western blot after SDS-agarose gel electrophoresis. They examined time to death and coexisting conditions. They performed survival analyses with adjustment for baseline demographics, comorbid conditions, albumin, and lipids. The median followup was 33.7 months, with 346 deaths, 162 kidney transplants, and 10 losses to followup. Regression analysis showed no association between Lp(a) level and mortality. However, an association was found between small apo(a) isoform size and mortality, after adjusting for other factors.

Machlin S.R., Valluzzi, J.L., Chevarley, F.M., and Thorpe, J.M. (2001). Measuring ambulatory health care use in the United States: A comparison of 1996 estimates across four federal surveys. *Journal of Economic and Social Measurement* 27, pp. 57-69.

The U.S. Department of Health and Human Services currently sponsors a number of national

continued on page 28

Research briefs

continued from page 27

surveys that have different primary objectives and methodologies, but all can be used in different ways to produce general estimates of the use of ambulatory care in the United States. Among these surveys are the Medical Expenditure Panel Survey (MEPS), the National Health Interview Survey (NHIS), the National Ambulatory Medical Care Survey (NAMCS), and the National Hospital Ambulatory Medical Care Survey (NHAMCS). Through a comparison of 1996 survey estimates, these authors describe important methodological and other technical considerations when using these different data sources for measuring ambulatory care use in office-based and hospital settings. Reprints (AHRQ Publication No. 03-R020) are available from AHRQ.** **Editor's note:** Although the cover date of this journal is 2001, it was actually published and received by subscribers in January 2003.

Murphy, N.A. Irwin, M.C., and Hoff, C. (2002, December). "Intrathecal baclofen therapy in children with cerebral palsy: Efficacy and complications." (AHRQ grant HS11825). *Archives of Physical Medicine and Rehabilitation* 83, pp. 1721-1725.

Spasticity is a hallmark finding in 75 percent of children with cerebral palsy (CP). In some children, spasticity can be beneficial as a system of intrinsic bracing and as a means to support upright positioning and ambulation. In others, it can lead to loss of range of motion, functional impairments, pain, and deformity. The goals of spasmolytic interventions in children with CP must therefore be individualized and may include a combination of interdisciplinary therapies, local

and systemic medications, orthopedic and neurosurgical procedures, and most recently, intrathecal baclofen (ITB). These investigators examined the efficacy of implanted ITB delivery systems in 23 children with CP during a 48-month period. The ITB therapy effectively reduced spasticity in children with CP. However, explantation was required in 44 percent of the children, with wound complications as the leading cause in 73 percent. Children of smaller size and younger age, as well as those with gastrostomy tubes and nonambulatory status, were more likely to encounter complications necessitating explantation.

Newgard, C.D., and Lewis, R.J. (2002, December). "The paradox of human subject protection in research: Some thoughts of and experiences with the federalwide assurance program." (AHRQ National Research Service Award fellowship F32 HS00148). *Emergency Medicine* 9(12), pp. 1426-1429.

The Office for Human Research Protections (OHRP) of the U.S. Department of Health and Human Services recommends that all federally supported research projects have a Federal-wide Assurance for Protection for Human Subjects (FWA) secured at all participating institutions. These authors point out that they were recently awarded a grant from an HHS agency to validate an out-of-hospital pediatric trauma triage rule for children involved in motor vehicle crashes. Because of the new assurance system, all 29 hospitals receiving study subjects required an FWA. However, only six hospitals (large academic trauma centers) had an FWA in place; the 23 community hospitals did not. Although the authors applaud the streamlining of the FWA, they conclude that until a practical

method for ensuring patient protections for research conducted in non-academic settings are devised, there will continue to be a barrier to effective outcomes-based research in the large patient population served by community and smaller private hospitals.

Peleg, M., Tu, S., Bury, J., and others. (2003, January). "Comparing computer-interpretable guideline models: A case-study approach." (Joint support from AHRQ, the National Library of Medicine, and Department of the Army). *Journal of the American Medical Informatics Association* 10, pp. 52-68.

Many groups are developing computer-interpretable clinical guidelines (CIGs) for use during clinical encounters. CIGs use Task-Network Models for representation but differ in their approaches to addressing particular modeling challenges. These authors compared six models: Asbru, EON, GLIF, GUIDE, PRODIGY, and PROforma, according to eight components that capture the structure of CIGs. The components enable modelers to encode guidelines as plans that organize decision and action tasks in networks. They also enable the encoded guidelines to be linked with patient data, a key requirement for enabling patient-specific decision support. The researchers found agreement among the models on many guideline components that the CIG community could adopt as standards: plan organizations, expression language, conceptual medical record model, medical concept model, and data abstractions. Differences were most apparent in underlying decision models, goal representation, use of scenarios, and structured medical actions.

continued on page 29

Research briefs

continued from page 28

Radwin, L., and Fawcett, J. (2002). "A conceptual model-based programme of nursing research: Retrospective and prospective applications." (AHRQ grant K08 HS11625). *Journal of Advanced Nursing* 30(3), pp. 355-360.

A conceptual model implicitly or explicitly guides research. Some researchers identify the conceptual model prior to conducting their studies. Other researchers may eventually come upon a conceptual model that provides a context for the research already completed and direction for future studies. These authors explain how collaboration with a theoretician enabled them to find a conceptual model that provided a frame of reference to past, present, and future studies. Further, the model allows the studies, previously considered to be disparate, to be viewed as a more coherent program of research.

Sambamoorthi, U., Olsson, M., Walkup, J.T., and Crystal, S. (2002, January). "Diffusion of new generation antidepressant treatment among elderly diagnosed with depression." (AHRQ grants HS11825, HS9566). *Medical Care* 41(1), pp. 180-194.

In 1997, nearly two-thirds of the 1.1 million community-dwelling elderly Medicare beneficiaries with depression were treated with antidepressants. Among those treated with antidepressants, the use of new-generation antidepressants, such as selective serotonin reuptake inhibitors (SSRIs), increased from 35 percent in 1992 to 77 percent in 1997. These new-generation antidepressants are more costly, but have fewer side effects, than earlier drugs. The researchers analyzed the use of new generation

antidepressants from 1992 to 1997 among depressed elderly Medicare patients using survey data, Medicare fee-for-service claims, and detailed self-reports from the Medicare Current Beneficiary Survey. They found that from 1992 to 1994, when SSRIs were being introduced, 63 percent of college-educated elderly were treated with new generation antidepressants compared with 47 percent of those with a high school education. Also, 42 percent of low-income elderly people compared with 54 percent of those with incomes above 200 percent of Federal poverty guidelines were treated with new generation antidepressants over the same period. These differences disappeared by the end of 1997. The findings agree with other studies which show that early users of new treatments, especially costly ones, are likely to disproportionately represent those of higher socioeconomic status.

Solomon, M.D., Lee, P.P., Mangione, C.M., and others. (2002, December). "Characteristics of eye care practices with managed care contracts." (AHRQ grant HS09942). *American Journal of Managed Care* 8(12), pp. 1057-1067.

Managed care has influenced the organization, financing, and delivery of health care for nearly every medical specialty. To examine the variation in practice structure, financial structure, and utilization and quality management systems for eye care practices with managed care contracts, these researchers surveyed 88 group and 56 solo eye care practices that contracted with six health plans affiliated with a national managed care organization. They found that few practices bore substantial financial risk, and nearly all practices used quality management

tools that could help improve the quality of care. For example, fee-for-service payments were the primary source of group practice revenue, although 60 percent of groups derived some revenues from capitation payments. Group practices paid their physicians almost exclusively with fee-for-service payments or salary arrangements. Most practices received practice profiles and three-fourths were subject to utilization review, which mainly consisted of preauthorization for procedures, tests, or referrals. The majority of practices used clinical guidelines, protocols, or pathways. Nearly all group practices used computerized information systems to assist in delivering care, and most had provider education programs.

Tsai, A.C., Lurie, P., and Sehgal, A.R. (2002, October). "An outbreak of Web sites selling ciprofloxacin following an outbreak of anthrax by mail." (NRSA training grant T32 HS00059). *American Journal of Medicine* 113, pp. 424-427.

The Centers for Disease Control and Prevention reported the first case of an anthrax outbreak transmitted by mail on October 4, 2001. At the time, ciprofloxacin was the only FDA-approved agent to prevent anthrax infection after exposure. Following the reported outbreak, at least 59 Web sites sold ciprofloxacin without prescription, 23 of these Web sites were created within 2 weeks after the anthrax outbreak was reported. These researchers used 11 Internet search engines to identify English-language Web sites that sold any generic or branded form of ciprofloxacin without requiring buyers to mail or fax written prescriptions from their physicians. Of the 59 Web sites identified,

continued on page 30

Research briefs

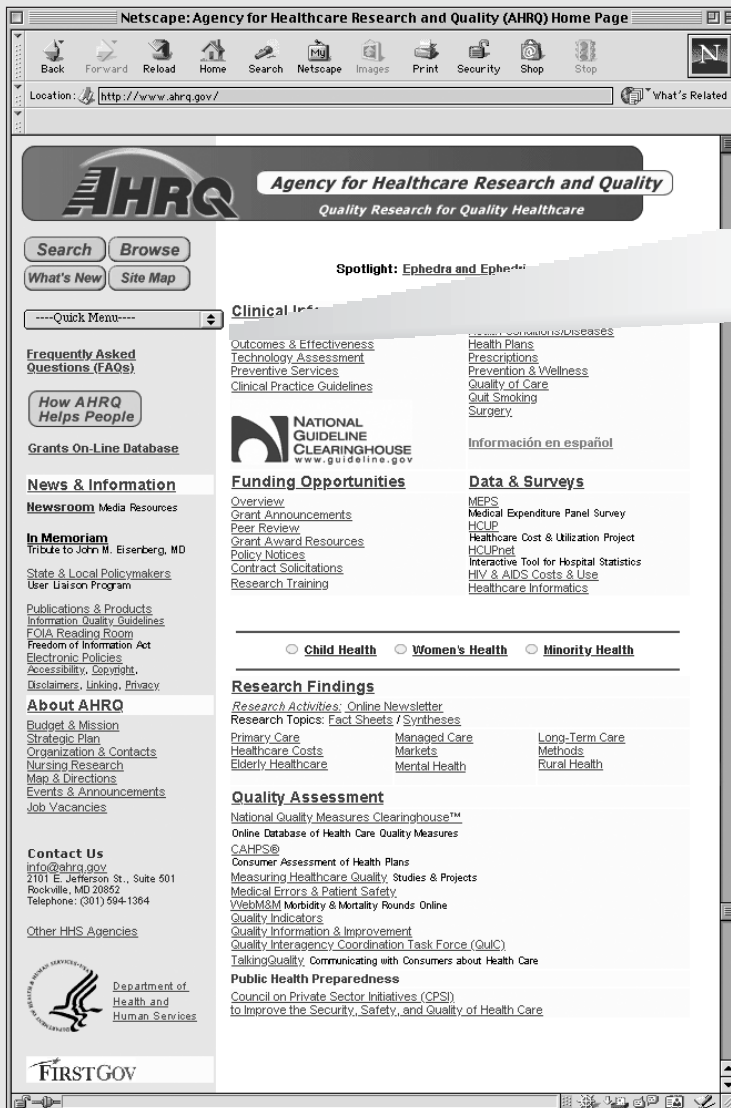
continued from page 29

none were certified by the Verified Internet Pharmacy Practice Sites program. Only 51 percent of the sites sold other medications in addition to ciprofloxacin; only 37 percent provided a telephone number for customers with questions; 29 percent displayed no information about potential adverse drug effects; and 27 percent did not mention contraindicated use in patients with a history of hypersensitivity to quinolone antibiotics like ciprofloxacin. In

addition, 19 percent did not require the customer to fill out a medical questionnaire for purchase, and 14 percent had false or misleading clinical claims and warnings. Only 68 percent of sites stated that a full dosing course for postexposure anthrax prophylaxis is 60 days; only 12 percent of these sites even sold the 60-day package. The median lowest per-tablet price was \$6.95, a 50 percent markup over the U.S. wholesale price at the time of \$4.67. By September 10, 2002 only 13 sites were still selling ciprofloxacin. ■

Don't Forget— Visit AHRQ's Web Site

AHRQ's Web site—<http://www.ahrq.gov/>—makes practical, science-based health care information available in one convenient location. You can tap into the latest information about the Agency and its research findings and other initiatives, including funding opportunities and job vacancies. *Research Activities* is also available and can be downloaded from our Web site. Do you have comments or suggestions about the site? Send them to info@ahrq.gov.



Check out
what's new
this month in...

Evidence-based Practice

<http://www.ahrq.gov/>

Ordering Information

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

(*) Available from the AHRQ Clearinghouse:

Call or write:

AHRQ 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)

To order online, send an e-mail to:
ahrqpubs@ahrq.gov

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

For instructions on using InstantFAX, call 301-594-2800. Use the key pad on your telephone or fax machine when responding to prompts. AHRQ InstantFAX operates 24 hours a day, 7 days a week.

(*) Available from NTIS:**

Some documents can be downloaded from the NTIS Web site free or for a nominal charge. Go to www.ntis.gov for more information.

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 Healthcare Research and Quality
P.O. Box 8547
Silver Spring, MD 20907-8547



AHRQ Pub. No. 03-0024
March 2003

ISSN 1537-0224