Research Activities

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Highlights

Departments

Regular Features

Use of ACE inhibitors during the first trimester of pregnancy is related to an increased risk of birth defects

Infants born to mothers who took angiotensin converting enzyme (ACE) inhibitors during the first trimester of pregnancy had an increased risk of major congenital malformations compared with infants whose mothers didn't take these drugs. The study, jointly funded by the Agency for Healthcare Research and Quality (HS10384) and the Food and Drug Administration (FDA), is the first to find an adverse impact of ACE inhibitors on a fetus when taken only during the first trimester of pregnancy.

ACE inhibitors, a class of medications primarily used to lower blood pressure and/or to preserve kidney function in people with diabetes, already carry an FDA "black box" warning stating that they can cause injury and even death to the developing fetus when used during the second and third trimesters of pregnancy. The warning states that use of ACE inhibitors should be discontinued as soon as possible when pregnancy is detected.

The study was conducted by researchers at the AHRQ-sponsored Vanderbilt University Center for Education and Research on Therapeutics (CERTs) in Nashville. The mission of the CERTs is to conduct research and provide education that will advance the best use of therapeutics (drugs, medical devices, and biological products). The program is administered as a cooperative agreement by AHRQ, in consultation with the FDA.

Researchers examined data gathered from the Tennessee Medicaid program on 29,507 infants born between 1985 and 2000. Of the total study population, 209 infants were identified as having been exposed to ACE inhibitors during the first trimester, 202 had comparable exposure to other antihypertensive medications, and 29,096 had no maternal use of antihypertensive drugs.

The researchers found that major congenital malformations identified by vital records and

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ACE inhibitors

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hospital claims were diagnosed in 856, or 2.9 percent of infants, and that 203 infants had more than one malformation. Among infants exposed to ACE inhibitors in the first trimester, the proportion born with major congenital malformations was 7.1 percent, compared with 1.7 percent among infants exposed to other antihypertensive medications. The rate of major congenital malformations in the general population is about 3 percent – or 3 infants out of every 100 pregnancies.

The chances of a major congenital malformation among infants exposed to ACE inhibitors during the first trimester were nearly 3 times higher than in infants whose mothers did not use any hypertension medications. The increased overall risk seen with ACE inhibitors was due primarily to higher risks for cardiovascular and central nervous system malformations, including atrial septal defect (hole in the wall that separates the two upper chambers of the heart), patent ductus arteriosus (an open blood vessel that causes blood to flow into the baby's lungs), hydrocephalus, and spina bifida. The risk for all other types of malformations, including those of the musculoskeletal, gastrointestinal, and genital systems, was not significantly increased by first-trimester exposure to ACE inhibitors.

More details are in "Major congenital malformations after first-trimester exposure to ACE inhibitors," by William O. Cooper, M.D., M.P.H., Sonia Hernandez-Diaz, M.D., Dr.P.H., Patrick G. Arbogast, Ph.D., and others, in the June 8, 2006 *New England Journal of Medicine* 354, pp. 2443-2451. ■

Pharmaceutical Research

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AHRQ
Office of Communications and Knowledge Transfer
540 Gaither Road
Rockville, MD 20850
(301) 427-1360

Barbara L. Kass, MPH, CHES, Managing Editor
Gail Makulowich, Contributing Editor
Joel Boches, Design and Production
Karen Migdail, Media Inquiries

National survey of community pharmacies examines workload, available technology, and perceptions of drug alert systems

Community pharmacists are often expected to provide innovative patient care services and optimize complex therapeutic regimens. At the same time, community pharmacies are facing a 35 percent larger prescription volume. Researchers at the Arizona Center for Education and Research on Therapeutics recently surveyed pharmacy managers at 736 chain and independent metropolitan community pharmacies. The 34-item survey collected data about each pharmacy, including demographics, workload issues, available technology, and perception of computerized drug-drug interaction (DDI) alerts. Two survey-related studies were supported by the Agency for Healthcare Research and Quality (HS10385) and are summarized here.

Skrepnek, G.H., Armstrong, E.P., Malone, D.C., and others. (2006, March). "Workload and availability of technology in metropolitan community pharmacies." *Journal of the American Pharmacists Association* 46(2), pp. 154-160.

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Survey of community pharmacies

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The pharmacists surveyed reported an average volume of 1,340 prescriptions per week processed at a rate of nearly 17 prescriptions per hour. Independent pharmacies processed about 3 prescriptions per hour more than chain pharmacies, even though a similar or slightly lower proportion of independent pharmacies had automated technologies and chain pharmacies were open significantly more hours per week. On average, community pharmacies operated 80 hours per week. Staffing consisted of 96.4 hours for pharmacists, 10.5 hours for pharmacy interns, and 110.5 hours for technicians per week; other personnel were employed for 28.3 hours per week.

Over 85 percent of pharmacies possessed at least one type of technology, with the most predominant type being the countertop tablet/capsule-counting device (62 percent of pharmacies). Pharmacies that processed more than 1,700 prescriptions per week were significantly more likely to report having Baker cells or similar counting/filling devices, computerized control of an automated filling device, and bar code scanners for medication verification/identification. Nearly half of all chain pharmacies had two or more devices available (49 percent) compared with only 15 percent of independent pharmacies.

Overall, 85 percent of pharmacies could accept new prescriptions by fax machine. Only 20 percent of independent pharmacies had automated telephone systems for either new or refill prescriptions compared with the 71 percent (new prescriptions) and 96 percent (refill prescriptions) of chain pharmacies. Also, 16 percent of independent pharmacies had Internet capability for refill prescriptions compared with 75 percent of chain pharmacies. All 24-hour pharmacies could accept refill prescriptions via the Internet or an automated telephone system. Overall, a mean of 3.5 computer terminals were present in each pharmacy (with more at chain pharmacies), equating to almost 400 prescriptions processed per terminal per week.

Abarca, J., Malone, D.C., Skrepnek, G.H., and others. (2006, March). "Community pharmacy managers' perception of computerized drug-drug interaction alerts." *Journal of the American Pharmacists Association* 46, pp. 148-153.

As a result of new drugs entering the market, the number of known drug-drug interactions (DDIs) is increasing. About 55 percent of community pharmacists surveyed in this study believed that more than 70 percent of the computerized DDI alerts encountered in the previous week were clinically insignificant. Despite this, community pharmacists did not consider DDI alerts to be meaningless or a waste of time. On the other hand, they were not completely convinced that their computer systems provided meaningful DDI alerts or provided these alerts in a user-friendly format that allowed them to distinguish between important and unimportant drug interactions.

Community pharmacy managers who could customize DDI alerts on their computer system and whose system provided detailed DDI information (for example, mechanisms of drug interaction and alternative medications) were more likely to express confidence in the pharmacy's computer system to provide meaningful alerts. They were also more likely to agree that DDI alerts were easily differentiated from other types of alerts and less likely to agree that DDI alerts were a waste of time.

Yet half of pharmacists surveyed stated that their computer software did not allow customization of DDI alerts. Another 20 percent did not know whether this option was available on their computer system. Little more than half (56 percent) stated that their pharmacy software provided detailed information about DDIs.

Incorporating features that streamline DDI alerts may improve the ability of pharmacists to detect and appropriately manage potentially life-threatening DDIs, suggest the researchers. They caution that desensitization of pharmacists as a result of being bombarded with mostly unimportant alerts remains a concern. ■

Also in this issue:

Limited health care access impairs blood sugar control among low-income urban blacks with type 2 diabetes

Controlling blood sugar (glycemic) levels to near normal (less than 7 percent) is the key to minimizing complications from diabetes such as serious eye, kidney, and cardiovascular problems. A new study, supported in part by the Agency for Healthcare Research and Quality (HS09722), looked at the clinical, socioeconomic, and health care access factors of low-income urban blacks with type 2 diabetes and found that health care access most affected their glycated hemoglobin (HbA1c) levels. Among those with diabetes, the average HbA1c was 8.7 percent for patients who had no trouble getting medical care compared with 9.4 percent for those who did have trouble; 8.9 percent for patients who had no trouble obtaining medication compared with 9.2 percent for those who had trouble doing so; and 8.6 percent for patients who regularly used a doctor's office or clinic compared with 9.5 percent among those who relied only on acute care facilities and 10.3 percent for those who had gone nowhere for care.

The study authors advise that approaches to improve diabetes outcomes should target barriers to health care access, develop programs to help high-risk groups maintain a regular place of health care, and educate high-risk groups to obtain periodic health evaluations. They did not find a direct association between HbA1c and factors such as health insurance, education, employment, race, or other socioeconomic characteristics. However, they note such factors are likely to affect patients' access to medical care and thus have an indirect impact on glycemic control.

The researchers examined whether differences in health care access affected HbA1c levels in 605 predominantly low-income black patients initially treated at a municipal diabetes clinic in 2001 and 2002. They administered a 26-question survey about sociodemographic characteristics and access to health care. They also examined clinical or disease-related variables. Overall, 47 percent reported difficulty getting medical care and trouble obtaining medications during the 12 months prior to their initial visit to the diabetes clinic. Only 56 percent used a regular source of care such as doctor's office or clinic.

See "Limited health care access impairs glycemic control in low socioeconomic status urban African Americans with type 2 diabetes," by Mary K. Rhee, M.D., Curtiss B. Cook, M.D., Virginia G. Dunbar, B.S., and others, in the November 2005 *Journal of Health Care for the Poor and Underserved* 16, pp. 734-746. ■

Blacks are more likely than whites and Hispanics to die following cardiovascular procedures, despite hospital experience

Black and Hispanic patients are more likely to undergo cardiovascular procedures in hospitals that perform a low volume of such procedures, and these hospitals usually have poorer outcomes than high-volume hospitals with more expertise. However, a new study shows that even after adjusting for differences in hospital volume, black patients were more likely than Hispanic and white patients to die after undergoing cardiovascular procedures. These findings suggest that hospital characteristics other than the number of procedures performed, such as financial resources, provider staffing, and availability of ancillary services, may be different in hospitals providing care to large numbers of minority patients.

Researchers, supported in part by the Agency for Healthcare Research and Quality (T32 HS00020), examined racial and ethnic differences in postoperative mortality for 719,679 hospitalizations for 4 cardiovascular procedures: cardiac artery bypass grafting (CABG), percutaneous transluminal coronary angioplasty (PTCA), abdominal aortic aneurysm (AAA) repair, and carotid endarterectomy (CEA). They used 1998 to 2001 data from the Nationwide Inpatient Sample of the Healthcare Cost and Utilization Project.

Blacks had nearly twice the risk of dying than whites after elective AAA repair, 19 percent greater risk after CABG, and nearly twice the risk after CEA, but did not have any greater risk of dying after PTCA. Hispanic patients were at no greater risk of dying after these procedures than whites. Both

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Cardiovascular procedures

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blacks and Hispanics had higher rates of urgent and emergency (rather than elective) AAA repair. This suggests inadequate screening or delayed referrals for surgery among Hispanic and black patients with aortic aneurysms.

More details are in "Impact of hospital volume on racial disparities in cardiovascular procedure mortality," by Amal N. Trivedi, M.D., M.P.H., Thomas D. Sequist, M.D., M.P.H., and John Z. Ayanian, M.D., M.P.P., in the January 17, 2006 *Journal of the American College of Cardiology* 47(2), pp. 417-424. ■

More data are needed to better identify health care disparities among American Indians and Alaska Natives

AHRQ's *National Healthcare Disparities Report (NHDR)* is an annual report to Congress on racial, ethnic, and socioeconomic disparities in American health care. Conditions targeted include cancer, diabetes, end stage renal disease, heart disease, respiratory disease, mental health, and substance abuse. Yet, due to the limited data available for American Indians and Alaska Natives, only 42 percent of measures of health care quality and access tracked in the 2004 *NHDR* could be used to assess disparities among these two groups. Patient safety data was particularly limited.

Data for American Indians and Alaska Natives needs to be improved to allow better targeting of interventions to reduce health care disparities among these groups and to monitor the success of these activities, suggests Ernest Moy, M.D., M.P.H., of the Agency for Healthcare Research and Quality. In a recent paper, he and colleagues analyzed the 2004 *NHDR* to identify gaps in data for American Indians and Alaska Natives. Data gaps were larger for those two groups than all other ethnic and racial groups. For example, 2004 *NHDR* data on all 149 measures of health care quality were available for blacks, on 95 percent of measures for Hispanics, on 63 percent for Asians, but only 55 percent for American Indians and Alaska Natives.

Of the 60 measures of access to health care that could be tracked, data were available for blacks and Hispanics on all measures, for Asians on 84 percent, and for American Indians and Alaska Natives on 52 percent. Overall, only 42 percent of measures of quality of care and access to care could be adequately assessed for American Indians and Alaska Natives. This was due to data collection issues (data on the two groups were simply not collected), estimation issues (groups were too small), large relative standard errors, and power issues (samples were not large enough to show a significant difference).

More details are in "Gaps in data for American Indians and Alaska Natives in the *National Healthcare Disparities Report*," by Dr. Moy, Colleen Ryan Smith, M.P.H., Patrik Johansson, M.D., M.P.H., and Roxanne Andrews, Ph.D., in *The Journal of the National Center* 13(1), pp. 52-69, 2006. Reprints (AHRQ Publication No. 06-R038) are available from AHRQ.* ■

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Disadvantaged blacks differ from disadvantaged whites in beliefs about genetic testing

Among high-risk groups, genetic testing has the potential to identify who might benefit from early counseling and screening. Genetic testing may also help to identify which patients are more likely to respond to certain treatments. Yet socioeconomically disadvantaged blacks differ from their white counterparts in their beliefs about genetic testing and the basis for moral decisionmaking, concludes a study supported in part by the Agency for Healthcare Research and Quality (HS10864). For example, blacks were 3 times more likely to believe that genetic testing would lead to racial discrimination and nearly 4 times more likely to think that all pregnant women should have genetic tests.

Blacks perceived themselves to be in worse health, were more likely to agree that genetic testing was tampering with nature and thereby unethical, and that God's word was their most important source for moral decisions. Over 90 percent of low-income blacks and whites surveyed thought that genetic testing was a good idea and that research on genetics would bring cures for many diseases. However, few believed that genetic testing results should be made available to employers, used for gender selection of a baby, or as a basis for abortion.

The researchers note that blacks are primarily concerned that genetic testing results could lead to racially based population control or could block access to health insurance or employment. They attribute blacks' greater support for genetic testing of all pregnant women in part to their desire to find out about sickle cell disease, which affects 1 in 600 black babies. The researchers suggest that failure to address blacks' concerns about racial discrimination and faith in God's word could lead to further mistrust and/or avoidance of the health care system and genetic testing, and may ultimately result in increased racial disparities.

These findings were based on survey responses by 314 low-income blacks and whites from 4 inner-city health centers in 2004.

See "Racial differences in beliefs about genetic screening among patients at inner-city neighborhood health centers," by Richard K. Zimmerman, M.D., M.P.H., Melissa Tabbarah, Ph.D., M.P.H., Mary Patricia Nowalk, Ph.D., R.D., and others, in the March 2006 *Journal of the National Medical Association* 98(3), pp. 370-377. ■

Child/Adolescent Health

Antidepressant use doubled among adolescents from 1997 to 2002, with no change among children younger than 13 years

Overall pediatric use of antidepressants significantly increased from 0.9 million children (1.3 percent) in 1997 to 1.4 million children (1.8 percent) in 2002. This increase was driven by a doubling in adolescent antidepressant use from 2.1 percent in 1997 to 3.9 percent in 2002, with no change in antidepressant use among children younger than 13 years. Use of selective serotonin reuptake inhibitors (SSRIs) and other new antidepressants increased, while use of older tricyclic antidepressants (TCAs) remained stable in adolescents and declined in younger children.

However, the rate of antidepressant use remained stable even for adolescents during the 2000-2002 period. This may have been due to publicized concerns about a possible antidepressant-induced increase in the risk of suicidal behavior, which ultimately resulted in a warning label on all antidepressants in 2004-2005,

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Note: Only items marked with a single (*) asterisk are available from the AHRQ Clearinghouse. Items with a double asterisk (**) are available from the National Technical Information Service. 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.

Antidepressant use

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explains Samuel H. Zuvekas, Ph.D., of the Agency for Healthcare Research and Quality. The increase in antidepressant use was most evident in groups that previously had lower levels of use, such as girls, blacks, and children from low-income families who were covered by public insurance. Thus, by 2002, there was no significant difference in antidepressant use among privately insured, publicly insured, and uninsured children or between higher- and lower-income children. Antidepressant use was similar among males and females and higher among whites than blacks and Hispanics.

The study's findings are consistent with the recognized higher prevalence of depression in adolescents (about 6 percent) than in younger children (about 2 percent). Antidepressant medications are used to treat children and adolescents with a variety of disorders that include depression, anxiety, attention-deficit/hyperactivity disorder, and enuresis. The findings were based on analysis of the Medical Expenditure Panel Survey (MEPS) database for the years 1997-2002. MEPS is a nationally representative survey of U.S. households conducted by AHRQ.

More details are in "National estimates of antidepressant medication use among U.S. children, 1997-2002," by Benedetto Vitiello, M.D., Dr. Zuvekas, and Grayson S. Norquist, M.D., M.S.P.H., in the March 2006 *Journal of the American Academy of Child and Adolescent Psychiatry* 45(3), pp. 271-279. Reprints (AHRQ Publication No. 06-R037) are available from AHRQ.* ■

A simple pocket card that assesses the symptoms and severity of a child's acute ear infection can aid treatment decisions

The majority of children with acute otitis media (AOM, ear infection) recover without antibiotics if their symptoms are managed. This "watchful waiting" approach is safe and effective but parents need to be educated because some parents expect an antibiotic whenever their child is diagnosed with AOM. A pocket AOM card can help facilitate shared decisionmaking between parents and clinicians. The AOM card combines a parent assessment of the child's symptoms (using a scale of facial expressions) and the clinician's assessment of the severity of tympanic membrane (ear drum) inflammation to assess total AOM severity.

Researchers, supported in part by the Agency for Healthcare Research and Quality (HS10613), developed the card to identify children who are candidates for watchful waiting by stratifying a child's AOM severity. The card includes a parent-friendly AOM faces scale (AOM-FS), with facial expressions ranging from a broadly smiling child with no problem (1) to a slightly frowning child with a moderate problem (4) to a crying child with an extreme problem (7). It also includes a more objective otoscopy scale (the OS-8), which grades the tympanic membrane and middle ear appearance as seen during otoscopy (examination of the tympanic membrane with a lighted instrument) on a scale of 0 to 8.

For example, based on the AOM card, a screaming child with a red but mobile tympanic membrane (OS-8 grade 1) should not be diagnosed with AOM. Similarly, a child who has an OS-8 grade 4 ear but is asymptomatic does not have AOM. After considering AOM severity, the child's age, and presence or absence of other risk factors, the clinician and parent can make a shared decision regarding the treatment plan. The AOM card can also be used to improve the diagnostic skills of medical students and residents.

See "Development of a practical tool for assessing the severity of acute otitis media," by Norman R. Friedman, M.D., David P. McCormick, M.D., Carmen Pittman, B.A., and others, in the February 2006 *Pediatric Infectious Disease Journal* 25(2), pp. 101-107. ■

Hospital patient safety systems show moderate progress in meeting Institute of Medicine recommendations

Development and implementation of hospital patient safety systems that meet Institute of Medicine recommendations is at best modest, concludes a study supported in part by the Agency for Healthcare Research and Quality (HS11885). Researchers surveyed all acute care hospitals in Missouri and Utah in 2002 and 2004, using a 91-item questionnaire; 107 hospitals responded to both surveys.

While 74 percent of the surveyed hospitals reported full implementation of a written safety plan, nearly 9 percent reported no plan. The area of surgery appeared to have the greatest level of patient safety systems. For example, nearly all hospital surgical units had systems for preanesthesia patient assessment (98.4 percent), inclusion of all prediagnostic studies in the patient's chart prior to surgery (97.6 percent), and a policy requiring the primary surgeon to verbally confirm the side for operation and mark the limb and/or site with a witness present (95.1 percent).

During the 2-year period, more hospitals had fully implemented policies providing for voluntary reporting of errors and near misses (from 60.9 to 69.9 percent), error reporting without fear of reprisal (63.9 to 77.6 percent), no demerits/points for making a medical error (73 to 86.8 percent), and thanks/praise for error detection/reports (23.1 to 33.6 percent). By the 2004 survey, 34 percent of hospitals had fully implemented computerized physician order entry systems for medications.

See "The long road to patient safety: A status report on patient safety systems," by Daniel R. Longo, Obl.S.B., Sc.D., John E. Hewett, Ph.D., Bine Ge, M.D., M.A., and Shari Schubert, B.A., in the December 14, 2005 *Journal of the American Medical Association* 294(22), pp. 2858-2865. ■

Primary care assessment of intimate partner violence and referrals may prevent its recurrence

When female primary care patients, who had been victims of intimate partner violence (IPV), were given a wallet-sized referral card from a local women's center that listed a safety plan and sources for IPV services (shelter, legal, counseling, and police) or a 20-minute counseling session with a nurse case manager, they tended to suffer less abuse in the next year or two. They also tended to adopt more safety behaviors, such as hiding a bag or money for an escape or alerting neighbors to call the police if they heard any violence, according to a study supported by the Agency for Healthcare Research and Quality (HS11079).

Thus, abuse assessment and referral seems sufficient to reduce reported levels of violence. Once abuse is disclosed and acknowledged, the woman's experience is validated and help-seeking is legitimized, explains Janet Y. Groff, M.D., Ph.D., of the University of Arizona, College of Medicine, in Tucscon, and Judith McFarlane, R.N., Dr.P.H. of Texas Women's University in Houston. Drs. Groff and McFarlane and colleagues randomized 360 abused women visiting urban primary care clinics, who had suffered IPV in the past 12 months, to either a wallet-sized referral card or a 20-minute nurse case management protocol. Both groups were contacted every 6 months to make an appointment with the clinic for a 1-hour interview.

Two years following treatment, both treatment groups of women reported a mean of 14.5 fewer threats of abuse, 15.5 fewer assaults, 2.6 fewer risks of homicide, and 2.7 fewer incidents of work harassment. Also, within 2 years, both groups of women adopted a mean of two more safety behaviors. The use of community resources decreased for both groups. The routine contact every 6 months with a nurse may have provided the women with ample support so that many of them did not need access to another resource. However, more research is needed about the perceived benefits of nurse case management for abused women.

More details are in "Secondary prevention of intimate partner violence," by Dr. McFarlane, Dr. Groff, Jennifer A. O'Brien, M.A., and Kathy Watson, M.S., in the January 2006 *Nursing Research* 55(1), pp. 52-61. ■

A year after leaving jail, half of women lack health insurance or use primary care

One year after release from a New York City jail, half of 511 women studied had health insurance coverage (56 percent) and about half used primary care (47 percent). Only about half of the women suffering from diabetes, asthma, or depression reported using primary care. This represents a lost opportunity to guide women with serious health conditions to the primary care that might help to improve their health and reduce medical expenses (for example, by reducing avoidable emergency department use and hospitalizations), notes Joshua Lee, M.D., of Weill Cornell Medical College. Dr. Lee and colleagues examined primary care use, health insurance, and health status of women between 1997 and 2001, for 1 year after they left a New York City jail.

The women participated in Health Link, a program designed to help incarcerated women and adolescent males reduce drug use and HIV risk after they leave New York City jails to return to their communities. The current study was supported in part by the Agency for Healthcare Research and Quality (T32 HS00066). Researchers found that, since release from jail, primary care use was more likely among women who were HIV-infected (73 percent), pregnant (58 percent), or had pregnancy complications (61 percent). These findings may indicate the success of outreach programs that have worked to link pregnant and HIV-infected women to health and social services over the past decade.

Extending such outreach services to women with other chronic conditions such as asthma, diabetes, or depression may help them as well, note the researchers. Primary care use was also more likely among women who received public benefits, had health insurance coverage, had moderate social support, and avoided illegal activity. Health insurance coverage was associated with receipt of public benefits, hospitalization, primary care, and avoiding re-arrest. These findings suggest the health and social benefits of programs that aid incarcerated individuals in obtaining health insurance coverage and appropriate benefits upon release.

See "Primary care and health insurance among women released from New York City jails," by Dr. Lee, David Vlahov, Ph.D., and Nicholas Freudenberg, Dr.P.H., in the February 2006 *Journal of Health Care for the Poor and Underserved* 17, pp. 200-217. ■

Half of postpartum depression cases are not recognized

About 13 percent of women suffer from the anxiety, hopelessness, desolation, and fatigue of postpartum depression (PPD) for the first 3 to 12 months of their children's lives. Yet, primary care physicians fail to recognize more than half of PPD cases, despite the availability of depression screening tools that can expedite diagnosis and treatment. Some women and clinicians may confuse PPD with "baby blues," which occur in more than 80 percent of mothers. However, baby blues begin within hours or days of delivery, are characterized by major mood swings rather than consistent depressive symptoms, and typically disappear 2 to 4 weeks postpartum.

While baby blues and minor depressive symptoms often clear spontaneously, PPD is a persistent form of major depression that develops within the first 2 to 6 months postpartum. Untreated PPD can devastate the mother (who loses her energy or joy in parenting), her child (who often has delayed psychological and cognitive development), and her family (with twice the risk of divorce within 2 years postpartum). In extreme cases, PPD can result in suicide and infanticide. Timely diagnosis and treatment of PPD can interrupt these cycles before damage to mother, child, and family become irreparable, explains Barbara P. Yawn, M.D., M.Sc., of the Olmsted Medical Center and University of Minnesota.

Presence of risk factors—young age, living without a partner, divorce, multiple life stresses, lower socioeconomic status, and history of affective disorders—can identify only 30 to 40 percent of women who will develop significant PPD. Recent studies investigating a broad spectrum of hormones are more promising, but a biochemical test to identify women at risk for PPD does not seem likely in the near future. Yawn and her colleagues have begun enrolling women in a 5-year study to assess the ability of family medicine practices to screen, diagnose, treat, and follow up women with PPD. The study was supported by the Agency for Healthcare Research and Quality (HS14744).

See "Postpartum depression, Part 1: Prevalence and considerations in screening," by Dr. Yawn, in the March 2006 *The Female Patient* 31, pp. 1-6; and, "Part 2: Practical application and screening options" in the April 2006 *The Female Patient* 31, pp. 48-52. ■

Increasing cervical cancer screening intervals is cost-effective for women with three consecutive normal Pap smears

Screening women for cervical cancer can be cost-effectively done every 2 to 3 years, instead of every year, once women over the age of 30 have had three or more normal Pap smear tests, concludes a study supported in part by the Agency for Healthcare Research and Quality (HS07373). Despite clinical guidelines to do this, many physicians continue to screen these women each year.

Researchers found the most cost-effective strategies for cervical cancer screening involved screening previously unscreened women younger than 30 years of age every 2 or 3 years and those 30 years of age and older with three consecutive normal Pap smears every 3 years. For women aged 30-44 years with no prior Pap tests, incremental cost-effectiveness ratios ranged from $20,533 for screening triennially (compared with no further screening) to $331,837 for screening annually (compared with biennially) per life-year saved. Among same-aged women with three or more prior normal Pap tests, incremental cost-effectiveness ratios for the same measures were much higher, ranging from $60,029 to $709,067 per life-year saved.

These findings were based on a cost-effectiveness model along with data on prevalence of cervical cancer in a large national sample of diverse women enrolled in a national trial. The researchers grouped women according to age at the final Pap test (age less than 30, 30-44, 45-49, and 60-65 years) and by screening history (zero, one, two, and three or more consecutive prior normal Pap tests) to estimate cost per life-year and quality-adjusted life-year associated with annual, biennial, and triennial screening.

More details are in "Cost-effectiveness of extending cervical cancer screening intervals among women with prior normal Pap tests," by Shalini L. Kulasingam, Ph.D., Evan R. Myers, M.D., M.P.H., Herschel W. Lawson, M.D., and others, in the February 2006 *Obstetrics & Gynecology* 107(2), pp. 321-328. ■

Menopausal hormone therapy declined after published WHI trial results

Termination of the estrogen plus progestin (EPT) arm of the long-term Women's Health Initiative (WHI) study was announced on July 9, 2002, due to findings that EPT use was associated with increased risk of breast cancer, coronary heart disease (CHD), stroke, venous thromboembolism, and pulmonary embolism. Following the announcement, use of EPT as well as estrogen only therapy (ET) declined. According to a study supported in part by the Agency for Healthcare Research and Quality's Centers for Education and Research on Therapeutics (CERTs) program (HS11843), this decline in hormone use was similar among women of all races, education level, and income level. Widespread media attention to the WHI EPT trial results may have resulted in comparable dissemination of this information across diverse socioeconomic groups, explain the study authors.

Researchers tracked EPT and ET continued use and initiation of use from September 1, 1999 to June 31, 2002 (baseline) and in December 31, 2002 (followup) among 221,378 women aged 40-80 years enrolled in 5 health maintenance organizations (HMOs). They categorized women by their census block, race, education, and household income. They found that the changes in prevalence, initiation, and discontinuation of both EPT and ET after release of the WHI results were similar regardless of race, education level, or household income.

In addition to the widespread media coverage of WHI trial results, the prescribing practices of HMO clinicians treating the women may also have played a role in the similar responses of different groups. In April 2004, release of the results from the WHI ET trial indicated no significant effect of ET on risks for coronary heart disease, breast cancer, colorectal cancer, pulmonary embolism, or total mortality; however, the trial indicated a 39 percent decrease in hip fracture risk and a 40 percent increase in stroke risk. How these findings may affect subsequent rates of EPT and ET use remains to be determined.

See "Changes in women's use of hormones after the Women's Health Initiative estrogen and progestin trial by race, education, and income," by Feifei Wei, Ph.D., Diana L. Miglioretti, Ph.D., Maureen T. Connelly, M.D., M.P.H., and others, in the *Journal of the National Cancer Institute Monographs* 35, pp. 106-112, 2005. ■

Clinical criteria can identify children with blunt head trauma who are unlikely to need CT scans

Emergency department clinicians typically order cranial computed tomography (CT) for patients with blunt head trauma in order to rule out serious intracranial injury. However, most adults and children with blunt head trauma end up having a minor injury that requires no specific therapy. An ongoing study recently identified seven clinical criteria that can identify children at low risk for important intracranial injury (ICI) and thus unlikely to need CT scans. The National Emergency X-Radiography Utilization Study II (NEXUS II) is a multicenter, prospective, observational study of all blunt head trauma victims who had cranial CT as part of their ED evaluation. It is supported in part by the Agency for Healthcare Research and Quality (HS09699).

Researchers found that children with blunt head trauma who did not have any of seven risk factors were at low risk for ICI and unlikely to need CT. The seven factors were: evidence of significant skull fracture; altered level of alertness; neurologic deficit; persistent vomiting; presence of scalp hematoma (swelling); abnormal behavior; and coagulopathy (blood coagulation problems). For adults, age over 65 years is another risk factor. The researchers defined ICI as one that required neurosurgical intervention or was likely to be associated with significant long-term neurologic impairment.

They used the seven factors to identify ICI in 1,666 children with blunt head trauma. A total of 205 of the children had evidence of traumatic injury on head CT; 67 cases were injuries that did not require therapeutic intervention and 138 (8.3 percent) had findings that met criteria for ICI. When applied to the pediatric cohort, the 7-factor decision instrument correctly identified 136 of 138 cases. Thus, two pediatric cases with ICI were not identified using this approach, but neither required neurosurgical intervention. The decision instrument identified all 25 cases of clinically important ICI out of 309 children under 3 years of age. At least one of the seven NEXUS II risk criteria was present in each child with significant ICI.

More details are in "Performance of a decision rule to predict need for computed tomography among children with blunt head trauma," by Jennifer A. Oman, M.D., Richelle J. Cooper, M.D., M.S.H.S., James F. Holmes, M.D., and others, in the February 2006 *Pediatrics* 117(2), pp. e238-e246. ■

Interventions for primary care providers improve management of diabetes

Diabetes care is most often provided in the primary care setting, and proper management of diabetes generally results in improved outcomes for the patient. However, glycated hemoglobin (HbA1c) or blood sugar levels are rising in patients with diabetes. While poor blood sugar control could be due to patient noncompliance with treatment recommendations, it is also possible that health care providers could be failing to initiate or intensify therapy appropriately—a problem known as "clinical inertia."

Three studies supported in part by the Agency for Healthcare Research and Quality (HS07922) examined interventions intended to overcome clinical inertia and whether these interventions improved blood sugar control. The first reveals that providing feedback to internal medicine resident primary care providers improves blood sugar control. The second found that providing feedback on performance to medical resident primary care providers both improved provider behavior and resulted in lower HbA1c levels in patients with diabetes. A third study indicates that feedback from an endocrinologist on residents' management practices can improve blood sugar control in their patients. All three studies are summarized here.

Miller, C.D., Ziemer, D.C., Doyle, J.P., and others. (2005, Autumn). "Diabetes management by

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residents in training in a municipal hospital primary care site (IPCAAD 2). *Ethnicity & Disease* 15, pp. 649-655.

The Improving Primary Care of African Americans with Diabetes (IPCAAD) study is a randomized, controlled trial that attempts to translate endocrinologist approaches to diabetes to the primary care setting by partnering endocrinologists with generalists to improve diabetes care. In this 7-week study prior to the initiation of the IPCAAD interventions, the investigators observed the diabetes management practices of internal medicine residents in a hospital primary care clinic.

They found that residents' patients with type 2 diabetes often did not achieve national standard of care goals, even though many were receiving medication for their condition, suggesting a need to intensify therapy. For example, the HbA1c goal (less than 7 percent) was met in only 39 percent of patients, and LDL cholesterol and systolic blood pressure goals (less than 100 mg/dL and 130mm Hg, respectively) were met in only 25 percent of patients. In contrast, HDL cholesterol was at goal (greater than 40 mg/dL for men and 50 mg/dL for women) in 51 percent of patients, triglycerides at goal (less than 200 mg/dL) in 85 percent, and diastolic blood pressure (less than 85 mm Hg) in 77 percent of patients.

An average of 53 percent of the patients had urine protein screening for diabetic-related kidney damage over the course of a year. Also, only 39 percent of patients took aspirin to reduce their risk of heart disease and stroke. Clinical skills and attitudes developed in residents are likely to carry over into later practice. Thus, local diabetes educators may need to work with medical faculty to develop new ways to improve post-graduate medical education in diabetes management, suggest the researchers.

Ziemer, D.C., Doyle, J.P., Barnes, C.S., and others. (2006, March). "An intervention to overcome clinical inertia and improve diabetes mellitus control in a primary care setting." *Archives of Internal Medicine* 166, pp. 507-513.

In this IPCAAD study, 345 internal medicine residents who treated patients with diabetes were randomly assigned to either a control group or an intervention group. Residents in the intervention group received one of three types of interventions: computerized reminders that provided patient-specific recommendations at each visit; feedback on their performance every 2 weeks; or both computerized reminders and feedback.

When the patient's blood sugar level exceeded 150 mg/dL (equivalent to an HbA1c level of 7 percent), a change of therapy was indicated. Resident management was divided into three categories: "did nothing" (meaning no steps were taken to increase the patient's medication or add a new diabetes medication); "did anything" (meaning that some steps were taken, but less than recommended); or "did enough" (meaning that the steps taken were as great as those recommended by an algorithm to improve blood sugar control).

At baseline, when a change in therapy was indicated, residents "did anything" for 35 percent of visits and "did enough" for 21 percent of visits. During the intervention period, residents who received the feedback alone or the feedback plus reminders intensified therapy more often for their patients than did residents who received reminders alone and the control group. After 3 years, resident behavior returned to baseline measures among those who received reminders alone and the control group; however, the improvement seen in residents who received feedback or feedback plus reminders was sustained: 52 percent "did anything" and 30 percent "did enough."

Additional analysis showed that intensification of therapy by providers, promoted by feedback on performance, contributed significantly to better glycemic control. The researchers concluded that performance feedback given to medical resident primary care providers improved their behavior—helping to overcome their "clinical inertia"—and lowered blood sugar levels in their patients.

Phillips, L.S., Ziemer, D.C., Doyle, J.P., and others. (2005, October). "An endocrinologist-supported intervention aimed at providers improves diabetes management in a primary care site." *Diabetes Care* 28(10), pp. 2352-2360.

Failure to intensify therapy in patients with diabetes when it is clinically indicated (for example, when glucose levels are high) is a problem known as clinical inertia. Clinical inertia affects management of disorders such as diabetes, hypertension, and dyslipidemia. This IPCAAD study found that utilizing feedback from endocrinologists aimed at overcoming the clinical inertia of internal medicine residents improved glycemic control in patients with diabetes.

The investigators randomized 4,138 patients with type 2 diabetes seen at a hospital primary care clinic by 345 internal medicine residents to a control group or 1 of 3 experimental groups. Patients

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Diabetes care interventions

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were followed for an average of 15 months.

Endocrinologists provided residents in one group with hard copy computerized reminders that provided patient-specific recommendations for diabetes management at the time of each patient's visit. They gave the second group of residents face-to-face feedback on their diabetes management performance for 5 minutes every 2 weeks. They emphasized the importance of achieving ADA goals and taking action to adjust medication when values were abnormal during visits. The endocrinologists provided the third group with both reminders and feedback.

Patients in the feedback plus reminders group had 0.6 percent improved HbA1c and final HbA1c of 7.46 (the goal is less than 7 percent). This was significantly better than the control group (0.2 percent change and a final HbA1c of 7.84 percent). Changes were smaller with feedback only and reminders only. Over a 2-year period, overall glycemic control improved at the intervention site, but did not change in other primary care sites. ■

Interventions that improve asthma outcomes in clinical trials may not translate to the practice level

Practice-based physician peer leader education and an asthma nurse educator improved use of asthma controller medications and reduced hospital and emergency department (ED) visits among children with asthma enrolled in a randomized trial. When measured on all patients in the participating practices using automated claims data, these same asthma care improvement interventions resulted in a slight increase in outpatient asthma visits, but no detectable impact on asthma medication use or asthma-related hospital and ED visits.

While these results do not negate the effect of direct contact with the nurse educator in clinical practices, they suggest that there was no spill-over effect on asthma care in the practices as a whole, either from the nurse or the peer leader. Researchers randomly assigned 40 primary care practices participating in the Pediatric Asthma Care Patient Outcomes Research Team trial, which is supported by the Agency for Healthcare Research and Quality (HS08368), to one of the two care improvement arms or to usual care.

The proportion of children with persistent asthma who were prescribed controllers increased in all three groups over the study period. No effect of the interventions on the proportion of all asthmatic children receiving controllers was detected. Small increases in outpatient visits of 0.08-0.10 visits per child per year were seen in practices in the first intervention year, but not the second year. No group differences in hospital-based events were detected. The authors call for more work to refine the types of intervention strategies that will help practices and health plans realize the benefits of adopting practice guidelines and innovative models for chronic and preventive care.

See "Practice-level effects of interventions to improve asthma care in primary care settings: The pediatric asthma care patient outcomes research team," by Jonathan A. Finkelstein, M.D., M.P.H., Paula Lozano, M.D., M.P.H., Anne L. Fuhlbrigge, M.D., M.S., and others, in the December 2005 *HSR: Health Services Research* 40(6), pp. 1737-1757. ■

Even modest rates of physical activity can improve the functioning of middle-age adults with arthritis

Physical activity is important for maintaining functional ability in middle-age adults with arthritis, concludes a study supported in part by the Agency for Healthcare Research and Quality (HS10283). Northwestern University investigators analyzed data from the Health and Retirement Study (HRS) to determine the effect of physical activity on changes in self-reported physical functioning among 3,544 HRS survey respondents age 53 to 64 years in 1994 who had arthritis and joint symptoms. About half found it difficult to climb stairs or walk due to their arthritis.

The study revealed that people suffering from arthritis who engaged in moderate physical activity were less likely to decline

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in functioning in the next 2 years compared with their more sedentary counterparts. The researchers used respondents' baseline (1992-1994) average physical activity levels (calculated from leisure time and work-related physical activity) to predict change in self-reported physical functioning at followup (1994-1996). The participants' physical activity was compared at three levels: recommended physical activity level (at least 30 minutes of moderate activity 5 or more days a week or at least 20 minutes of vigorous activity at least 3 days a week); less-than-recommended activity level (moderate physical activity for less than 30 minutes a day or less than 3 days a week or less than 20 minutes of vigorous activity less than 3 days a week); and inactive level (less than 10 minutes of daily moderate or vigorous activity).

Nearly 30 percent of respondents reported functional declines by 1996, while 39 percent of those with baseline functional difficulties in 1994 reported improvement. By 1996, 27 percent of those at the recommended physical activity level and 29 percent of those at a less-than-recommended activity level experienced functional declines compared with 37 percent of respondents at the inactive level. Work-related physical activity was not a significant predictor of functional decline or improvement. However, few of the sampled group engaged in work-related activity, so this may not have been a good indicator.

See "Effect of physical activity on functional status among older middle-age adults with arthritis," by Joe Feinglass, Ph.D., Jason A. Thompson, B.A., Xiaoxing Z. He, M.D., and others, in the December 15, 2005 *Arthritis & Rheumatism* 53(6), pp. 879-885. ■

Delaying surgery and watchful waiting for inguinal hernias is safe in men with minimal symptoms

Many men with an inguinal hernia, in which part of the intestine protrudes through a weak point in the groin, have minimal symptoms. Delaying surgery in favor of watchful waiting until they suffer from pain or discomfort is safe in these cases because acute hernia incarcerations (when an abdominal organ cannot be reduced back into the abdomen) occur rarely, notes Robert J. Fitzgibbons Jr., M.D., of Creighton University.

Researchers, supported in part by the Agency for Healthcare Research and Quality (HS09860), randomized 720 men with minimally symptomatic inguinal hernias to 2 groups: 364 men to watchful waiting and 356 to receive standard open tension-free surgical repair with mesh. They examined pain and discomfort that interfered with usual activities 2 years later and change in the physical component score (PCS) of the SF-36 quality of life measure from baseline to 2 years. Men in the watchful waiting group were followed up at 6 months and annually and watched for hernia symptoms. Surgery patients were followed up at 3 and 6 months and annually. Similar proportions of men in both groups had pain sufficient to limit usual activities at 2 years (5.1 percent vs. 2.2 percent), and their levels of physical functioning were similar (PCS improvement over baseline, 0.29 points vs. 0.13 points).

Twenty-three percent of men assigned to watchful waiting crossed over to surgery, mostly due to hernia-related pain; 17 men assigned to receive surgery crossed over to watchful waiting. Men who had surgery after they developed symptoms had no greater risk of operative complications than those undergoing prophylactic hernia repair.

Hernia accidents were extremely uncommon (1.8 per 1,000 patient years). Because the risk of a hernia accident increases with the length of time the hernia is present and because accidents are more common in elderly individuals, a longer followup period is needed. To this end, a registry has been set up to continue to follow the patients indefinitely.

More details are in "Watchful waiting vs repair of inguinal hernia in minimally symptomatic men," by Dr. Fitzgibbons Jr., Anita Giobbie-Hurder, M.S., James O. Gibbs, Ph.D., and others, in the January 18, 2006 *Journal of the American Medical Association* 295(3), pp. 285-292. ■

Adverse incident reporting system improves documentation of falls in nursing homes to guide prevention of future falls

One-half of all nursing home residents fall each year. The first step in reducing these sometimes serious falls is to find out how they happened, so that interventions can be put in place to prevent future falls. One such approach is a falls menu-driven incident-reporting system (MDIRS). In a study supported by the Agency for Healthcare Research and Quality (HS11588), the system was tested over a 4-month period for its effect on quality improvement efforts at three nursing homes. Laura M. Wagner, Ph.D., R.N., of the Baycrest Centre for Geriatric Care, and colleagues compared documentation of fall incidents at the three homes with three matched homes that used existing narrative incident reports to document falls.

Nearly one-third of the 910 residents at the 6 facilities fell during the 4-month study period. MDIRS nursing homes had significantly better documentation of fall characteristics on the incident reports than did the control nursing homes. The MDIRS allows a person reporting a fall to just "point and click" on a menu of options related to the fall rather than trying to evaluate it in the unstructured manner typical of traditional narrative incident reports. For example, the MDIRS form prompts health care workers to state how they found the person who fell or whether they witnessed the fall, the cause (for example, lost balance, slipped, lost strength, tripped, lost consciousness/seizure, other causes), the fall location, and footwear at the time of the fall.

A significantly greater proportion of fall type (for example, witnessed, unwitnessed, or near fall), circumstances, bed side-rail status, and restraint status were documented in MDIRS than control homes. Two of the three MDIRS homes used the MDIRS software to develop charts and graphs in quality improvement meetings. As a result of these data, one nursing home reported a problem with restraint-related falls and planned to implement a restraint-reduction program. The quality improvement minutes of control homes were limited to the number of fall incidents and associated injuries.

More details are in "Impact of falls, menu-driven incident-reporting system on documentation and quality improvement in nursing homes," by Dr. Wagner, Elizabeth Capezuti, Ph.D., R.N., F.A.A.N., Jo A. Taylor, R.N., M.P.H., and others, in the December 2005 *Gerontologist* 45(6), pp. 835-842. ■

Clinicians may need to balance recommendations with patient preferences for anticoagulant medication to treat atrial fibrillation

Atrial fibrillation (AF) is the most common type of cardiac arrhythmia. People with AF have a risk of stroke that ranges from less than 1 percent to over 15 percent per year depending on their age and clinical factors. The drug warfarin is more effective in preventing stroke in AF patients than aspirin, but it is more costly, inconvenient (patients need regular blood monitoring), and dangerous (with 1 to 3 percent per year risk of major bleeding). Given the advantages and disadvantages of these therapies, personal preferences may play an important role in determining the optimal antithrombotic therapy for individuals with AF, suggest researchers who performed a systematic review of studies on the topic.

The researchers, supported in part by the Agency for Healthcare Research and Quality (HS10133), found that patients with AF were less inclined to go on warfarin therapy than treatment recommendations suggest. They compared the thresholds for antithrombotic treatment of 890 patients from 8 studies that determined or modeled the treatment preferences of patients with AF. All eight studies found highly variable individual thresholds above which warfarin was preferred over aspirin.

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Atrial fibrillation

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In five of eight studies, patient preferences indicated that fewer patients would prefer warfarin compared with the recommendations of the guidelines. In general, at a stroke rate of 1 percent with aspirin, half of the participants would prefer warfarin, and at a stroke rate of 2 percent with aspirin, two-thirds would prefer warfarin. In three studies, warfarin had to provide at least a 0.9 to 3 percent per year absolute reduction in stroke risk for patients to be willing to take it, corresponding to a stroke rate of 2 to 6 percent on aspirin. The researchers conclude that practicing physicians may need to balance patient preferences with treatment recommendations from clinical practice guidelines.

See "Preference-based antithrombotic therapy in atrial fibrillation: Implications for clinical decision making," by Malcolm Man-Son-Hing, M.D., Brian F. Gage, M.D., Alan A. Montgomery, Ph.D., and others, in the September 2005 *Medical Decision Making* 25, pp. 548-559. ■

Diagnosis of a seriously ill patient misses the link between a type of hepatitis and Hodgkin's disease

This clinical case of a 46-year-old Mexican immigrant, who arrived at the hospital with epigastric pain and vomiting of coffee-grounds material, points out the importance of considering a diagnosis of Hodgkin's disease in any feverish patient with unexplained intrahepatic cholestasis (vanishing bile duct syndrome). The patient suffered from fatigue, malaise, jaundice, and a 20-lb weight loss during the past 2 months. Due to the insidious nature of this patient's illness, fever, enlarged lymph nodes, and history of exposure to livestock, the physicians treated him for brucellosis (a livestock infection that can be transmitted to humans).

A week later, he was readmitted to the hospital, but had no dilation of the pancreatic or liver bile ducts. The patient's neutropenia (decrease in a type of infection-fighting white blood cell), which may have been a manifestation of worsening liver disease, is also associated with brucellosis and tuberculosis (which he was treated for next). The patient was readmitted 2 weeks later with elevated white cell count and enlarged lymph nodes in the chest and abdomen. The patient was discharged while taking prednisone for presumed granulomatous hepatitis. A month later, the patient returned to the clinic with persistent weight loss and abdominal pain. Liver tests showed a badly damaged liver and the liver biopsy specimen revealed a rapidly progressive intrahepatic cholestatic process (failure of bile to flow from the liver ducts). The doctor remained stumped at this point.

After a progressive downhill course, the patient died. At autopsy, a diagnosis of Hodgkin's disease was made. A review of all previous biopsy specimens showed no evidence of Hodgkin's disease. Cholestatic hepatitis has been described in several case reports as appearing several weeks before the Hodgkin's disease became clinically apparent. Although Hodgkin's disease reportedly has remained undiagnosed after an initial bone marrow biopsy, the physicians were not aware of reports of a similar difficulty in detecting it after numerous lymph node and bone marrow biopsies, as in this case. The study was supported in part by the Agency for Healthcare Research and Quality (HS11540).

More details are in "Empirically incorrect," by Amy Schmitt, M.D., Daniel J. Gilden, M.D., Sanjay Saint, M.D., M.P.H., and Richard H. Moseley, M.D., in the February 2, 2006 *New England Journal of Medicine* 354(5), pp. 509-514. ■

Primary care physician and health care system characteristics influence the likelihood of referral to specialists

Only 5 percent of primary care visits include referral of a patient to a specialist. Referral decisions of primary care physicians (PCPs) are influenced by a complex mix of patient, physician, and health care system structural characteristics, according to a study supported by the Agency for Healthcare Research and Quality (HS09377). Patient characteristics had the largest effect on any referral. Increased likelihood of referral was also associated with less tolerance of uncertainty by PCPs, larger practice size, health plans with gatekeeping arrangements (the PCP was the gatekeeper who had to approve specialty referrals), and practices with high levels of managed care.

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Referral decisions

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The likelihood that PCPs would refer patients to specialists for discretionary reasons (for conditions normally handled in primary care) was increased by capitated primary care payment (PCPs are paid a set amount per patient regardless of diagnosis or resources used), internal medicine specialty of the PCP, high concentration of specialists in the community, and higher levels of managed care in the practice.

Discretionary referrals were not strongly associated with patient factors, which suggests that the need for specialty care was not a major determinant. These findings were based on background questionnaires completed by 142 PCPs in 83 practices, located in 30 States, and survey data for 34,069 patient visits. The researchers modeled the occurrence of any specialty referral, which occurred during 5.2 percent of visits, as a function of patient, physician, and health care system structural characteristics. They did a subanalysis to examine determinants of referrals made for discretionary indications (17 percent of referrals), that is, referrals for problems commonly managed by PCPs, which have a high level of diagnostic and therapeutic certainty and low urgency for specialist involvement.

See "Primary care physician specialty referral decision making: Patient, physicians, and health care system determinants," by Christopher B. Forrest, M.D., Ph.D., Paul A. Nutting, M.D., M.S.P.H., Sarah von Schrader, M.A., and others, in the February 2006 *Medical Decision Making* 26, pp. 76-85. ■

Communication between primary care patients and their doctors does not necessarily result in shared decisionmaking

During primary care visits, communication between the patient and physician can "look good," but it does not always "feel good," reveals a study supported in part by the Agency for Healthcare Research and Quality (HS10856). Over one-third of the time (38 percent), patients and physicians exchanged information and beliefs and appeared to make joint decisions. However, their subjective experience was negative and the relationship was characterized by mistrust, withholding of crucial information, or mutual frustration. For example, the patient had not told the doctor he was not taking his medicine or the doctor was frustrated with a patient, but had not told him so.

The researchers directly observed and videotaped 18 visits between experienced primary care physicians and predominantly low-income minority patients at three clinics. Patients and physicians were independently asked about their discussions of treatment options during recall sessions where they viewed the videotaped encounters. The researchers coded decision moments for objective evidence of shared decisionmaking (SDM present or not) and positive subjective experience or not. SDM consisted of five behaviors: offering beliefs, eliciting beliefs, offering information, eliciting information, and reaching closure.

The 18 visits yielded 125 decisions, 50 percent of which demonstrated SDM. Analysis of 82 decisions discussed in stimulated recall resulted in 4 archetypes of engagement in decisionmaking: full engagement (SDM present, positive subjective experience), 22 percent; simulated engagement (SDM present, negative subjective experience), 38 percent; assumed engagement (SDM absent, positive subjective experience), 21 percent; and nonengagement (SDM absent, negative subjective experience), 19 percent. These findings suggest that communication behavior does not ensure an experience of collaboration, and a positive subjective experience of partnership does not reflect full communication.

More details are in "Shared decision making and the experience of partnership in primary care," by George W. Saba, Ph.D., Sabrina T. Wong, R.N., Ph.D., Dean Schillinger, M.D., and others, in the January 2006 *Annals of Family Medicine* 4(1), pp. 54-62. ■

A practice-based research cohort of patients may have advantages over the traditional PBRN model

The North Carolina Primary Care Practice-based Research Network (PBRN) has developed a new model for conducting primary care research, which may offer advantages over the traditional PBRN model, according to a study supported in part by the Agency for Healthcare Research and Quality (HS13521). Primary care PBRNs are groups of practices that join to carry out practice-relevant research. However, traditional PBRNs have found it difficult to enroll sufficient racial and ethnic minorities. They also tend to focus more on physicians and physician services such as office function, quality of care, and health services research than on patients and health behavior. Finally, they tend to be costly, inefficient, and demanding of practitioners' time.

In 2001, the North Carolina PBRN began recruiting adult patients in 15 of its family practices to participate over several years in multiple PBRN research projects on chronic disease and related health care problems commonly addressed in primary care settings. This approach offers advantages over traditional PBRNs such as a patient rather than physician focus, a structure that places few demands on practices, ability to target racial and ethnic minorities, and better-defined patient populations. However, the cost of development and maintenance is significant, notes Philip D. Sloane, M.D., M.P.H., of the University of North Carolina.

The original group of recruited patients answered a questionnaire about demographics, risk factors, health status, and quality of life. Followup of enrolled patients has been maintained for 3 years. In 2004 and 2005, the cohort was refreshed by adding eight new practices. Of the 10,649 eligible patients approached in 2001, 5,575 consented to be included in the cohort. Blacks, Latinos, and older people were enrolled at rates paralleling the State's adult population. Over 3 years, cohort members were included in multiple studies and 77 percent of the original group remained active. The per-subject enrollment cost varied between $27 and $45. Annual program maintenance costs were about $35,000.

More details are in "Development of a practice-based cohort for primary care research," by Dr. Sloane, Leigh Callahan, Ph.D., Leila Kahwati, M.D., M.P.H., and C. Madeline Mitchell, M.U.R.P., in the January 2006 *Family Medicine* 38(1), pp. 50-58. ■

Health Care Costs and Financing

Medicaid spending on outpatient drugs more than doubled in recent years

Medicaid spending for outpatient prescription drugs increased by 20 percent per year on average from 1997 to 2002, jumping from $11.6 billion to $23.7 billion during that period, according to a new study by Agency for Healthcare Research and Quality researchers. Jessica S. Banthin, Ph.D., and G. Edward Miller, Ph.D., from the Division of Modeling and Simulation, Center for Financing, Access and Cost Trends, analyzed data from the Medical Expenditure Panel Survey linked to a prescription drug therapeutic classification system to examine trends between 1996/1997 and 2001/2002 in utilization and expenditures for Medicaid enrollees.

The increase reflects a rise in both the number of prescriptions written for Medicaid enrollees—from 301 million in 1997 to 429 million in 2002—and the rapid uptake of newer classes of drugs, which are often more expensive. The increase also reflected rapidly growing spending on behalf of disabled adults, including low-income people with serious mental illnesses.

Prescriptions for newer classes of drugs included antidepressants, COX-2 inhibitors, proton pump inhibitors, and cholesterol-lowering medications. For example, the number of Medicaid enrollees taking antidepressants rose by 50 percent—from 2.5 million enrollees in 1997 to 3.7 million in 2002—which helped fuel a 130-percent rise in Medicaid spending for those drugs during the period. Antidepressants and all other psychotherapeutic drugs constituted the largest category of drugs prescribed to Medicaid enrollees in 2002, and total spending for all psychotherapeutic drugs rose 127 percent between 1997 and 2002.

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Medicaid spending

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In addition, annual Medicaid spending on drugs for disabled adults ages 19 to 64 grew 97 percent during the period—from $5.3 billion in 1997 to $10.3 billion in 2002—while drug spending for all Medicaid enrollees 65 and older rose 81 percent, from $3.5 billion to $6.3 billion. Furthermore, disabled adults accounted for 47 percent of the Medicaid enrollees who were prescribed antidepressants—an increase of 37 percent between 1997 and 2002. The data do not include spending on drugs given to Medicaid patients while hospitalized or those in nursing homes.

Other leading categories of drugs, by overall expenditures, were cardiovascular drugs, including ACE inhibitors, beta blockers, antihypertensive combinations, and diuretics; hormones; respiratory drugs; analgesics; gastrointestinal drugs; and antibiotics. Use and expenditures for all these drugs increased substantially during the period.

For more information, see "Trends in Prescription Drug Expenditures by Medicaid Enrollees," by Drs. Banthin and Miller in the May 2006 *Medical Care* 44(5 Suppl), pp. I-27-35. Reprints (AHRQ Publication No. 06-R040) are available from AHRQ. ■

Insuring adults in late middle age may reduce the costs of paying for health problems later

The lack of insurance is consistently associated with a higher risk of decline in overall health for adults in middle to late middle age. A study supported by the Agency for Healthcare Research and Quality (HS10283) indicates that insuring this age group now could lead to improved health status and reduce costs later in life.

David W. Baker, M.D., M.P.H., of Northwestern University and colleagues analyzed data from the Health and Retirement Study (HRS), a prospective study of a national sample of community-dwelling adults 51 to 61 years old from 1992 to 2002. The researchers analyzed the relationship between insurance coverage and health outcomes by examining each one at 2-year intervals between HRS interviews over the 10-year study period.

People who were uninsured at baseline had a 35 percent higher mortality rate (adjusted for risk factors) than those with private insurance from 1992 to 2002. However, when the outcomes were analyzed over 2-year intervals, individuals who were uninsured at the start of each interval were 43 percent more likely to have a major decline in their overall health, and they were as likely to die as the privately insured. Of the 1,512 people who were uninsured at baseline, 220 (15 percent) died. Of those who died, only 70 (32 percent) were still uninsured at the HRS interview prior to death, and 150 (68 percent) died during a period when they had insurance coverage.

The average annual health care expenditure in 2001 for someone aged 51 to 61 was $12,578 for those in poor health and $6,938 for those in fair health. In contrast, the average annual total health care costs for healthier adults in this same age group were $3,922 for those in good health and $1,791 for those in excellent health. Thus, even a modest reduction in the number of uninsured individuals who transition to fair or poor health could yield long-term reductions in health care costs to partially offset the cost of covering the uninsured, suggest the researchers.

See "Health insurance coverage and the risk of decline in overall health and death among the near elderly, 1991-2002," by Dr. Baker, Joseph J. Sudano, Ph.D., Ramon Durazo-Arvizu, Ph.D., and others, in the March 2006 *Medical Care* 44(3), pp. 277-282. ■

Better defining the role of public health nurses can improve disease surveillance necessary for bioterrorism preparedness

The threat of bioterrorism has become a major issue for public health systems across the United States. Public health nurses typically conduct disease surveillance, which is an important first step in recognizing diseases caused by bioterrorist agents. The current public health infrastructure and expectations for public health nurses are not clearly defined, and therefore pose serious difficulties for conducting disease surveillance in case of a bioterrorism event.

In 2004, researchers, supported by the Agency for Healthcare Research and Quality (HS13715), interviewed 19 public health officials (including nurses) with diverse backgrounds in nursing, medicine, epidemiology, and emergency management, at local and regional levels within one Texas public health region. This region encompassed the metropolitan area of San Antonio, 21 surrounding counties (mainly rural), 1 military installation, and 2 towns on the Texas and Mexico border. The officials were asked about existing and emerging disease surveillance systems and the role of public health nurses in general and in disease surveillance in particular.

Those interviewed said they would be more effective with the aid of a public health nurse and agreed that person-to-person working relationships were the backbone of surveillance. The interviews revealed that public health nurses effectively used informal communication channels (for example in schools, hospitals, day care centers, and nursing homes) to obtain critical disease surveillance information. However, nurses had unmet needs and experienced multiple barriers to conducting disease surveillance. Lack of sufficient funds and electronic equipment, lack of specialized training and education in bioterrorism preparedness, noncompetitiveness of public health position salaries, and the national nurse shortage all create barriers to filling public health positions with appropriately trained nurses. In addition, the operational lines, expectations, and responsibilities for public health nurses are quite confusing, since they serve both public and community health functions.

See "The role of public health nurses in bioterrorism preparedness," by Ralitsa B. Akins, M.D., Ph.D., Josie R. Williams, M.D., R.N., Rasa Silenas, M.D., F.A.C.S., and Janine C. Edwards, Ph.D., in the October 2005 *Disease Management & Response* 3(4), pp. 98-105. ■

New MEPS publication identifies trends in health care expenditures

Overall health care expenditures increased to $895.5 billion in 2003, according to data from the Medical Expenditure Panel Survey (MEPS). Health care spending was heavily concentrated in a small portion of the total population. In addition, an increasing proportion of this population remained in the highest-cost groups from one year to the next, according to data from 2002 and 2003.

- One percent of the population accounted for 22 percent of total health care expenditures in 2002. In other words, 1 percent of the total civilian noninstitutionalized population of 288 million accounted for $180.8 billion in health care spending, out of a total $810.7 billion spent on doctors, hospitals, prescription drugs, and other personal health care services.
- This concentration in the top percentile is less than was found in 1996, when the top 1 percent accounted for 28 percent of all expenditures. However, more than a quarter (25.3 percent) of those in the top percentile in 2002 remained there in 2003. This reflects a near doubling of the proportion of people who remain in the top percentile from one year to the next, compared with 1996-1997.
- People ranked in the top 5 percent of the health care expenditure distribution

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New MEPS Publication

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accounted for 49 percent of health care expenditures in 2002, and 34 percent of these individuals retained this ranking in 2003. The top 10 percent accounted for 64 percent of overall health care spending in 2002, and 41.8 percent of them remained in the top decile in 2003.

- At the other end of the spectrum, the lower half of the population (144 million people) accounted for only 3 percent of overall health care spending ($27.6 billion out of the $810.7 billion total.

Details are in *The Persistence in the Level of Health Expenditures over Time: Estimates for the U.S. Population, 2002-2003, Statistical Brief #124,* on AHRQ's Web site at www.meps.ahrq.gov/papers/st124/stat124.pdf. ■

New MEPS chartbook reports on expenditures for outpatient prescription drugs in 2003

A new 40-page report, which uses data from AHRQ's Medical Expenditure Panel Survey (MEPS), summarizes overall outpatient prescription medicine spending, presents data for various population groups including the Medicare population, and analyzes expenses for outpatient prescription drugs by therapeutic class. Some key findings include the following:

- Overall outpatient prescription drug expenses for the U.S. civilian noninstitutionalized population grew from $65.3 billion in 1996 to $177.7 billion in 2003—a 172 percent increase.
- Outpatient prescription drugs' share of all health care spending rose from 12 percent to 20 percent from 1996 to 2003.
- The top five classes of prescribed outpatient drugs, when ranked by total expenses, in 2003 were cardiovascular agents, hormones, central nervous system agents, psychotherapeutic drugs, and antihyperlipidemic medicines.

More details can be found in *Outpatient Prescription Drug Expenses in the U.S. Community Population, 2003, MEPS Chartbook No. 16*, on the ARHQ Web site at www.meps.ahrq.gov/Papers/cb16/cb16.pdf. ■

New HCUP reports detail characteristics of hospitalizations in 2003

AHRQ has released two new statistical briefs from the Healthcare Cost and Utilization Project (HCUP). These reports characterize hospitalizations among the uninsured, including costs and demographic information and identify conditions and the risk of death among men who are hospitalized.

The first report, *Uninsured Hospitalizations, 2003, HCUP Statistical Brief #7*, indicates that about 16.6 percent of the U.S. population was uninsured in 2003, but only 4.5 percent (1.7 million) of the approximately 38 million hospitalizations that year were uninsured. Hospital charges for uninsured patients in 2003 totaled $29 billion. Half of all uninsured hospital patients were between 18 and 44 years of age, compared with one-third of privately insured and Medicaid patients in this age range. Nearly 60 percent of uninsured hospital stays originated in the emergency department, compared with 31.8 percent for the privately insured and 39.3 percent for Medicaid patients. About 3.5 percent of uninsured patients left the hospital against medical advice—a rate 3 times higher than that for Medicaid patients and 7 times greater than that of privately insured patients.

The second report, *Hospitalizations among Males, 2003, HCUP Statistical Brief #9,* indicates that male hospital patients are more likely than female patients to have a number of serious conditions, including heart attack, alcohol-related mental disorders, alcohol-related liver disease, hepatitis, and injuries. The report also found that for each of these conditions, the rate of cases per 1,000 hospital stays was 50 percent higher or more for men than for women. For example, about 59 men per 1,000 hospital stays had alcohol abuse, compared with approximately 20 women. Men also had a higher risk of dying in the hospital with an in-hospital death rate 12 percent higher than that of female patients. Overall, nearly one in four hospital stays for men was for a heart or other circulatory system disorder, such as hardening of the arteries, congestive heart failure, heart attack, and irregular

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HCUP reports

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heart beat. In addition, certain conditions ranked higher among hospitalized men than among female patients. For example, heart attack ranked 4th among men, while among women it was the 12th leading condition.

The reports used statistics from HCUP's Nationwide Inpatient Sample, a database of hospital inpatient stays that is nationally representative of all short-term, non-federal hospitals. The data are drawn from hospitals that comprise 90 percent of all discharges in the United States and include all patients, regardless of insurance type as well as the uninsured. To view these reports, go to AHRQ's Web site at www.hcup-us.ahrq.gov/reports/statbriefs.jsp. ■

Announcements

Study finds no clinically significant difference in effectiveness of drugs for managing anemia in patients undergoing cancer treatment

Cancer patients who are undergoing chemotherapy or radiation treatment often suffer from anemia, a deficiency of red blood cells that is measured by hemoglobin concentration. A blood transfusion can quickly restore a low hemoglobin concentration, and adverse events related to transfusion are uncommon.

Drugs that mimic the actions of erythropoietin, a hormone that helps regulate red blood cell production, can be used to correct anemia and reduce the need for transfusions. Two such erythropoietic stimulant drugs are commercially available in the United States – epoetin alfa (sold as Epogen and Procrit) and darbepoetin alfa (sold as Aranesp), a newer, longer acting drug that requires fewer injections. The two drugs, epoetin and darbepoetin, show no clinically significant difference in improving hemoglobin concentration and reducing the need for transfusion, according to the latest comparative effectiveness review by the Agency for Healthcare Research and Quality.

The report, *Comparative Effectiveness of Epoetin and Darbepoetin for Managing Anemia in Patients Undergoing Cancer Treatment*, was produced by AHRQ's Effective Health Care Program, the first Federal program designed to compare alternative treatments for significant health conditions and make the findings public. The program is intended to help patients, health care providers, and others in choosing the most effective treatments.

The review compared the effectiveness and safety of the two drugs. Both epoetin and darbepoetin reduce the need for transfusion. However, there is no evidence that the drugs, when added to cancer treatment, improve survival. The report finds that many other significant questions remain unanswered about the safety and best use of both drugs.

In particular, the review sought to determine whether darbepoetin differed from epoetin in its ability to achieve key treatment goals. For some of these goals, such as reducing transfusion need, the evidence showed the drugs did not differ significantly. For others, such as improving quality of life, it was uncertain whether either drug had a meaningful effect.

The review also sought evidence to define the most effective use of the drugs, including the appropriate target hemoglobin level, patient characteristics for predicting responses to treatment, when treatment should be initiated or discontinued, optimum dosing strategies, and duration of treatment. In general, the data were insufficient to answer these questions.

The review identified significant research gaps, including the effects on survival, tumor progression, and the risk of adverse events when the drugs are administered as currently recommended. Most studies did not provide complete reporting on adverse events. The report also said that more research is needed to determine whether small improvements in quality of life survey scores translate into noticeable improvements for patients.

Key findings of the report included the following:

- The evidence shows no clinically significant difference between epoetin and darbepoetin in hemoglobin response. The two drugs were equally effective in increasing hemoglobin concentration.
- No statistically significant difference was found between epoetin and darbepoetin in

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Managing anemia

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reducing the need for transfusion. Pooled results of trials showed approximately 30 percent of patients treated with epoetin or darbepoetin underwent transfusion, compared with 50 percent of untreated patients.

- Studies directly comparing epoetin and darbepoetin showed no statistically significant difference in the rates of thromboembolic events (blood clotting). While these rates varied widely, pooled results showed approximately 7 percent of patients treated with either drug experienced a thromboembolic event, compared with 4 percent of untreated patients. Some studies sought to maintain hemoglobin levels higher than recommended on product labels, but the evidence was insufficient to determine whether this increased the risk of thromboembolic events.
- Overall, quality of life measures tended to favor treatment with either drug, but the selection of measures and reporting of results were inconsistent. Individual trial results were variable and, more important, the clinical significance of study results on quality of life is uncertain.
- The limited evidence available suggests that the drugs do not improve solid tumor response to cancer therapy. One study reported that erythropoietic stimulants might decrease survival, and another study suggested that the drugs might accelerate progression of some cancers; however, both of these findings remain uncertain.

Under the Effective Health Care Program, the review of epoetin and darbepoetin will be updated as significant new evidence becomes available. The report is available at www.effectivehealthcare.ahrq.gov. Copies of the executive summary of the report (AHRQ Publication No. 06-EHC008-1) are available from AHRQ.*

Editor's note: The report on drugs for anemia in patients undergoing cancer treatment was prepared by the Blue Cross and Blue Shield Association Technology Evaluation Center Evidence-based Practice Center (Chicago), one of 13 such centers working under contract with AHRQ to generate syntheses of evidence regarding health care issues for AHRQ's Effective Health Care Program. The program compares the effectiveness of different interventions, including drugs, to better inform consumers, health care providers, and others as they make treatment choices. The Effective Health Care Program Web site (www.effectivehealthcare.ahrq.gov) includes features for the public to participate in the Effective Health Care Program. Users can sign up to receive notification when new reports are available. They can also be notified when draft reports and other features are posted for comment, and comments can be submitted through the Web site. The public is also invited to use the Web site to nominate topics for review by the Effective Health Care Program. ■

Research Briefs

Arozullah, A.M., Lee, S-Y., Khan, T., and others. (2006, February). "The roles of low literacy and social support in predicting the preventability of hospital admission." (AHRQ Grant HS13004). *Journal of General Internal Medicine* 21(2), pp. 140-145.

Preventable hopitalizations among veterans do not seem to be influenced by low literacy, but they can be predicted by binge drinking, less social support for medical care (someone to accompany them to the hospital or doctor), fewer clinic visits, and a larger social network. Overall, 77 percent of preventable hospitalizations for the veterans in this study were attributed to medication nonadherence (30 percent), alcohol or drug use (25 percent), or inadequate outpatient care in the previous 2 weeks (22 percent). Neither low literacy (less than completion of the 7th grade) nor very low literacy (less than completion of the 4th grade) was significantly associated with preventability of hospitalization.

Ayanian, J.Z., Zaslavsky, A.M., Guadagnoli, E., and others. (2005, September). "Patients' perceptions of quality of care for colorectal cancer by race, ethnicity, and language." (AHRQ Grant HS09869). *Journal of Clinical Oncology* 23(27), pp. 6576-6586.

This study found that blacks, Hispanics, Asian/Pacific Islanders, and non-English-speaking white patients are significantly more likely than English-speaking white patients to report problems in quality of

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colorectal cancer care. Problems with coordination of cancer care were most strongly correlated with lower ratings of overall quality of care.

The results were based on survey responses of 1,067 patients with colorectal cancer in northern California. Blacks reported more problems than whites with coordination of care, psychosocial care, access to care, and health information. Asian/Pacific Islanders reported more problems than did whites with coordination of care (a difference of 13.2 points), access to care, and health information.

Hispanics tended to report more problems with coordination of care, access to care, and treatment information. Non-English-speaking whites reported more problems than other whites with coordination of care, psychosocial care, access to care, and treatment information. Non-English-speaking Hispanics reported more problems than other Hispanics with confidence in providers.

Cunningham, W.E., Hays, R.D., Duan, N., and others. (2005 November). "The effect of socioeconomic status on the survival of people receiving care for HIV infection in the United States." (AHRQ Grant HS08578). ***Journal of Health Care for the Poor and Underserved*** **16, pp. 655-676.**

A new HIV Costs and Service Utilization Study reveals that HIV-infected people of low socioeconomic status (SES) have worse survival rates than others infected with HIV. The study correlated SES with survival among a nationally representative group of people receiving HIV/AIDS care in the United States starting in 1996. By December 2000, 20 percent of the sample had died (13 percent from HIV, 7 percent from non-HIV causes). Those with no accumulated financial assets had an 89 percent greater risk of death, and those with less than a high school education had a 53 percent greater risk of death than their counterparts, after adjusting for sociodemographic and clinical variables. Further adjusting for use of health care services and antiretroviral treatment diminished, but did not eliminate, the elevated relative risk of death for those with low SES for three of four SES measures: annual income, wealth, educational attainment, and current work status.

Halm, E.A., Wisnivesky, J.P., and Leventhal, H. (2005, October). "Quality and access to care among a cohort of inner-city adults with asthma: Who gets guideline concordant care?" (AHRQ Grants HS09973 and HS13312). ***Chest*** **128(4), pp. 1943-1950.**

A study of inner-city adults hospitalized for asthma found suboptimal asthma care and significant underuse of recommended asthma care options. Researchers tracked several indicators of asthma care quality for 198 inner-city adults with asthma at 1 hospital upon admission and at 1 month and 6 months later. At all study intervals, inhaled corticosteroids (ICs), a mainstay of asthma prevention and stabilization, were underprescribed by physicians, underused by patients, and used less often when asthma symptoms were absent. ICs were prescribed for 77 percent of patients prior to hospital admission, 83 percent at 1 month, and 67 percent at 6 months. Adherence rates for other asthma care recommendations were 89 percent for receipt of inhaler instructions, 68 percent for use of spacers for inhaled medications, 80 percent for peak flow meters (which measure expiration force to gauge lung capacity and need for medication), 31 percent for written action plans for worsening asthma, and 22 percent for written plans for asthma attacks.

Kanwal, F., Gralnek, I.M., Hays, R.D., and others. (2005, September). "Impact of chronic viral hepatitis on health-related quality of life in HIV: Results from a nationally representative sample." (AHRQ Grant HS08578). ***American Journal of Gastroenterology*** **100, pp. 1984-1994.**

Infection with hepatitis B (HBV) or hepatitis C (HCV) does not appear to affect the quality of life of patients already infected with HIV. Researchers analyzed data on 1,874 adults from the nationally representative HIV Cost and Services Utilization Study. They examined the health status of HIV-infected patients interviewed in 1996 (baseline) and again in 1997 and 1998. Overall, they identified 1,493 adults with HIV monoinfection, 279 with HIV-HCV coinfection (15 percent), and 122 (6 percent) with HIV-HBV coinfection.

Despite significant differences in sociodemographic characteristics between the three groups, there were no differences between them in the baseline scores for physical or mental health, overall QOL, overall health, or disability days. HRQOL did not decline significantly over time for the HIV patients with or without HCV or HBV coinfections. All groups reported similar changes over time in HRQOL scores for all measures, ranging from the ability to feed and dress oneself to doing household tasks, shopping, and working at a job.

Kivimaki, M., Ferrie, J.E., Brunner, E., and others. (2005, October). "Justice at work and reduced risk of coronary heart disease among employees." (AHRQ Grant HS06516). ***Archives of***

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***Internal Medicine* 165, pp. 2245-2251.**

This study linked lack of justice at work to greater risk of coronary heart disease among 6,442 male British civil servants aged 35 to 55 years. The men did not have coronary heart disease (CHD) at baseline in Phase 1 of the study (1985-1988). The researchers determined if workers perceived justice at work and other work-related psychosocial factors by the men's responses to a questionnaire at Phase 1 and 2 (1989-1990). They then examined medical records to determine dates of CHD death, first nonfatal heart attack, or definite angina occurring from Phase 2 through 1999, for an average followup of nearly 8 years.

After adjustment for age and employment grade, employees who experienced a high level of justice at work had a 35 percent lower risk of incident CHD than employees with a low or an intermediate level of justice. This risk did not change after additional adjustment for baseline cholesterol, body mass index, hypertension, smoking, alcohol consumption, and physical activity. Although other psychosocial factors, such as job strain and effort-reward imbalance, also predicted CHD, the level of justice remained an independent predictor of CHD after adjustment for these factors.

Mein, G.K., Shipley, M.J., Hillsdon, M., and others. (2005, June). "Work, retirement and physical activity: Cross-sectional analyses from the Whitehall II study." (AHRQ Grant HS06516). *European Journal of Public Health* 15(3), pp. 317-322.

To explore the relationship between work, retirement, and physical activity, researchers analyzed data on work hours and physical activity among 6,224 civil servants aged 45-69 years who participated in Phase 5 of the Whitehall II longitudinal study. They found a dose-response relationship between hours worked and the prevalence of physical activity, with a lower prevalence of recommended physical activity among participants working full-time (30 or more hours a week), higher prevalence among those working part-time (less than 30 hours a week), and the highest prevalence among those who were not working at all.

Physical activity rates did not increase greatly among participants who had retired from the civil service and who had gone on to do further full-time work. Also, workers in lower grade occupations were less likely to meet recommended physical activity levels than those in higher grades.

Rochon, P.A., Field, T.S., Bates, D.W., and others. (2006, January). "Clinical application of a computerized system for physician order entry with clinical decision support to prevent adverse drug events in long-term care." (AHRQ grants HS10481 and HS15430). *Canadian Medical Association Journal* 174(1), pp. 52-54.

This paper describes the case of an 89-year-old woman with multiple medical problems living in a long-term care facility, for whom a simple prescribing decision initiated a cascade of errors culminating in an adverse drug event (ADE). The authors use this case to illustrate how computerized physician order entry (CPOE) with clinical decision support (CDS) could have avoided the prescribing errors involved and prevented the ADE. They point out that, like the case patient, residents of long-term care facilities are prescribed an average of more than six concurrent drug therapies and are often very elderly and frail—all conditions that markedly increase their potential for ADEs. They conclude that CPOE—CDS is a promising new technology that may be very useful in long-term care settings.

Rockman, C.B., Halm, E.A., Wang, J.J., and others. (2005, November). "Primary closure of the carotid artery is associated with poorer outcomes during carotid endarterectomy." (AHRQ Grant HS09754). *Journal of Vascular Surgery* 42(5), pp. 870-877.

A new study of several carotid endarterectomy (CEA) techniques found that primary closure during CEA has poorer outcomes than either standard endarterectomy with patch angioplasty or eversion endarterectomy. Primary closure was associated with more than double the rate of perioperative stroke or death than the other two techniques (6.0 vs. 2.5 percent), despite similar symptoms in the patients prior to surgery.

Researchers retrospectively studied consecutive CEAs performed by 81 surgeons during 1997 and 1998 in 6 regional hospitals. They reviewed medical charts, surgical records, and hospital administrative databases to ascertain clinical data on each case and all deaths and nonfatal strokes within 30 days of surgery. A total of 1,972 CEAs were performed on patients whose average age was 72 years. Nearly 29 percent of patients had preoperative neurologic symptoms and 71 percent had no symptoms prior to surgery. Primary closure was performed in 12 percent, patch angioplasty in 70 percent, and eversion endarterectomy in 18 percent, with no significant difference in preoperative symptom status among groups.

Schwartz, L.M., Woloshini, S., and Birkmeyer, J.D. (2005, September). "How do elderly patients decide where to go for major surgery? Telephone interview survey."

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(AHRQ Grant HS1304). *British Medical Journal* 331, pp. 821-827.

This study indicates that most elderly Medicare patients still rely on their referring physicians' opinion when selecting a hospital for major surgery. Researchers conducted a telephone survey with 510 randomly selected elderly Medicare beneficiaries who had undergone an elective, high-risk procedure about 3 years earlier. These procedures included abdominal aneurysm repair, heart valve replacement, or surgery for bladder, lung, or stomach cancer. Although all respondents could choose where to have surgery, only 55 percent said there was an alternative hospital in their area where they could have gone, and 10 percent of them seriously considered going elsewhere for surgery. Few (11 percent) looked for information to compare hospitals. Nearly all those interviewed thought their hospital and surgeon had good reputations (94 and 88 percent, respectively), beliefs mostly determined by what their referring doctors said.

When the elderly advised a friend where to go for surgery, a surgeon's reputation was the most influential factor (78 percent said it would influence their advice a lot), followed by the hospital having "nationally recognized" surgeons (63 percent).

Seid, M. and Stevens, G.D. (2005, December). "Access to care and children's primary care experiences: Results from a prospective cohort study." (AHRQ Grant HS10317). *HSR: Health Services Research* 40(6), pp. 1758-1780.

This study found that having a regular provider and obtaining needed care have a greater impact on children's primary care experiences than having health insurance. A continuously insured child was found to have, on average, a total primary care score 6.2 points higher than one continuously uninsured, based on the Parents' Perceptions of Primary Care (P3C) measure. Children with a regular physician had a score 10.9 points higher, on average, than those who never had a regular physician. Finally, children who never had to forego needed care had scores 10.7 points higher, on average, than those who report foregone care (unmet needed care).

After controlling for other factors that affect the primary care experience, such as parent's language and mother's education level, gaining or losing insurance during the 1-year study period did not have a significant effect on primary care experiences. Gaining a regular physician was associated with primary care scores no different from always having had one, but losing a regular physician was associated with scores an average of 9.2 points lower on the P3C.

Singh-Manoux, A. and Marmot, M. (2005, December). "High blood pressure was associated with cognitive function in middle-age in the Whitehall II study." (AHRQ Grant HS06516). *Journal of Clinical Epidemiology* 58, pp. 1308-1315.

A new Whitehall II study of British civil servants links elevated blood pressure—both systolic (SBP) and diastolic (DBP)—to poor cognitive performance among middle-aged men and women as well. Researchers analyzed blood pressure data obtained at baseline or Phase I (1985-1988), when the 5,838 civil workers were an average of 44 years old, and again at Phase 3 (1991-1994), and Phase 5 (1997-1999), when they were an average of 56 years old. They assessed cognitive function using five standard tasks (a memory test, AH 4-1 test of verbal and mathematical reasoning, Mill-Hill vocabulary test, phonemic fluency, and semantic fluency) and examined the relationship between both baseline and current blood pressure with cognitive performance.

Overall, there was a small but significant inverse relationship between blood pressure and cognitive ability, with both elevated SBP and DBP associated with poor cognitive performance. Blood pressure was particularly related to verbal fluency (both phonemic and semantic), AH 4-1, and memory. In women, an elevated SBP predicted poor performance on all the cognitive outcomes.

Tebb, K.P., Pantell, R.H., Wibbelsman, C.J., and others. (2005, October). "Screening sexually active adolescents for *Chlamydia trachomatis*: What about the boys?" (AHRQ Grant HS10537) *American Journal of Public Health* 95(10), pp. 1806-1810.

Routine screening for *Chlamydia trachomatis* (CT) infection is currently recommended for sexually active women aged 15 to 25 years. Only the American Medical Association recommends CT urinalysis screening for sexually active male adolescents. This study found that a quality improvement (QI) team at pediatric clinics can substantially improve screening of CT among male adolescents.

Researchers randomized 10 pediatric clinics in a health maintenance organization in the San Francisco Bay area into 2 groups. Five QI clinics participated in a QI program that included a QI team to establish protocols for gathering adolescents' confidential sexual histories, collecting urine samples, and examining ways to reduce barriers to CT screening. The five control clinics received traditional information on CT screening. A total of 1,088 sexually active male adolescents 14 to 18 years old visited the QI clinics and 1,134 visited the control clinics.

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Researchers found CT infection in 4 percent of sexually active male adolescents screened at pediatric clinics. QI clinics increased CT screening among adolescent boys during pediatric health maintenance visits from 0 percent at baseline to 60 percent 18 months later. Screening at control clinics only changed from 0 to 5 percent.

Thompson, D.A., Lubomski, L., Holzmueller, C., and others. (2005, October). "Integrating the intensive care unit safety reporting system with existing incident reporting systems." (AHRQ Grant HS11902). *Journal on Quality and Patient Safety* 31(10), pp. 585-592.

Researchers at Johns Hopkins University found that, in some hospitals, leadership on incident reporting was minimal, and even when a voluntary system such as the anonymous, Web-based Intensive Care Unity Safety Reporting System (ICUSRS) was integrated with existing reporting system(s), few reports were submitted. Reporting of an adverse event that could be linked to a provider was often associated with shame and blame. In the most successful units, reporting was transparent rather than secretive, and staff were reminded to report on patient care rounds.

Despite enthusiasm about the ICUSRS, risk managers at several hospitals were concerned about disclosure laws within their States and were the largest opponents of ICUSRS implementation. Three out of 30 responding hospitals ultimately withdrew because of existing disclosure laws, even though the ICUSRS has two levels of confidentiality and protection of data against discoverability, both as an institutionally approved research project and as a Federally funded project.

Tsai, A.C., Votruba, M., Bridges, J.F., and Cebul, R.D. (2006, February). "Overcoming bias in estimating the volume-outcome relationship." (AHRQ grants T32 HS00059 and HS14151). *HSR: Health Services Research* 41(1), pp. 252-264.

This study examined the effect of hospital volume on 30-day mortality for patients with congestive heart failure (CHF) using administrative and clinical data in conventional regression and instrumental variables (IV) estimation models. The researchers concluded that use of only administrative data for volume-outcomes research may generate spurious findings. What's more, conventional estimates of the volume-outcome relationship may be contaminated by the effects of selective referral to certain hospitals. These results suggest that efforts to concentrate hospital-based CHF care in high-volume hospitals may not reduce mortality among elderly patients. The findings were based on analysis of data on comorbid conditions, vital signs, clinical status, and laboratory test results for 21,555 elderly Medicare-insured patients hospitalized for CHF in Ohio from 1991 to 1997.

Zhang, S., Sun, D., He, C.Z., and Schootman, M. (2006). "A Bayesian semi-parametric model for colorectal cancer incidences." (AHRQ grant HS14095). *Statistics in Medicine* 25, pp. 285-309.

Most studies that have explored the relationship between colorectal cancer trends and factors like age, gender, and race, have examined trends over large areas like States, but not smaller areas like counties. However, Bayesian empirical and hierarchical approaches have been recently used for solving small-area estimation problems. In this paper, the authors propose a Bayesian semi-parametric model to capture the interaction among demographic effects (age and gender), spatial effects (county), and temporal effects of colorectal cancer incidences simultaneously. Data analysis showed significant spatial correlation only existed in the age group of 50 to 59 years. Males and females in their 50s and 60s showed fairly strong correlation, which suggests that gender correlation cannot be ignored in this model.

Zhou, K.H., Greve, D.N., Wang, M., and others. (2005, December). "Reproducibility of functional MR imaging: Preliminary results of prospective multi-institutional study performed by biomedical informatics research network." (AHRQ grant HS13234). *Radiology* 237, pp. 781-789.

Functional magnetic resonance (MR) imaging has substantially contributed to our understanding of normal and diseased brains in humans. However, much variability in the magnitude, spatial distribution, and statistical significance of the corresponding functional MR imaging maps often exists, owing to differences in the equipment used and to subject- and site-specific differences. The researchers prospectively investigated the factors—including subject, brain hemisphere, study site, field strength, MR imaging unit vendor, imaging run, and examination visit—that affect the reproducibility of functional MR imaging activations based on a repeated sensory-motor task performed by five healthy men aged 20–29 years at 10 sites. MR imaging at 3.0-T and 4.0-T yielded higher reproducibility across sites and significantly better results than 1.5-T imaging. The effects of subject, k-space, and field strength on examination reproducibility were significant. ■

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