



RESEARCH ACTIVITIES

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Surgical errors cost nearly \$1.5 billion annually

Potentially preventable medical errors that occur during or after surgery may cost employers nearly \$1.5 billion a year, according to new estimates by researchers William E. Encinosa, Ph.D., and Fred J. Hellinger, Ph.D., of the Agency for Healthcare Research and Quality (AHRQ). The study found that insurers paid an additional \$28,218 (52 percent more) and an additional \$19,480 (48 percent more) for surgery patients who experienced acute respiratory failure or post-operative infections, respectively, compared with patients who did not experience either error.

The authors also found these additional costs for surgery patients who experienced the following medical errors compared with those who did not:

- Nursing care associated with medical errors, including pressure ulcers and hip fractures – \$12,196 (33 percent more).
- Metabolic problems associated with medical errors, including kidney failure or uncontrolled blood sugar – \$11,797 (32 percent more).
- Blood clots or other vascular or pulmonary problems associated

with medical errors – \$7,838 (25 percent more).

- Wound opening associated with medical errors – \$1,426 (6 percent more).

The study also found that 1 of every 10 patients who died within 90 days of surgery did so because of a preventable error and that one-third of the deaths occurred after the initial hospital discharge.

The study was based on a nationwide sample of more than 161,000 patients age 18 to 64 in employer-based health plans who underwent surgery between 2001 and 2002. The authors used AHRQ's Patient Safety Indicators to identify medical errors. Drs. Encinosa and Hellinger conclude that studies that focus only on medical errors incurred during the initial hospital stay may underestimate the financial impact of patient safety events by up to 30 percent.

For details, see the "Impact of medical errors on 90-day costs and outcomes: An examination of surgical patients," by Drs. Encinosa and Hellinger in the July 2008 *Health Services Research*. Reprints (AHRQ publication no. 08-R079) are available from AHRQ.* ■

Registered nurses are key to detecting, correcting, and preventing medical errors during critical care

Since registered nurses (RNs) play a pivotal role in preventing or reducing the impact of medical errors during critical care, interventions should build on factors that enhance their effectiveness in preventing, intercepting, or correcting these errors, suggests a new study. Using entries in daily logbooks maintained by a random sample of 502 critical care nurses over a 28-day period, Ann E. Rogers, Ph.D., R.N., of the University of Pennsylvania School of Nursing, and colleagues examined the type and frequency of medical errors detected by critical care nurses. They found 367 errors identified by 184 of the nurse participants during the data-gathering period. Errors in medication administration (most commonly, wrong drug, wrong dosage, or dose not given) were the most frequent problems. They

accounted for 163 of the errors—43 percent of which involve giving the wrong dosage of a prescribed medication. Procedural errors were the next most common (115 errors reported), followed by charting errors (55 instances), and transcription errors (55 instances).

The nurses caught only 43 of the 367 errors—mostly medication errors or overlooked allergies—before they reached the patient. Yet, nurses were particularly effective at discovering and correcting errors that had been made by other nurses and other members of the health care team. The incredibly busy pace of critical care units may play a role in errors, with an average of 187 activities performed for each patient each day. Heavy workloads and fatigue are also factors that may affect the ability of RNs to intercept or correct errors, note the researchers.

Their results did not show differences in error types or rates based on the size of the critical care unit or of the hospital. Because procedures for administering medications and other health care procedures are similar across health care institutions despite how they are organized or their size, the researchers suggest that future studies should focus on system- and process-related factors. Their study was funded in part by a grant from the Agency for Healthcare Research and Quality (HS11963).

More details are in “Role of registered nurses in error prevention, discovery and correction,” by Dr. Rogers, Grace E. Dean, Ph.D., R.N., Wei-Ting Hwang, Ph.D., and Linda D. Scott, Ph.D., R.N., in the April 2008 *Quality and Safety in Health Care* 17(2), pp.117–121. ■

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Improving health literacy in elderly patients, see page 11

Growth hormone and effect on athletic performance, see page 14

Identifying depression in the emergency department, see page 18

Children’s health insurance and unmet health care needs, see page 22

Use of voluntary reporting along with other strategies best identifies adverse drug events affecting children

Clinicians typically use medical chart review, voluntary reporting, or computerized adverse drug event (ADE) surveillance to identify pediatric ADEs. However, a new study found that surveillance did not detect ADEs in children as well as in adults. The best approach to detecting pediatric ADEs is use of voluntary reporting in tandem with targeted chart review and computerized surveillance, conclude Jeffrey Ferranti, M.D., M.S., and Duke University colleagues. They found that voluntary reporting efficiently identified administration errors, while chart and computerized surveillance excelled at detecting ADEs caused by high-risk medications and identifying evolving conditions that may provoke imminent patient harm.

The researchers evaluated all medication-related events detected by the Duke University Hospital's computerized surveillance and safety reporting systems over a 1-year period. They scored ADEs for severity and causality and assigned each a drug event category.

Of the total 849 medication-related reports entered into the safety reporting system, 93 caused patient

harm, resulting in an ADE rate of 1.8 events per 1,000 pediatric patient-days.

The two methods of detecting ADEs did not duplicate each other, but were complementary. The most common events identified by the voluntary safety reporting system were failures in the medication use process (27 percent), drug omissions (16 percent), and dose- or rate-related events (13 percent). The most frequent ADE surveillance categories were nephrotoxins (21 percent), narcotics and benzodiazepines (19 percent), and hypoglycemia (11.5 percent). Most voluntarily reported events originated in intensive care units (72 percent), whereas surveillance events were split evenly across intensive and general care. The study was supported by the Agency for Healthcare Research and Quality (HS14882).

See "Reevaluating the safety profile of pediatrics: A comparison of computerized adverse drug event surveillance and voluntary reporting in the pediatric environment," by Dr. Ferranti, Monica M. Horvath, Ph.D., Heidi Cozart, R.Ph., and others, in the May 2008 *Pediatrics* 121, pp. e1201-e1207. ■

Women's Health

Pregnant Latinas who experience intimate partner violence are more likely to be depressed or have PTSD

Women who are abused while they are pregnant are more likely to attempt homicide, have unplanned pregnancies, forego prenatal care until the second trimester, and are at greater risk for complications during birth, previous studies have shown. Adding to this knowledge, a new study finds pregnant Latina women who have suffered physical, emotional, or sexual abuse are more likely to be depressed or suffer from post-traumatic stress disorder (PTSD). Michael A. Rodriguez, M.D., M.P.H., and his colleagues at the University of California, Los Angeles, used questionnaires to assess 210 pregnant Latina women

in Los Angeles from January 2003 to January 2004 for intimate partner violence, strength (mastery, resilience, social support, coping strategies), adverse social behavior (social undermining, trauma history, alcohol and tobacco use), PTSD, and depression.

Nearly 44 percent of the women reported intimate partner abuse. All 210 women in the study reported similar levels of mastery (being in control of their lives) and resilience. However, social support was lower for the 92 abused women, who also reported higher levels of social undermining by their partner (criticism, anger, insults) and stress. As expected, women who were

exposed to abuse were more likely to be depressed (41.3 percent) or have PTSD (16.3 percent) than their nonabused counterparts (18.6 and 7.6 percent, respectively).

The authors recommend screening Latina patients at care sites to identify who is at risk for depression, PTSD, and intimate partner violence. Once these patients are identified, interventions can be implemented to build mastery, resilience, social support, and active coping skills. This study was funded in part by the Agency for Healthcare Research and Quality (HS11104).

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Pregnant Latinas

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See “Intimate partner violence, depression and PTSD among pregnant Latina women,” by Dr.

Rodriguez, MarySue V. Heilemann, Ph.D., R.N., Eve Fielder, Ph.D., and others in the January/February 2008 *Annals of Family Medicine* 6(1), pp. 44-52. ■

Women sexually abused by partners have worse health than never abused women, even years after the abuse has stopped

Thirty-four percent of women surveyed in a large health plan had suffered from physical and/or sexual intimate partner violence (IPV) during their adult lifetime. Sexual IPV took an enormous toll on women’s health, whether or not they also suffered from physical IPV—their depression and physical symptoms persisted for many years after the abuse had stopped, according to a new study. The researchers analyzed the surveys of 3,429 insured women about whether they had ever suffered from physical or sexual IPV, as well as their mental, social, and physical health. Although 34 percent of the women had suffered from sexual and/or physical IPV, only 5 percent said they suffered the abuse within the past year. For the others, it had been a median of 19 years since the last episode of abuse.

Compared with never abused women, women with a history of sexual IPV had the worst overall health. Women with a history of sexual IPV only had scores on the mental and social health components of the Short Form-36 survey that were 4.28 to 6.22 points lower than nonabused women, and women with a history of both physical and sexual IPV had scores that were 4.95 to 5.81 points lower. Women who suffered from physical IPV only had scores that were 2.41 to 2.87 points lower than never abused women.

Depression was also more prevalent among sexually abused women than other women. Compared with never abused women, women with a history of sexual IPV only had 2.4 to 3 times greater prevalence of depressive and severe depressive symptoms. Women with a history of both physical and sexual IPV had 2.3 to 2.9 times greater prevalence, and women who had been physically abused only had 1.6 to 1.9 times greater prevalence of these symptoms than never abused women. Finally, compared with never abused women, women who were both physically and sexually abused were nearly twice as likely to report fair or poor health, had more overall symptoms, more limited involvement in voluntary groups, and less trust of individuals in their community. The study was supported by the Agency for Healthcare Research and Quality (HS10909).

See “Health outcomes in women with physical and sexual intimate partner violence exposure,” by Amy E. Bonomi, Ph.D., M.P.H., Melissa L. Anderson, M.S., Frederick P. Rivara, M.D., M.P.H., and Robert S. Thompson, M.D., in the September 2007 *Journal of Women’s Health* 16(7), pp. 987-997. ■

Visit the AHRQ Patient Safety Network Web Site

AHRQ’s national Web site—the AHRQ Patient Safety Network, or AHRQ PSNet—continues to be a valuable gateway to resources for improving patient safety and preventing medical errors and is the first comprehensive effort to help health care providers, administrators, and consumers learn about all aspects of patient safety. The Web site includes summaries of tools and findings related to patient safety research, information on upcoming meetings and conferences, and annotated links to articles, books, and reports. Readers can customize the site around their unique interests and needs through the Web site’s unique “My PSNet” feature. To visit the AHRQ PSNet Web site, go to <http://psnet.ahrq.gov/>.

Intimate partner violence affects the abused women as well as the care use and costs of their children

Over 40 percent of women suffer from intimate partner violence (IPV)—physical or sexual abuse, threats, or controlling behaviors—during their adult lives. A new study found that their children also suffer. Children of women who are or have been abused by their partners seek more mental and other health care than children of nonabused mothers. This is true even of children whose mothers were abused before they were born. A group of researchers compared health care use and costs of 760 children of mothers with no history of IPV with 631 children of mothers with a history of IPV over an 11-year period (1992-2003).

Nearly 47 percent of the women reported having suffered from some

type of IPV as an adult. Health care use and costs were greater for children of mothers with a history of IPV and were significantly greater for mental health services, primary care visits and costs (15 percent higher), and laboratory costs. Even after IPV was reported to have ended, children of abused mothers were three times more likely to use mental health services and had 16 percent higher primary care costs than did children of nonabused mothers, although their overall costs were no higher.

Children whose mothers' abuse ended before the children were born used significantly more mental health, primary care, specialty care, and pharmacy services than did children whose

mothers had not been abused, and their care costs were 24 percent higher than children of nonabused mothers. One important limitation of the study was that the researchers did not know if the children were also abused. The study was supported by the Agency for Healthcare Research and Quality (HS10909).

See "Intimate partner violence and health care costs and utilization for children living in the home," by Frederick P. Rivara, M.D., M.P.H., Melissa L. Anderson, M.S., Paul Fishman, Ph.D., and others, in the December 2007 *Pediatrics* 120, pp. 1270-1277. ■

Black women's choice of hospital to give birth contributes to racial disparities in neonatal deaths

Black infants in the United States are more than twice as likely to die than white infants during the first month of life (the neonatal period). This is partly due to more preterm births among black women. However, the hospitals in which black women deliver also contribute substantially to the black/white disparities in neonatal deaths among infants weighing less than 3.3 pounds, finds a new study. A team from Mount Sinai School of Medicine analyzed New York City records on all live births and deaths of infants weighing 1.1 to 3.3 lbs (very low birthweight, VLBW), who were born in 45 of the city's hospitals in the 6-year period from 1996 through 2001.

The neonatal mortality rates for VLBW infants ranged from 9.6 to 27.2 deaths per 1,000 births, after

adjusting for their risk of dying (based on their clinical status). VLBW white infants were more likely to be born in hospitals in the lowest third of neonatal mortality rates (49 percent) compared with VLBW black infants (29 percent). If black women delivered in the same hospitals as white women, the VLBW black neonatal mortality rates would be reduced by 6.7 deaths per 1,000 VLBW births, removing more than one-third (34.5 percent) of the black/white disparity in VLBW neonatal mortality rates in New York City.

The hospital volume of VLBW deliveries was modestly associated with VLBW mortality rates, but explained little of the racial disparity. It is not known why hospitals that treat a greater proportion of black VLBW infants experience higher risk-adjusted

neonatal mortality rates, but the findings suggest more study is needed in this area. The reasons why women deliver at specific hospitals likely involve several factors, ranging from where a patient resides and distance to the hospital (which may be influenced by patterns of racial segregation) to physician referral, patient choice, and insurance contracts. The study was supported in part by the Agency for Healthcare Research and Quality (HS10859).

See "Black/white differences in very low birth weight neonatal mortality rates among New York City hospitals," by Elizabeth A. Howell, M.D., M.P.P., Paul Hebert, Ph.D., Samprit Chatterjee, Ph.D., and others, in the March 2008 *Pediatrics* 121(3), pp. e407-e415. ■

Women's perception of risk affects screening for colon cancer, but not cervical or breast cancer

How older women perceive their risk of developing colon cancer significantly affects whether they get screened for it. However, a new study finds that risk perception does not seem to affect screening for cervical or breast cancer. Researchers interviewed 1,160 white, black, Hispanic, and Asian women (50 to 80 years of age) from primary care practices in San Francisco about their perceived risk for breast, cervical, and colon cancer. They compared their perceived risk with self-reported screening behavior by ethnicity.

The perceived lifetime risk of cancer varied by ethnicity, with Asian women generally perceiving the lowest risk and Hispanic women the highest risk for all three types of cancer. For example, compared with white women, Hispanic women had three times higher perceived risk for cervical cancer and colon cancer, and Asian women had 40 percent lower perceived risk for both cancers. There were no significant differences in risk perception between black and white women for cervical, breast, and colon cancer, even though black women suffer higher incidence and deaths from these cancers.

Close to 90 percent of women reported having undergone mammography and about 70 percent reported having had a Pap test in the previous 2 years. About 70 percent of the women studied were current on colon cancer screening. After demographic factors and cancer history were controlled for, there was no significant relationship between perception of cervical or breast cancer and having had a Pap test or mammogram in the prior 2 years. However, reporting a moderate to very high risk perception for colon cancer was associated with nearly three times higher odds of having undergone colonoscopy in the last 10 years. These findings suggest that communication of cancer risk information may serve as an important tool to promote screening and early cancer detection. The study was supported in part by the Agency for Healthcare Research and Quality (HS10856).

See "Association between cancer risk perception and screening behavior among diverse women," by Sue E. Kim, Ph.D., M.P.H., Eliseo J. Perez-Stable, M.D., Sabrina Wong, R.N., Ph.D., and others, in the April 14, 2008 *Archives of Internal Medicine* 168(7), pp. 728-734. ■

Women who receive food stamps are more likely to be overweight and obese and to spend more on health care

The Federal Food Stamp Program (FSP) helps prevent malnutrition among impoverished families by supplementing food budgets. However, women who receive food stamps are nearly 6 percent less likely to be normal weight and nearly 7 percent more likely to be obese than women who do not receive food stamps, estimates a new study. Yet men receiving food stamps are no more likely to become obese than men who do not receive food stamps. The increase in women's body weight due to FSP participation was smaller than suggested by previous studies. Nonetheless, this increase has potential consequences for their

health care expenditure patterns, suggest economists Chad D. Meyerhoefer, Ph.D., of the Agency for Healthcare Research and Quality, and Yuriy Pylypchuk, Ph.D., of Social and Scientific Systems.

Their analysis estimated that participation in the FSP leads women to devote \$94 extra per year to health care (which results in an additional \$708 in total medical spending). This is roughly equivalent to two to three extra office visits, or perhaps one or two additional prescription drugs. The researchers estimated a small negative relationship between health care spending and FSP

participation for men, but it was not statistically significant.

They analyzed State-level data on FSP characteristics, which they merged with data from nationally representative 2000-2003 Medical Expenditure Panel Survey data to estimate the link between FSP participation and weight and health care expenditures of nonelderly adults. Overall, the direct effect of FSP participation on medical spending through higher discretionary income (freed up from food purchases) was significantly larger than the indirect effect through changes in weight status. Although a growing number of States are providing nutritional

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Food Stamps

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education to the FSP population to steer them toward healthier, low-calorie foods, it is unclear whether this has had any significant impact on the driving forces of obesity.

More details are in “Does participation in the food stamp program increase the prevalence of obesity and health care spending?” by Drs. Meyerhoefer and Pylypchuk, in the May 2008 *American Journal of Agricultural*

Economics 90(2), pp. 287-305. Reprints (AHRQ Publication No. 08-R072) are available from AHRQ.* ■

Child/Adolescent Health

Overweight adolescents with type 2 diabetes underestimate their weight problem, as do their parents

Over 80 percent of children with type 2 diabetes are overweight or at risk for becoming overweight. These excess pounds increase their risk of developing diabetes-related complications, such as eye or kidney disease. Yet, severely overweight adolescents (mean body mass index, BMI, of 36.4 kg/m²) and their parents tend to underestimate the seriousness of their weight problem, finds a new study. This misperception is also linked to poorer diet and more perceived barriers to healthy exercise and diet behaviors, note the researchers.

They interviewed 104 adolescents (ages 12 to 20) and their parents about perceptions of the adolescents' weight, diet, and exercise behaviors, as well as barriers to engaging in these behaviors. They also calculated the child's BMI based on weight documented in their clinical records. While 87 percent of children were overweight (a mean of 221 pounds), only 41 percent of parents and 35 percent of adolescents considered the adolescent “very overweight.” Also, 40 percent of parents and 55 percent of adolescents with BMIs at or above the 95th percentile considered their weight “about right.”

Adolescents were more likely to underestimate their weight when their parents also underestimated their weight than when parents accurately perceived their weight (66.2 vs. 34.2 percent). Girls were more likely than boys to underestimate the severity of their weight problem (42.9 vs. 22 percent), but parental accuracy did not differ by the child's sex. Both parents and adolescents who underestimated the adolescent's weight were less likely to report good dietary behaviors and physical activity (although more weakly correlated) and more likely to report barriers to healthy diet and exercise than those who correctly estimated or overestimated the adolescent's weight. The study was supported in part by the Agency for Healthcare Research and Quality (T32 HS00032).

More details are in “Accuracy of perceptions of overweight and relation to self-care behaviors among adolescents with type 2 diabetes and their parents,” by Asheley Cockrell Skinner, Ph.D., Morris Weinberger, Ph.D., Shelagh Mulvaney, Ph.D., and others, in the February 2008 *Diabetes Care* 31(2), pp. 227-229. ■

Black girls look at being overweight with different eyes

The current epidemic of childhood overweight is a special problem for black girls in their teens. For example, 23.6 percent of black girls aged 12 to 19 years are overweight in contrast to 12.7 percent of white girls and 19.9 percent of Mexican American girls the same age (according to data for the years 1999 through 2002). To understand

why, researchers conducted a pilot study of 12 overweight black girls from 12 to 18 years of age.

The girls were in a hospital-based program to screen for diabetes among children and intervene to prevent the disease's development. The researchers asked the girls about their attitudes towards weight, diet, and physical activity in five group interviews.

According to the researchers, the girls were “conditioned” against the impact of hurtful, weight-related comments and such comments did not motivate them to change their eating or physical activity habits. The girls used culturally based terms (such as “big,” “medium,” “thick,” “fat,” or “skinny”) to describe body size, rather than an

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Overweight black girls

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objective measure such as weight. Rather than visualizing an ideal weight or body size, the girls preferred a range of acceptable sizes—self-satisfaction with size was more important than actual size. The teenage girls consistently described large body size as preferable, and stated that large breasts and buttocks made one physically attractive.

As to food choice, the girls knew which foods were considered “healthy,” but healthy foods were not seen as filling as the foods—frequently fried—that they were

used to from their home life and culture. The texture, taste, and appearance of food were more important than food’s nutritional value to these teens. When asked about participation in physical activity, the girls brought up a range of barriers. They mentioned the unavailability of preferred activities at their school, exclusion from desired sports due to their weight and blood pressure, and the “beauty cost” of vigorous activity—getting sweaty or messing up their hair. The girls also noted time spent on schoolwork and the need to stay home in an unsafe neighborhood. These findings can help design

future context-sensitive interventions aimed at reducing obesity in black teenage girls, conclude the researchers. The study was funded in part by the Agency for Healthcare Research and Quality (HS13353).

More details are in “Cultural attitudes toward weight, diet, and physical activity among overweight African American girls,” by Josephine E. A. Boyington, Ph.D., M.P.H., R.N., Lori Carter-Edwards, Ph.D., M.P.H., Mark Piehl, M.D., M.P.H., and others, in the April 2008 *Preventing Chronic Disease* 5(2), www.cdc.gov/pcd/issues/2008/apr/07_0056.htm. [Web only.] ■

Task Force recommends screening for hearing loss in all newborns

All newborn infants should be screened for congenital hearing loss that is present at birth, according to a new recommendation from the U.S. Preventive Services Task Force. The recommendation and the accompanying summary of evidence appear in the July 7 issue of *Pediatrics*.

Children whose hearing is impaired at birth, during infancy, or in early childhood can have problems with verbal and nonverbal communication and social skills, increased behavioral problems, and lower academic achievement compared with children with normal hearing. Infants at high risk for hearing loss include those who have spent more than 2 days in a neonatal intensive care unit; those diagnosed with certain syndromes, such as Waardenburg or Usher syndrome; and those with a family history of childhood hearing loss. Because half of infants with hearing loss have no identifiable risk factors, the Task Force proposes universal screening, rather than targeted screening. Detecting and treating infants for hearing loss, rather than detecting it at a later age, provides better chances for positive outcomes such as stronger language skills.

For every 1,000 infants born in the United States, congenital hearing loss occurs in between 1 and 3

infants. Congenital hearing loss happens more frequently than other conditions typically screened for as part of a health care evaluation. Infants should be screened before they are 1 month old; those who do not pass the screening should receive further hearing and medical evaluation before they are 3 months old. Thirty-nine States have enacted legislation related to universal newborn hearing screening. Laws differ on whether screening is mandated or encouraged, how results are reported, and how screening is funded.

The Task Force recommends screening using a two-step screening process that includes otoacoustic emissions followed by auditory brainstem response in those infants who fail the first test. Otoacoustic emissions check the inner ear response to sound and are measured by placing a very sensitive microphone in the ear canal to measure the ear’s response. The auditory brainstem response checks the brain’s response to sound and is measured by placing electrodes on the infant’s head to record the brain’s response to sound. Good evidence was found that newborn hearing screening testing is highly accurate and leads to earlier identification and treatment of infants with hearing

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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.

Hearing loss

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loss. Good evidence was also found demonstrating that early detection and treatment improve language outcomes.

The Task Force is the leading independent panel of experts in prevention and primary care. The Task Force, which is supported by the Agency for Healthcare Research and Quality (AHRQ), conducts rigorous, impartial assessments of the scientific evidence for the effectiveness of a broad range of clinical preventive services, including screening, counseling, and

preventive medications. Its recommendations are considered the gold standard for clinical preventive services. The Task Force based its conclusions on a report from a research team led by Heidi Nelson, M.D., at AHRQ's Evidence-based Practice Center at the Oregon Health & Science University in Portland.

The recommendations and materials for clinicians are available on the AHRQ Web site at www.ahrq.gov/clinic/uspstf/uspsnbhr.htm. Previous Task Force recommendations, summaries of the evidence, and related materials are available from AHRQ.* ■

Most children who enroll in SCHIP still have some type of health insurance a year later

Over three-fourths of children who enroll in the State Children's Health Insurance Program (SCHIP) are still publicly insured a year later (either through SCHIP or Medicaid), while some transition to private insurance coverage, according to a report by the Agency for Healthcare Research and Quality. SCHIP provides health insurance coverage to low-income children whose families earn too much to qualify for Medicaid, but lack private coverage. The report summarizes findings from a Child Health Insurance Research Initiative (CHIRI™) project that studied patterns of insurance coverage for low-income children enrolled in the Kansas and New York SCHIP programs.

The report also found that:

- 15 percent of Kansas and 4 percent of New York SCHIP enrollees obtained private insurance coverage after leaving SCHIP.
- Most children who left SCHIP within 1 year of enrollment reverted to their previous type of health insurance (Medicaid or private).

- SCHIP retention was boosted by a simplified renewal policy, which automatically reenrolled children in SCHIP unless their families submitted reenrollment forms indicating a change affecting their eligibility.
- Children who disenrolled from SCHIP when their eligibility was redetermined at 1 year were more likely to become uninsured than children who left during their first year of enrollment.

The findings were based on surveys conducted in 2000 and 2001 on new SCHIP enrollees in Kansas and New York. The surveys were conducted shortly after enrollment and again 13 to 15 months later. The researchers matched survey responses with SCHIP administrative data.

For details, see *Do SCHIP Enrollees Stay Insured?*, CHIRI Issue Brief #7 at www.ahrq.gov/chiri/chiribrf7/chiribrf7.htm. ■

Elderly/Long-Term Care

Fewer elderly persons are developing heart failure and those who do are surviving longer

Over the past decade, fewer elderly persons developed heart failure, and more of them are surviving longer with the disease, finds a new study of Medicare beneficiaries. The

incidence of heart failure declined from 32 per 1,000 person-years in 1994 to 29 per 1,000 person-years in 2003. Incidence dropped most sharply among those aged 80 to 84 years (from 57.5 to 48.4 per 1,000

person-years) and rose only slightly among those aged 65 to 69 years (from 17.5 to 19.3 per 1,000 person-years). Men continued to be more affected by heart failure than

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Heart failure

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women. By 2003, nearly 130 per 1,000 men were diagnosed with the condition compared with 115 per 1,000 women.

Heart failure mortality rates also declined during the study period. Risk-adjusted 30-day, 1-year, and 5-year mortality rates decreased by more than 5 percent (from 13 to 12.6 percent for men and from 11.5 to 10.8 percent for women), 5 percent (from 28.9 to 27.5 percent), and 3 percent (from 67.5 to 64.9 percent for men and from 61.7 to 60.2 percent for women), respectively.

Nevertheless, the prognosis for those with heart failure remained poor. For example, the 1-year mortality rate of 27.5 percent in 2002 was more than three times higher than for age- and sex-matched patients, and nearly two-thirds of those struck by the illness died within 5 years. Also, the average survival was 2.9 years following diagnosis, with women living slightly longer than men (3.1 vs. 2.7 years). Identifying optimal strategies for the treatment and management of heart failure will become increasingly important as the size of the Medicare population grows, note the researchers. Their

findings were based on a nationally representative sample of nearly 3 million Medicare beneficiaries age 65 or older, who were diagnosed with heart failure between 1994 and 2003. The study was supported in part by the Agency for Healthcare Research and Quality (HS10548).

See “Incidence and prevalence of heart failure in elderly persons, 1994-2003,” by Lesley H. Curtis, Ph.D., David J. Whellan, M.D., M.H.S., Bradley G. Hammill, M.S., and others, in the February 25, 2008 *Archives of Internal Medicine* 168(4), pp. 418-424. ■

Incident reporting system helps gather information that can reduce falls by nursing home residents

A structured questionnaire that helps nursing home staff document falls by residents can improve the quality of fall documentation and subsequent safety analysis to identify correctable factors that increase fall risk. That is the conclusion of a study that compared incident reporting of resident falls in three nursing homes using a structured reporting system (the intervention group) with three nursing homes that continued using their existing narrative incident reporting process to document falls (the control group).

Laura Wagner, Ph.D., R.N., of the Baycrest Centre for Geriatric Care, and colleagues collected fall-related information from the medical records of 207 residents in the 6 nursing homes, who fell and met the eligibility criteria (age 65 years or older, not in a coma, and not receiving hospice services). The intervention group (104 residents) included significantly more older, female, and black residents than did the control group (103 residents), and more of them had physical restraints. Auditing of the medical records for both groups of nursing home residents revealed significantly greater documentation of fall diagnosis, management, and monitoring in the

nursing homes using the structured questionnaire than in the control nursing homes. These results were also true for residents who had fallen within 6 months of the beginning of the study period, and fell again during the study (47 in the intervention group and 43 in the control group).

Based on their findings, the researchers suggest that the use of paper or electronic systematic assessment forms can capture readily available information about a resident's fall that may not be included in a narrative record. Nursing homes using a structured questionnaire could also use the information to measure staff compliance with policies related to fall assessment, and to measure the success of specific fall interventions (such as bed alarms) by identifying a reduced number of falls associated with their use. The study was funded in part by the Agency for Healthcare Research and Quality (HS14663).

More details are in “Use of a falls incident reporting system to improve care process documentation in nursing homes,” by Dr. Wagner, Elizabeth Capezuti, Ph.D., R.N., Patricia C. Clark, Ph.D., R.N., and others, in the April 2008 *Quality and Safety in Health Care* 17(2), pp. 104-108. ■

Improving health literacy in elderly patients may enhance health status and reduce use of health care services

Health literacy directly affects a person's health status and health care use, suggests a new study. Researchers explored four intermediate factors that may link health literacy and health status and use: disease knowledge, health behavior, preventive care, and compliance. Contrary to their hypothesis, they found that health literacy was directly and positively linked to self-related health status and directly and negatively linked to hospitalization and emergency room use. Aside from health literacy, health behavior was the only variable found to be significantly correlated with perceived health status.

The researchers interviewed 489 elderly Medicare patients, most of whom were female (78.7 percent) and black (59.1 percent) with a high school education. To measure health literacy, the researchers used

the Short Test of Functional Health Literacy in Adults (S-TOFHLA). To measure the intermediate factors, they asked questions about chronic diseases, exercise, nutrition, and health responsibility; screening tests; and medication compliance. Health status was measured on a five-point scale from poor to excellent. Health care utilization was measured by the number of emergency room visits and hospital admissions in the previous year.

Educational attainment, frequently used as a proxy measure of health literacy, had indirect effects that were mediated via increased health literacy. The researchers suggest that improving health literacy may be the most effective and direct approach to improving the health status and reducing hospital and emergency room use among elderly patients. They also recommend that the

health care system be made more accessible to adults with low health literacy. This could be accomplished by designing more reader-friendly media with simple illustrations and culturally sensitive examples and enhancing patients' understanding of health information by communicating in simpler language and with simple instructions. This study was supported by the Agency for Healthcare Research and Quality (HS13004).

See "Effects of health literacy on health status and health service utilization amongst the elderly" by Young Ik Cho, Ph.D., Shoou-Yih D. Lee, Ph.D., Ahsan M. Arozullah, M.D., and Kathleen S. Crittenden, Ph.D. in the *Social Science and Medicine* 66, pp.1809-1816, 2008. ■

Racial disparities in care for the elderly persisted and even worsened for some procedures in the late 1990s

Despite a 1996 Department of Health and Human Services initiative to eliminate disparities in care, racial disparities in elderly care persisted and even worsened for some procedures during the late 1990s, reveals a new study. Jayasree Basu, Ph.D., M.B.A., of the Agency for Healthcare Research and Quality (AHRQ), and Lee R. Mobley, Ph.D., of RTI International, analyzed discharge data for New York and Pennsylvania hospitals for elderly patients undergoing three referral-sensitive hospital procedures during 1997 and 2001 using the Healthcare Cost and Utilization Project State Inpatient Database.

Percutaneous transluminal coronary angioplasty (PTCA), coronary artery bypass graft surgery (CABG), and hip/joint replacement are fairly discretionary, high-technology procedures that generally require a referral from a primary care physician to a specialist.

Elderly blacks were 37 percent less likely than elderly whites to have received PTCA in 1997, but were 48 percent less likely to have had this procedure in 2001, when compared with marker admissions (non-

referral-sensitive urgent). Likewise, blacks were 35 percent and 49 percent less likely than whites to have received CABG in 1997 and 2001, respectively, compared with marker admissions. The disparities in CABG use between whites and other races (those who were not black or Hispanic) were not significant in either year. Also, there were no differences in CABG or PTCA rates for Hispanics versus whites in 1997, but in 2001 Hispanics were 34 percent less likely to have undergone PTCA than whites. The differences between Hispanics and whites were not significant for hip/joint replacement in either year.

The elderly from racial groups other than blacks and Hispanic also showed greater disparities in care for these three procedures compared with elderly whites over time. While they were 39 percent more likely than whites to have received PTCA in 1997, the difference became nonsignificant in 2001. Also, the members of this elderly subgroup were 24 percent less likely to undergo hip/joint replacement in 1997, but were 46

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Racial disparities

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percent less likely to undergo the procedures in 2001. The authors explained that these findings may be consistent with expectations for the post-Balance Budget Act period with significant financial constraints

and Medicare managed care plan disruptions that could have affected minorities more.

See “Trends in racial disparities among the elderly for selected procedures,” by Drs. Basu and Mobley, in *Medical Care Research and Review*, available online May 19, 2008 at online.sagepub.com. Reprints (AHRQ Publication No. 08-R074) are available from AHRQ.* ■

Health Information Technology

Small hospitals owned by multihospital systems have higher levels of electronic medical record adoption

Large (more than 150 beds) and medium (26-150 beds) hospitals tend to have more advanced health information technology (HIT) capacity than small hospitals (25 or fewer beds), regardless of their affiliation with a health care system. In contrast, small hospitals owned by multihospital systems have more HIT capacity than small independent hospitals. A team of researchers analyzed 4 stages of electronic medical record (EMR) adoption among 4,017 U.S. hospitals. Stage 0 hospitals did not install all three ancillary systems (laboratory, pharmacy, and radiology), while stage 1 hospitals installed all three systems. Stage 2 hospitals had stage 1 capacity plus a clinical data repository. Stage 3

hospitals had stage 2 capacity and other advanced HIT applications such as order entry, nursing documentation, electronic medication administration record, clinical decision support systems, and picture archiving.

The mean EMR adoption stage was significantly different between small (0.85), medium (1.53), and large (1.79) hospitals. The level of EMR adoption did not differ among medium and large hospitals that belonged to a hospital system or were independent. However, small hospitals that were owned by a multihospital system had a significantly higher EMR adoption level than small independent hospitals (1.08 vs. 0.77).

Large hospitals tend to have the capacity and resources to afford

innovations and to invest in HIT. Better access to capital and purchasing efficiencies may be the most important factors for small hospitals struggling to improve their HIT capacity. Given that most hospitals with 25 or fewer beds are located in rural areas, this study presents important findings for small rural hospitals. The study was supported by the Agency for Healthcare Research and Quality (HS15009).

More details are in “Role of multihospital system membership in electronic medical record adoption,” by Pengxiang Li, Ph.D., James A. Bahensky, M.S., Mirou Jaana, Ph.D., and Marcia M. Ward, Ph.D., in the April-June 2008 *Health Care Management Review*, 33(2), pp. 169-177. ■

Pharmaceutical Research

Patients' distrust of the drug industry's influence on doctors and other beliefs may affect drug adherence

From 20 to 50 percent of patients do not take prescribed medications as their doctors recommend. Two factors may influence acceptance of a doctor's recommendation, according to a new study. Researchers found that many patients are concerned about the drug industry's influence (via gifts and other incentives) on doctors' prescribing practices. Also, many believe that there is a clear “best” medication for most health problems, even though there

is often no clear evidence for one treatment choice over another (equipoise). The study's findings suggest a need to examine how doctors' relationships with pharmaceutical representatives affect patient trust and medication adherence and how patients' understanding of equipoise affects medication adherence.

Researchers at the HMO Research Network Center for Education and Research on Therapeutics (CERT)

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Drug adherence

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interviewed 50 members of 2 Massachusetts health plans about beliefs and preferences about doctors' medication recommendations. Participants were asked several questions after listening to an audio vignette of a doctor prescribing a new drug for either depression or hypertension to a patient. The questions addressed how participants felt the patient-doctor relationship, outside influences, and the doctor's expertise affected the doctor's decision to recommend a medication.

Trust in and good communication with the doctor was associated with greater likelihood of following the medication recommendation. However, concerns about gifts and other financial incentives from pharmaceutical companies to the doctors appeared to threaten participants' trust in doctors'

recommendations. Participants believed doctors knew the "best" drug for their clinical situation, even though sometimes different drugs are equally effective for the same condition. In these cases, doctors could discuss possible cheaper generic drugs with patients, especially since participants said they wanted to be involved in drug cost decisions.

The study was supported by the Agency for Healthcare Research and Quality through a supplement to the HMO Research Network CERT (HS10391). For more information on the CERTs program, go to www.ahrq.gov/clinic/certsovr.htm.

See "Patients' beliefs and preferences regarding doctors' medication recommendations," by Sarah L. Goff, M.D., Kathleen M. Mazor, Ph.D., Vanessa Meterko, B.S., and others in the March 2008 *Journal of General Internal Medicine* 23(3), pp. 236-241. ■

Direct-to-patient mailings increase adherence to beta-blocker therapy after heart attack

Beta-blocker therapy improves survival dramatically among heart attack patients. In fact, heart attack survivors who stop taking beta-blockers are almost twice as likely to die within the next year as those who continue therapy. Yet, use of beta-blockers remains low. Direct-to-patient mailings can be a low cost way to boost adherence to beta-blocker therapy, finds a new study.

To determine the effect of direct-to-patient communication following hospitalization for heart attack on adherence to beta-blocker therapy, researchers examined its impact on heart attack survivors in four health maintenance organizations. Patients received two mailings that explained why the use of beta-blockers was important to patients who had been treated for heart attack, the risk of not taking these drugs, and information on the

drugs' adverse effects; the content of the mailings was based on input from focus groups. The first mailing was a personalized letter, followed 2 months later by a similar letter and an accompanying brochure. Both mailings included a wallet card with questions for the patient to ask their clinician. Patients randomly assigned to usual care were not contacted by the researchers.

Researchers calculated the proportion of days covered (PDC) by prescriptions filled for 426 patients who received the intervention and 410 patients who received usual care. Patients who received the intervention were 17 percent more likely to have a PDC of at least 80 percent (i.e., availability of beta blocker medication at least 4 out of every 5 days) over the entire postintervention period. Patients in the intervention group had an

increase of 4.3 percent in days covered by beta-blockers per month compared with patients who received usual care, an absolute increase of 1.3 days of coverage per month. The treatment effect was consistent across the four study sites.

The study was funded by the Agency for Healthcare Research and Quality through the Center for Education and Research on Therapeutics (CERT) at the HMO Research Network (HS10391). For more information on the CERTs program, go to www.ahrq.gov/clinic/certsovr.htm.

See "A randomized trial of direct-to-patient communication to enhance adherence to beta-blocker therapy following myocardial infarction," by David H. Smith, R.Ph., Ph.D., Judith M. Kramer, M.D., M.S., Nancy Perrin, Ph.D., and others in the March 10, 2008, *Archives of Internal Medicine* 168(5), pp. 477-483. ■

Although most children and adolescents have been vaccinated against hepatitis B virus, adults lag behind

Nearly 95 percent of children and adolescents were vaccinated against the hepatitis B virus (HBV) in 2004. However, public health planners should not be misled by the boost in HBV vaccination rates among young adults into thinking that strategies aimed at adults have also been successful. Accelerating the elimination of HBV infection in the United States will require policy and practice changes to target unvaccinated high-risk adults of all ages, suggest the Medical University of South Carolina investigators.

They used data from the National Health Interview Survey in years 2000, 2002, and 2004 to examine trends in HBV vaccination among high-risk adults aged 18 to 49 years and in age subgroups (18-29, 30-39, and 40-49 years). Vaccination rates significantly increased across the three survey years (32.6, 35.3, and 41.4 percent in 2000, 2002, and 2004, respectively). Survey respondents aged 18 to 29 years were nearly twice as likely to be vaccinated in 2004 than in 2000, after

adjusting for other factors. However, there was no significant increase in vaccination rates for the other adult groups.

Driving the higher rates of vaccination among high-risk young adults was most likely their higher vaccination rates as children or adolescents. Improving vaccination of older high-risk adults, who were too old to benefit from childhood immunization programs and requirements to be immunized before school entry, may require national immunization programs similar to those that have proven successful with children and adolescents, suggest the researchers. Their study was supported in part by the Agency for Healthcare Research and Quality (T32 HS13851).

See “The effect of vaccinated children on increased hepatitis B immunization among high-risk adults,” by Deepika L. Koya, M.D., M.S.C.R., Elizabeth G. Hill, Ph.D., and Paul M. Darden, M.D., in the May 2008 *American Journal of Public Health* 98(5), pp. 832-838. ■

Growth hormone builds muscle in athletes, but may not help sports performance

The use of human growth hormone (HGH) by athletes as a performance enhancer has grown in recent years, despite the fact it is illegal in the United States. The hormone, approved to treat children and adults who suffer from growth hormone deficiency, increases lean body mass and reduces fat mass. However, serious side effects (diabetes, hepatitis, and acute renal failure) have been observed in athletes taking high-dose growth hormone. Although HGH builds muscle in athletes, it does not seem to enhance sports performance, a new study reveals.

Hau Liu, M.D., M.B.A., M.P.H., and associates at Stanford University reviewed randomized, controlled trials of growth hormone therapy compared with no therapy. They identified 44 papers representing 27 studies that enrolled a total of 440 subjects; 303 of them received

growth hormone treatment. Study participants were predominantly male (85 percent), young (mean age of 27 years), lean, and physically fit in terms of respiratory capacity. Most of the studies reported on changes in body composition, and a majority of the studies looked at the effect of growth hormone on basal metabolism or respiratory exchange. Only two studies looked directly at changes in muscle strength, while another six reported on exercise capacity.

Individuals treated with HGH to improve strength or exercise capacity significantly increased lean body mass by 2.1 kg, but did not appear to improve strength or exercise capacity. Six or twelve weeks of HGH treatment did not increase muscle strength in the biceps or quadriceps. In fact, HGH treatment worsened, rather than improved, exercise capacity in subjects given

either a single dose of the hormone or a placebo. In other studies involving continued administration of the hormone or placebo, metabolic changes observed during rest in hormone-treated subjects failed to carry over into vigorous exercise. Also, HGH-treated subjects reported higher rates of fatigue—consistent with a hormone-associated reduction in exercise capacity. The researchers caution that the findings are based on a small number of studies. The study was supported in part by a National Research Service Award from the Agency for Healthcare Research and Quality (T32 HS000028).

See “Systematic review: The effects of growth hormone on athletic performance,” by Dr. Liu, Dena M. Bravata, M.D., M.S., Ingram Olkin, Ph.D., and others in the May 20, 2008 *Annals of Internal Medicine* 148(10), pp. 747-758. ■

AHRQ and AARP team to help adults over 50 stay healthy

The Agency for Healthcare Research and Quality (AHRQ) and the AARP have released two new checklists designed to help men and women over the age of 50 learn what they can do to stay healthy and prevent disease. AHRQ and AARP also released an accompanying wall chart that provides information about recommended preventive services and can be posted in both clinical and community settings.

The three publications — *Men: Stay Healthy at 50+, Checklists for Your Health*; *Women: Stay Healthy at 50+, Checklists for Your Health*; and the *Staying Healthy at 50+* timeline — show at a glance the evidence-based recommendations from the U.S. Preventive Services Task Force regarding screening tests, preventive medicines, and healthy lifestyle behaviors for people 50 and older.

Both Checklists for Health, available in English and Spanish,

are brochures that adults can take along to medical appointments and are designed to help patients and clinicians engage in discussions about necessary preventive screening tests. Unlike diagnostic tests, which clinicians order when they suspect someone has a disease, screening tests help check for problems before symptoms are apparent. Patients can use the checklists to record their screening test history and plan follow-up medical appointments. The checklists also provide tips about other things to do to stay healthy, such as eating a healthy diet and exercising.

The Task Force is the leading independent panel of experts in prevention and primary care. The Task Force, which is supported by AHRQ, conducts rigorous, impartial assessments of the scientific evidence for the effectiveness of a broad range of clinical preventive services,

including screening, counseling, and preventive medications. Its recommendations are considered the gold standard for clinical preventive services.

AARP is a nonprofit, nonpartisan membership organization that helps people 50+ have independence, choice, and control in ways that are beneficial and affordable to them and society as a whole.

Men: Stay Healthy at 50+, Your Checklists for Health and *Women: Stay Healthy at 50+, Your Checklists for Health* are available on the AHRQ Web site at www.ahrq.gov/ppip/men50.htm and www.ahrq.gov/ppip/women50.htm. The *Staying Healthy at 50+* timeline is also available on the AHRQ Web site at www.ahrq.gov/ppip/50plusposter.htm. The publications may also be ordered from AHRQ.* ■

Men with certain risk factors for osteoporosis should be screened for the condition

Although osteoporosis (low bone mass density, BMD) is considered primarily a problem for older women, a 60-year-old white man has a 25 percent lifetime risk of suffering a bone fracture due to osteoporosis. Osteoporosis, which is typically without symptoms, is substantially underdiagnosed and undertreated among men in the United States. However, a new study reveals certain risk factors for osteoporosis among asymptomatic men that can be used to identify those who should be screened for the problem.

A team of researchers systematically reviewed studies on the topic from 1990 to July 2007. The studies either assessed risk factors for osteoporotic fracture in men or evaluated the gold standard screening test for osteoporosis, the dual-energy x-ray absorptiometry (DXA), against a non-DXA screening

test. The studies revealed that the key risk factors for low BMD-mediated fracture included older age (notable over 70 years), low body weight (body mass index less than 20 to 25 kg/m²), greater than 10 percent weight loss, physical inactivity, prolonged corticosteroid use, previous osteoporotic fracture, and androgen deprivation therapy.

Cigarette smoking was associated with lower BMD, but there was less evidence in men to determine its association with fracture. The studies also showed that non-DXA tests either are too insensitive or have insufficient data to reach conclusions. These tests range from ultrasonography of either heel to the World Health Organization fracture risk algorithm based on clinical risk factors for fracture. The study was supported in

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Osteoporosis

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part by the Agency for Healthcare Research and Quality (T32 HS00028).

More details are in “Screening for osteoporosis in men: A systematic review for an American College of

Physicians guideline,” by Hau Liu, M.D., M.B.A., M.P.H., Neil M. Paige, M.D., M.S.H.S., Caroline L. Goldzweig, M.D., M.S.H.S., and others, in the May 6, 2008 *Annals of Internal Medicine* 148, pp. 685-701. ■

Use of prevention drugs after heart attacks declines steadily after hospital discharge

Quality measures report on how often patients who suffer heart attacks are prescribed two recommended drugs—beta blockers and angiotensin-converting enzyme (ACE) inhibitors—when they are discharged from the hospital. Though the 2007 National Healthcare Quality Report shows that hospitals have improved in prescribing these drugs, a new study finds that patients often do not continue taking them in the 2 years following a heart attack.

Beta blockers work against adrenaline, causing the heart to beat more slowly and improving blood flow. ACE inhibitors help blood vessels relax so the heart does not have to work so hard. Using medical and pharmaceutical claims from June 1, 2000, to May 31, 2001, researchers from Rutgers University found that patients taking beta blockers and ACE inhibitors steadily abandoned

those drugs over time, once they were discharged from the hospital. For instance, 6 percent of patients stopped taking their beta blockers within the first 30 days, 18 percent at 6 months, 28 percent at 1 year, and 47 percent at 2 years. Discontinuation results were similar for ACE inhibitors.

Several factors influenced patients’ continuation of the drugs. Women and patients who lived in high-income neighborhoods (more than \$60,000 annual median income), had high blood pressure, or had vascular disease were more inclined to continue taking beta blockers. Patients taking ACE inhibitors were more likely to keep taking those drugs if they previously suffered from coronary artery disease or angina. Cost was not presumed to be related to continuation, as most patients paid \$5 co-payments for their medications.

Side effects of the drugs, including fatigue and loss of sexual functioning with beta blockers, could contribute to their unpopularity. However, because these drugs decrease the chance of future heart attacks, the authors say more research is warranted to determine why patients stop taking them. Further, because of the widespread abandonment of these drugs, additional quality measures that address drug adherence should be developed. This study was funded in part by the Agency for Healthcare Research and Quality (HS16097 and HS11825).

See “Long-term adherence to evidence based secondary prevention therapies after acute myocardial infarction,” by Ayse Akincigil, Ph.D., John R. Bowblis, M.A., Carrie Levin, Ph.D., and others in the February 2008 *Journal of General Internal Medicine* 232(2), pp. 115-121. ■

Hypertension in the emergency department may signal undiagnosed hypertension, not just pain or anxiety

A third of adults in the United States who have hypertension (high blood pressure) are unaware that they have the condition. Emergency department (ED) clinicians may be able to diagnose hypertension among these unsuspecting patients, suggests a new study. Blood pressure readings taken during ED visits are thought to be over-representative of the patient’s true blood pressure because of anxiety or pain experienced during the visit. However, a study by Paula Tanabe, Ph.D., M.P.H., and colleagues at

Northwestern University’s Feinberg School of Medicine in Chicago, found that only 6 percent of patients who had hypertension during their ED visit had normal blood pressure during the week after they returned home.

Patients seen at an urban ED who had no history of hypertension but had two blood pressure measurements of at least 140/90 mm Hg (stage I hypertension) during their ED visit, were interviewed about their levels of

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Hypertension

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anxiety and pain during the ED visit. Patients who were eligible to be discharged to home were asked to take their blood pressure twice a day with home blood pressure monitors and return the monitors to the researchers after 1 week. Of the 156 patients who returned the monitors and completed the study protocol, 51 percent had elevated home blood pressure. Of patients with stage I hypertension in the ED, 52 percent had prehypertension (120-139/80-89 mm Hg), 36 percent had stage I hypertension, and 6 percent had home blood pressures meeting stage II hypertension (greater than 160 mm Hg systolic or greater than 100 mm Hg diastolic). The difference between ED and home systolic blood pressures was not associated with anxiety in the ED and was only slightly associated with pain (in the opposite direction than expected) during the ED visit.

The researchers suggest that brief patient education in the ED about hypertension and referral for a fuller assessment for possible hypertension is warranted in patients found to have two increased blood pressure readings during the ED visit. They recommend future research to develop systematic procedures to screen ED patients for hypertension and brief interventions recommending and providing referrals for blood pressure follow-up. The study was funded by the Agency for Healthcare Research and Quality (HS15619).

See “Increased blood pressure in the emergency department: Pain, anxiety, or undiagnosed hypertension?” by Dr. Tanabe, Stephen D. Persell, M.D., M.P.H., James G. Adams, M.D., and others in the March 2008 issue of *Annals of Emergency Medicine* 51(3), pp. 221–229. ■

Mental Health

Youth at highest risk of attempting suicide are severely depressed and suffered a recent romantic breakup or assault

Although depression is linked to suicide attempts, most depressed youth do not attempt suicide. However, youth with severe depression and externalizing behaviors such as aggression, along with high levels of stress and key stressors such as romantic breakup, being assaulted, and recent arrest, are likely to have the highest risk of attempting suicide, according to a new study. Primary care doctors should ask depressed youth about these issues, suggest University of California at Los Angeles researchers. Joan R. Asarnow, Ph.D., and colleagues examined suicide attempts among 451 ethnically diverse depressed youth aged 12 to 21 years in the largest study of adolescent depression in primary care to date.

In the past 6 months, 12 percent of these youths had attempted

suicide. Those who attempted suicide were significantly more likely to be female (91.1 vs. 77 percent) and to have more severe depression. After controlling for depression severity, only externalizing behaviors remained a significant predictor of suicide attempts, increasing the risk by 58 percent.

After controlling for depression severity and externalizing behaviors, none of the other psychopathology factors (substance use, anxiety, and symptoms of post-traumatic stress disorder) contributed to the prediction of suicide attempts, although youth reporting suicide attempts had elevated substance use and anxiety symptoms, including post-traumatic stress symptoms.

Suffering a romantic breakup or physical assault nearly doubled or

tripled, respectively, the risk of attempting suicide. The relationship between stressful events and suicide attempts is not always accounted for by psychopathology, note the researchers. The study was supported in part by the Agency for Healthcare Research and Quality (HS09908).

See “Suicide attempts among depressed adolescents in primary care,” by Samantha R. Fordwood, M.A., Dr. Asarnow, Diana P. Huizar, B.A., and Steven P. Reise, Ph.D., in the *Journal of Clinical Child and Adolescent Psychology* 36(3), pp. 392-204, 2007. ■

Emergency department clinicians rarely address depression

Identifying a patient with depression is often missed amid the bustling activity of an emergency department (ED). Yet that environment may be a good venue for detecting it, a new study finds. Karin V. Rhodes, M.D., M.S., and colleagues from the University of Pennsylvania reviewed audio recordings of conversations between providers and 871 women aged 18 to 65 who visited either a city or suburban hospital's ED between June 2001 and December 2002.

Of the 486 women randomized to complete a health risk survey on a computer, nearly half of them (48 percent) reported they felt sad or depressed for more than 2 weeks during the past month, and 28 percent said they felt sad or depressed for most of the prior 2 weeks. Providers were more likely to address depression and other psychosocial issues when the patient self-disclosed these risk factors on the computer. However, even when prompted to do so by the computer, providers addressed depression with only 70 patients (8 percent) and had significant discussions with only 20 patients (2 percent).

It was not uncommon for ED providers to dismiss a patient's concerns, be judgmental, interrupt their response, or ask multiple questions at one time. On a positive note, in most significant discussions, providers expressed empathy (85 percent) and asked well-worded sensitive questions (90 percent). When ED providers did address depression, they generally spent less than 90 seconds. However, even this minimal attention to depression was associated with improved patient satisfaction.

Considering the volume of patients who move through emergency departments, the authors suggest that emergency department providers can do more to identify patients with depression and link them to appropriate mental health resources. This study was funded in part by the Agency for Healthcare Research and Quality (HS11096).

See "Characterizing emergency department discussions about depression," by Dr. Rhodes, Hallie M. Kushner, M.A., Joanna Bisgaier, B.A., and Elizabeth Prenoveau, B.A., in the October 2007 *Academic Emergency Medicine* 14(10), pp. 908-11. ■

Ten-day lapse in antipsychotic drug use is associated with an increased risk of hospitalization in patients with schizophrenia

Antipsychotic medications to treat schizophrenia are effective in reducing symptoms and preventing hospitalization. However, only 50–60 percent of patients treated for schizophrenia follow their medication regimen for extended periods, with only 12 percent of Medicaid-insured patients staying on their medications for a full year. Yet, failing to refill medication within even just 10 days is associated with an increased risk of hospitalization, according to a new study.

The Harvard Medical School researchers analyzed the Medicaid and Medicare claims data of 1,191 patients with schizophrenia from the Maine and New Hampshire Medicaid programs. The researchers used Medicaid pharmacy claims data to determine to what extent

gaps in taking atypical antipsychotic medications, medication switching, and augmentation with additional antipsychotic drugs were related to hospitalization risk. Of the individuals whose records were studied, 552 were hospitalized over 3 years, including 371 for mental health problems and 315 for schizophrenia.

Compared with patients who continued to refill their medication, those who missed refilling their medication for as little as 10 days had a significant 54 percent increased risk of hospitalization for mental health problems and a 77 percent higher risk of hospitalization for schizophrenia. Those patients whose medication gaps were longer than 30 days were 60 percent and 49 percent more likely to be hospitalized for mental health problems and schizophrenia,

respectively. Given that higher risk of hospitalization occurs within 10 days of a missed prescription refill, immediate action to increase adherence as early as possible might lower the risk of schizophrenia relapse.

The study was funded in part by the Agency for Healthcare Research and Quality for the Centers for Research and Education in Therapeutics (CERT) (HS10391). For more information on the CERTs program, go to www.ahrq.gov/clinic/certsovr.htm.

See "A longitudinal study of medication nonadherence and hospitalization risk in schizophrenia," by Michael R. Law, M.Sc., Stephen B. Soumerai, Sc.D., Dennis Ross-Degnan, Sc.D., and Alyce S. Adams, Ph.D., in the January 2008 *Journal of Clinical Psychiatry* 69(1), pp. 47–53. ■

Report offers resources for home health care response during a flu pandemic

Home Health Care During an Influenza Pandemic: Issues and Resources, a report identifying home health care as a critical component in providing care during a pandemic influenza event and offering resources to home health care providers and community planners to prepare for such an event, has been released by the Agency for Healthcare Research and Quality (AHRQ) in collaboration with the Office of the Assistant Secretary for Preparedness and Response.

Home health care agencies already provide routine care for acute and chronically ill, permanently disabled, and terminally ill patients. In fact, on any given day, there are three times as many patients in home health care settings as there are in hospitals.

The report emphasizes the home health care sector's potential to help handle a surge in patients during a biologic event and stresses the need for involvement of home health care agencies in advance planning and coordination at the local level. It offers resources and suggestions on addressing key elements of home health care preparedness and includes lists of existing tools and models throughout. Examples of issues and strategies addressed in the report include:

- Exploring the use of technology to monitor patients at a distance.
- Collaboration with community partners.
- Legal and ethical considerations of providing care under emergency conditions.
- Home health care workforce issues, including training.
- Recommendations for additional action and research at the Federal, State, and local levels.

The report is based on the findings of an expert panel meeting, including representatives of home health care, emergency and disaster planning, professional organizations, and Federal and State government agencies. It can be found online at www.pandemicflu.gov/plan/healthcare/homehealth.html.

Editor's note: AHRQ has developed more than 60 emergency preparedness-related studies, workshops, and conferences to help hospitals and health care systems prepare for public health emergencies. Many of these projects were made possible through collaboration with other Federal agencies. More information about these projects can be found online at www.ahrq.gov/prep. ■

The Balanced Budget Act of 1997 reduced the number of home health aides

To curb the booming home health agency growth that occurred in the 1980s, Congress passed the Balanced Budget Act (BBA) of 1997. The Act sought to tame Medicare home health care costs as well as the abuse and improper use associated with it. To accomplish this, the Act initiated new reimbursement formulas, coupled with stricter certification requirements for home health agencies. As a result, Medicare expenditures fell from

\$18.3 billion in 1997 to \$9.5 billion in 1999.

Agency for Healthcare Research and Quality researcher William Spector, Ph.D., and colleagues used Centers for Medicare and Medicaid Services data from 1996 to 2002 to examine staffing trends in rural and urban Medicare-certified home health agencies before and after the implementation of the BBA. They found an average annual decline of 13 percent in home health aides in rural and urban counties from 1997

to 2002. The number of registered nurses, licensed professional and vocational nurses, dietitians, and medical social workers also fell, but not at the rate of home health aides.

Another result of the BBA's provisions was that therapists and registered nurses took on a larger share of home health care visits, edging out opportunities once met by home health aides. These professionals also carried out Medicare's focus on short-term and

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Home health aides

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rehabilitative care in lieu of the chronic care home health aides tend to provide.

The number of professional therapists rose slightly after the BBA was instituted. Both metropolitan and nonmetropolitan

counties were equally affected by the staffing declines. However, rural counties tended to suffer most from the ebb of home health care staff because they tend to be underserved in general.

See "Home health care agency staffing patterns before and after the Balanced Budget Act of 1997,

by rural and urban location," by William J. McAuley, Ph.D., Dr. Spector, and Joan Van Nostrand, D.P.A. in the Winter 2008 *Journal of Rural Health* 24(1), pp. 12-23. Reprints (AHRQ Publication No. 08-R059) are available from AHRQ.* ■

Dental Health

Having medical, not dental insurance, leads to dental appointments

Traditional thinking links the likelihood of visiting a dentist with a person's having dental insurance. In reality, though, having any form of medical insurance seems to be a factor in the pursuit of dental care, a new study finds. Agency for Healthcare Research and Quality researchers Richard J. Manski, D.D.S., Ph.D., M.B.A., and Philip F. Cooper, Ph.D., used 2003 Medical Expenditure Panel Survey (MEPS) data to examine the link between medical and dental insurance and dental visits. The MEPS is a nationally representative health survey of the U.S. community.

Of the more than 32,000 survey participants in 2003, 43.8 percent of the U.S. population saw a dentist. Women and people from middle- or high-income families were more likely to visit the dentists than men and lower-income families. Visits occurred more often when patients had dental insurance (54.3 percent) or dental and medical coverage (54.5 percent) than when they had only medical coverage (45.9 percent) or no coverage at all (26.9 percent).

However, people with public or private medical insurance and no dental coverage (39.9 percent) visited the dentist at least once that year.

Individuals who had medical insurance, but no dental insurance, were more likely to have seen a dentist than those who had neither medical nor dental insurance. The researchers believe this occurred because these people, by nature of having medical insurance, exhibit health-seeking behavior. They suggest that their findings be considered when policymakers contemplate programs to improve access to dental care, because offering dental coverage offers less of an incentive to seek dental care than previously thought.

See "Dental care use: Does dental insurance truly make a difference in the U.S.?" by Drs. Manski and Cooper in the 2007 *Community Dental Health* 24, pp. 205-212. Reprints (AHRQ Publication No. 08-R076) are available from AHRQ.* ■

Untreated tooth decay remains a substantial problem for children with public insurance coverage

Kindergartners enrolled in public health insurance programs such as Medicaid and the State Children's Health Insurance Program (SCHIP) are nearly twice as likely to have untreated tooth decay than children not enrolled in these programs, according to a new study. Yet,

SCHIP-enrolled children are 26 percent less likely to suffer from untreated tooth decay than their Medicaid-insured counterparts. The researchers estimate that if Medicaid-insured children were moved into SCHIP, there would be a 16 percent improvement in

untreated dental caries in North Carolina.

The reimbursement and administrative improvements in SCHIP, a relatively new program for low-income families who earn too much to qualify for Medicaid, may play a distinct role in these

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Tooth decay

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differences, note the researchers. They examined dental health outcomes obtained through oral screening of kindergarten children (enrolled in the 2000-2001 school year). They examined claims data for children enrolled in Medicaid and SCHIP, who were eligible for dental services during 1999 to 2000, to compare children's likelihood and extent of untreated dental cavities based on insurance enrollment.

Children enrolled in Medicaid or SCHIP were 1.7 times more likely to have untreated dental cavities (indicated by prevalence and severity of dental caries) than nonenrolled children, with SCHIP-enrolled children 26 percent less likely than their Medicaid-ensured counterparts to have their tooth decay go untreated. These findings are important, because Federal guidelines require Medicaid to provide access to dental care for children enrolled in Medicaid equal to that of other children in their

communities. The study was supported in part by the Agency for Healthcare Research and Quality (HS11514).

See "Effects of enrollment in Medicaid versus the state children's health insurance program on kindergarten children's untreated dental caries," by Tegwyn H. Brickhouse, D.D.S., Ph.D., R. Gary Rozier, D.D.S., M.P.H., and Gary D. Slade, D.D.P.H., Ph.D., B.D.Sc., in the May 2008 *American Journal of Public Health* 98(5), pp. 876-881. ■

Access to Care

Native Americans, nonurban residents, and people living in the South travel further for specialized cancer care

More than 42 percent of the U.S. population lives within 1 hour of a National Cancer Institute (NCI)-designated cancer center, and nearly 70 percent of the population lives within 1 hour of a cancer center or an academic medical center. If oncologists are included, 92 percent of the U.S. population is within 1 hour of any form of specialized cancer care. However, Native Americans, people living outside urban areas, and people residing in southern States have less access to specialized cancer care than other groups, according to a new study.

Researchers used the median driving time from the most populous region of each U.S. zip code to an NCI cancer center, an academic medical center, or an oncology practice, as measures of access by population subgroups to the three levels of specialized cancer care. Previous studies had shown that patients with a greater travel time for care were more likely to be diagnosed with advanced cancer, have decreased use of breast-conserving therapy, and have lower enrollment in clinical trials. The researchers found that Native Americans, nonurban dwellers, and persons residing in southern States had the longest travel times to the nearest NCI cancer center, compared with the overall U.S. population. Native Americans and nonurban

dwellers also had longer drive times to the nearest academic medical center or oncology practice.

The study found that the median travel time for the total continental U.S. population to an NCI cancer center was 78 minutes. Asians had the shortest median travel time (28 minutes), and Native Americans had the longest (155 minutes). Hispanics and whites had comparable travel times to these cancer centers (86 minutes for both groups), while blacks had a shorter median travel time of 69 minutes. On a regional basis, compared with residents of the Northeast, the median travel time to an NCI cancer center was five times longer for people in the South, three times longer for residents of the Western States, and more than twice as long for residents of the Midwest. Travel times to all three cancer care settings was longest for Native Americans than other racial or ethnic groups and for nonurban than urban residents. The study was funded in part by the Agency for Healthcare Research and Quality (T32 HS00070).

More details are in "Geographic access to cancer care in the U.S.," by Tracy Onega, Ph.D., Eric J. Duell, Ph.D., M.S., Xun Shi, Ph.D., and others, in the February 15, 2008, *Cancer* 112(4), pp. 909-918. ■

Gaps in children's health insurance are linked to unmet health care needs

Low-income children who go without health care coverage for even as little as a few months risk having unattended health needs, a new study finds. Jennifer E. DeVoe, M.D., D. Phil., of Oregon Health and Science University, and colleagues received surveys from 2,681 families with children that were enrolled in Oregon's food stamp program at the end of January 2005. Oregon was chosen because it has a 6-month waiting period before parents can enroll children in the State Children's Health Insurance Program. The State also mandates re-enrollment every 6 months. Both requirements can cause gaps in coverage.

Surveyed families reported that a quarter of children had coverage gaps during the previous 12 months. These gaps included less

than 6 months (17.5 percent), 6 to 12 months (1.5 percent), and more than 12 months (3.1 percent). Almost 4 percent of the children never had health insurance coverage. Children most likely to experience gaps were older than 14, were Hispanic, lived with families that had no incomes or had incomes just above the Federal poverty level, and had an unemployed parent.

Researchers found that the longer the insurance gap, the higher the chance of a child having an unmet health care need. These included not receiving medical or dental care, unfilled prescriptions, not having a usual source of care, and delaying urgent care when it was needed. For example, compared with children without coverage gaps, children who had less than 6-month gaps were 2.5 times as likely to delay getting

urgent care. Children with gaps between 6 and 12 months or more than 12 months were 4.6 and 6.8 times, respectively, as likely to put off visits to receive urgent care. The authors recommend that State policymakers design health insurance programs to prevent coverage gaps to ensure children receive continuous access to health care. This study was funded in part by the Agency for Healthcare Research and Quality (HS14645 and HS16181).

See "Mind the gap' in children's health care coverage: Does the length of a child's coverage gap matter?" by Dr. DeVoe, Alan Graham, M.D., Lisa Krois, M.P.H., and others in the March-April 2008 *Ambulatory Pediatrics* 8(2), pp. 129-134. ■

Acute Care/Hospitalization

Estrogen levels predict life or death in critically ill patients

After a severe trauma, the body responds with a cascade of reactions that trigger the immune and inflammatory systems. Lesly A. Dossett, M.D., and colleagues at Vanderbilt University and the University of Virginia, looked at how one chemical in the cascade, estrogen, predicts whether a critically injured patient will survive. The team studied levels of estradiol, the most active form of estrogen in the human body, to determine its ability to foretell a patient's future.

The team studied blood samples from 991 trauma patients admitted to intensive care units who survived for 48 hours or more at the 2 university medical centers. Of the 133 (13.4 percent) patients who died, their median estradiol levels were 35 pg/mL. Survivors' levels were less than half of that amount (16 pg/mL).

When the researchers used a model that combined patient age, estradiol level, and a commonly used trauma score, they were best able to predict patient outcome. Serum estradiol was determined to be a marker of both how severely injured a patient was and a predictor of death. Whether or not estrogen plays a role in life or death or serves simply as an indicator remains to be explored. However, the researchers suggest that controlling estrogen levels could be part of a therapy to improve outcomes in critically injured patients. This study was funded in part by the Agency for Healthcare Research and Quality (HS13833).

See "High levels of endogenous estrogens are associated with death in the critically injured adult," by Dr. Dossett, Brian R. Swenson, M.D., M.S., Daithi Heffernan, M.D., and others in the March 2008 *Journal of Trauma* 64(3), pp. 580-585. ■

Reducing community contacts by half within 7 days may allow for local control of a flu pandemic

If hit by a flu pandemic, up to 35 percent of the U.S. population could develop the disease. Fifty percent of infected people will seek medical care and about 20 percent of them will be hospitalized. Up to 2 percent of those infected will die, according to the national plan to implement flu pandemic strategies. Clearly, the massive surge of sick patients would outstrip the surge capacity of local hospitals. Using a mix of strategies, such as social distancing, antiviral medications, and targeted vaccination, may limit the infection rate so that demand for care would not exceed the surge capacity of local hospitals. However, it's not clear there would be enough supply of antiviral medications or vaccines or that they would be sufficiently effective in the event of a flu pandemic. In that worst-case

scenario, reducing community contacts by half within 7 days may control a local epidemic without reliance on outside support, suggests a new study.

This social distancing would include closing schools and churches, banning public gatherings, and encouraging people to work from home if possible. George Miller, Ph.D., of the Altarum Institute in Ann Arbor, Michigan, and colleagues came to this conclusion based on two models to simulate disease contact and transmission based on public health interventions and to simulate diagnosis and treatment options. They used the models for hypothetical scenarios based on the response plans, infrastructure, and demographic data of the population of San Antonio, Texas, with a population of 1.4 million.

Delaying the decision to restrict contacts outside the household from 7 to 21 days would result in surges of demand that would exceed the supply of hospital beds. However, hospitals were able to meet the surge when social distancing was doubled by day 7 instead of by day 21. These results illustrate the importance of quick action to reduce community contacts in the face of a pandemic for which vaccine and antiviral medications are not available. The study was supported by the Agency for Healthcare Research and Quality (HS13683).

See "Responding to simulated pandemic influenza in San Antonio, Texas," by Dr. Miller, Stephen Randolph, M.B.A., and Jan E. Patterson, M.D., in the April 2008 *Infection Control and Hospital Epidemiology* 29(4), pp. 320-326. ■

HIV/AIDS Research

Studies reveal the impact of agency coordination and high incarceration rates on sexually transmitted disease rates

Two new studies of North Carolina counties demonstrate the importance of HIV prevention agency coordination on control of HIV and other sexually transmitted diseases (STDs) and the devastating impact of residents' prison time on a community's STD rates. The studies, supported by the Agency for Healthcare Research and Quality (HS10861), are briefly described here.

Thomas, J.C., Carter, C., Torrone, E., and Levandowski, B.A. (2008, January/February). "Pulling together: Interagency coordination and HIV/STD prevention." *Journal of Public Health Management & Practice* 14(1), pp. E1-E6.

In their struggle to compete for funding and clients, HIV prevention agencies often fail to work with other agencies to prevent HIV and other STDs. Yet, STD control works better when agencies work together

to share information, funds, and clients, concludes this study. Through coordinated efforts among public health clinics, schools, and other sites, clients can be referred to timely and appropriate services, such as substance abuse treatment centers and HIV test counseling programs. Agencies can also coordinate by agreeing to work with different groups (for example, English speakers and Spanish speakers), or they can divide up tasks to fully address the needs of a

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HIV prevention

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single group, explain the researchers.

They analyzed 170 HIV prevention agencies in 10 counties in North Carolina for overall density (agencies share information, funds, and clients) and centralization (only one or a few agencies act as a central hub). They examined the associations between connectedness among county agencies and syphilis and gonorrhea rates. The number of HIV prevention agencies in a county's network ranged from 5 to 32.

Syphilis rates were lower in counties with a high network density. Syphilis rates were higher and black-white rate differences were greater with centralization of services in a few agencies. Gonorrhea rates demonstrated similar but weaker patterns of association with network characteristics. Because both syphilis and gonorrhea are transmitted in the same way as HIV

and each biologically facilitates HIV transmission, the authors infer that agencies working together would also improve HIV prevention.

Thomas, J.C., Levandowski, B.A., Isler, M.R., and others. (2007). "Incarceration and sexually transmitted infections: A neighborhood perspective." *Journal of Urban Health: Bulletin of the New York Academy of Medicine* 85(1), pp. 90-99.

A community's rate of sexually transmitted infections (STIs) soars, when a significant number of its residents are sent to prison, with the rate soaring especially high during the year after imprisonment. This study reveals patterns of behavior that may explain why. It found, for example, that partners left behind (more often women with young children) find new sexual partners, often to help pay the bills. Also, men often have sex with men for the first time in prison (for protection and sexual release) and then have multiple new partners (often women, to whom they spread

infection) upon reentry to the community.

To gauge the impact of incarceration on STI rates, the researchers examined the association between incarceration rates among census tracts in North Carolina counties with high incarceration rates with rates of STIs. They also interviewed ex-offenders and sexual partners of prisoners or ex-offenders. Census tract rates of incarceration were consistently associated with gonorrhea rates in the subsequent year.

An increase in the percentage of census tract person-time spent in prison from 2 to 2.5 percent corresponded to a gonorrhea rate increase of 7.1 cases per 100,000 person-years. These associations and recounted experiences of those interviewed on the effects of incarceration on sexual relationships provide additional evidence of the unintended community health consequences of high incarceration rates in a community. ■

Agency News and Notes

Hospitalizations soar for children with skin infections

Children aged 4 and younger were hospitalized with skin infections more than 34,000 times in 2006, a 150 percent increase from 2000, according to data from the Agency for Healthcare Research and Quality (AHRQ). The data are included in a new AHRQ analysis of hospitalization trends among children 17 and younger. It shows skin infections ranked as the 8th most common reason for child hospitalizations in 2006, up from 17th in 2000. The legs, face, and buttocks were most common sites for infections among hospitalized children in 2006. Reasons for the rise in hospitalizations are unclear but may be in part linked to increasing resistance to antibiotics. AHRQ's new analysis also showed:

- Hospitalizations for skin infections also increased sharply for youths aged 15 to 17 – from about 4,900 in 2000 to about 10,500 in 2006.
- Respiratory diseases remained the top reason for child hospitalizations. About 513,000 children were admitted in 2006 for pneumonia, asthma, bronchitis, influenza or other respiratory diseases.

Other leading admissions of children in 2006 included: gastritis, intestinal infections, and other digestive disorders (310,000); meningitis, epilepsy and other nervous system disorders (174,000); adolescent pregnancy (174,000); diabetes, nutritional deficiencies and other metabolic or endocrine disorders (147,000);

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Skin infections

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and depression, bipolar disease and other mental disorders (140,000).

For more information, see *Hospital Stays for Children, 2006*, Statistical Brief #56 ([www.hcup-](http://www.hcup-us.ahrq.gov/reports/statbriefs/sb56.pdf)

[us.ahrq.gov/reports/statbriefs/sb56.pdf](http://www.hcup-us.ahrq.gov/reports/statbriefs/sb56.pdf)). The report uses 2006 statistics from the Kids' Inpatient Database, a database of the hospital inpatient stays of children age 17 and younger in short-term, non-Federal hospitals. ■

Pneumonia is the most common reason for hospitalization

More than 1.2 million Americans—roughly equivalent to the population of Dallas—were hospitalized for pneumonia in 2006, making this lung infection the most common reason for admission to the hospital other than for childbirth, according to data from the Agency for Healthcare Research and Quality (AHRQ).

Treating pneumonia cost hospitals \$10 billion in 2006 (see table below). The disease, which can be especially deadly among the elderly, occurs when the

lungs fill with fluid from infection or inflammation caused by bacteria or a virus.

This analysis is based on 2006 data in HCUPnet (<http://hcupnet.ahrq.gov>), AHRQ's free, online query system based on data from the Healthcare Cost and Utilization Project. HCUPnet provides reporters and others fast and easy access to health statistics on hospital inpatient and emergency department utilization. ■

2006 estimated hospital admissions and hospitals' costs for common conditions

Condition	Estimated admissions	Hospital costs
Pneumonia	1,200,000	\$10 billion
Hardening of the arteries	1,198,000	\$17 billion
Congestive heart failure	1,099,000	\$11 billion
Chest pain	857,000	\$4 billion
Injuries to the mother during birth	818,000	\$2 billion
Other complications of labor and delivery	767,000	\$3 billion
Heart rhythm problems	749,000	\$7 billion
Osteoarthritis	735,000	\$10 billion
Heart attack	675,000	\$12 billion

Thousands are struck down by summer heat and most are poor

About 6,200 Americans are hospitalized each summer due to excessive heat, and those at the highest risk are poor, uninsured, or elderly, according to data from the Agency for Healthcare Research and Quality (AHRQ). About 180 people who were hospitalized for heat exposure died in 2005, according to the AHRQ analysis.

Severe heat exposure—called hyperthermia—occurs when body temperatures rise to 106 degrees Fahrenheit or more. Heat exhaustion symptoms range from nausea and vomiting to weakness, headache, and muscle cramps. More extreme heat stroke may cause a rapid pulse, difficulty breathing, mental confusion, seizure, and coma.

AHRQ's analysis, based on 2005 data, found that:

- People from communities with average household incomes of \$36,999 or less were hospitalized more than twice as often as people who came from wealthier areas where average household incomes topped \$61,000.

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Summer heat

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- The rate of hyperthermia hospital admissions for uninsured patients was significantly higher (17 percent) than hospital admissions for uninsured patients as a whole (5 percent).
- The hospitalization rate for people over 65 with hyperthermia was 15 times greater than for people age 17 and younger.

- The rate of admission for hyperthermia in the South (3.1 per 100,000 population) was more than twice that of the Midwest and West (1.4 per 100,000 each). The Northeast had a rate of 1.7 per 100,000 for hyperthermia.

For more information, see *Hospital Stays Resulting from Excessive Heat and Cold Exposure Due to Weather Conditions in U.S. Community Hospitals, 2005*, Statistical Brief #55 ([www.hcup-](http://www.hcup-us.ahrq.gov/reports/statbriefs/sb55.pdf)

[us.ahrq.gov/reports/statbriefs/sb55.pdf](http://www.hcup-us.ahrq.gov/reports/statbriefs/sb55.pdf)). The report uses statistics from the 2005 Nationwide Inpatient Sample, a database of hospital inpatient stays that is nationally representative of inpatient stays in 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. ■

Antidepressant prescriptions climb by 16 million

Prescriptions filled for antidepressant drugs increased from 154 million in 2002 to 170 million in 2005, according to data from the Agency for Healthcare Research and Quality (AHRQ). Among the prescriptions (not including refills) which were written after patients talked with doctors in-person or over the phone, AHRQ data found that in 2005:

- Psychiatrists – medical doctors who specialize in the treatment of mental disorders – prescribed 29 percent.
- General practitioners – physicians who provide primary care but are specialty-trained – prescribed 23 percent.
- Family practitioners – primary care physicians who complete a residency in family medicine — prescribed 21 percent.

- Internal medicine specialists – physicians who complete a residency in internal medicine and who focus on the diagnosis and non-surgical treatment of illnesses in adults that are often difficult to diagnose or manage – prescribed 10 percent.

These data are taken from the Medical Expenditure Panel Survey, a detailed source of information on the health services used by Americans, the frequency with which they are used, the cost of those services, and how they are paid. For more information, go to *Antidepressants Prescribed by Medical Doctors in Office-Based and Outpatient Settings for the U.S. Civilian Noninstitutionalized Population, 2002 and 2005*, Statistical Brief #206 (www.meps.ahrq.gov/mepsweb/data_files/publications/st206/stat206.pdf). ■

Announcements

New feature on AHRQ PSNet: Patient Safety Primers

AHRQ PSNet (<http://psnet.ahrq.gov/>), a national Web-based resource featuring the latest news and essential resources on patient safety, introduces Patient Safety Primers to guide users through key concepts in the field. Each Primer provides background and context, is continually updated with items newly added to AHRQ PSNet, and highlights relevant content from AHRQ PSNet and AHRQ WebM&M (a Web-based journal showcasing patient safety lessons drawn from actual cases of medical errors at <http://webmm.ahrq.gov/>). Available topics include medication reconciliation, never events, and root cause analysis. More topics will be added in the future. To view the Patient Safety Primers, go to <http://psnet.ahrq.gov/primerHome.aspx>. ■

Arozullah, A.M., Yarnold, P.R., Bennett, C.L., and others. (2007, November). "Development and validation of a short-form rapid estimate of adult literacy in medicine." (AHRQ grant HS13004). *Medical Care* 45(11), pp. 1026-1033.

A recently developed seven-item short version of the Rapid Estimate of Adult Literacy in Medicine (REALM-SF), a word recognition test, provides clinicians with a valid quick assessment of patient health literacy. Researchers developed, validated, and field tested the REALM-SF with 1,336, 164, and 50 patients, respectively, at 4 different hospitals. They asked the patients to read seven medical words that were scored as correct, mispronounced, or not attempted: behavior, exercise, menopause, rectal, antibiotics, anemia, and jaundice. The researchers equated a score of 0 to a 3rd grade or lower literacy level; 1-4, 4th to 6th grade; 4-6, 7th to 8th grade; and 7, 9th grade or higher level.

They developed the REALM-SF using a patient sample in which 43 percent of patients had less than 9th grade literacy, 45 percent were 65 years or older, and two-thirds (67 percent) were from racial/ethnic minorities. Furthermore, they validated it in a patient sample comprised of 98 percent black patients and 64 percent with less than 9th grade literacy.

Beeber, A.S. (2008). "Interdependence: Building partnerships to continue older adults' residence in the community." (AHRQ grant HS14697). *Journal of Gerontological Nursing* 34 (1), pp. 19-25.

Current practice frames care of older adults in terms of

independence and dependence. However, the focus is on older adults' deficits instead of how supportive services may enhance their ability to function. In contrast, interdependence, based on the idea that people rely on social networks for survival, is central to care for young adults with disabilities. Possibly because of ageism, this concept has not been applied to older adults. The author of this paper argues that through interdependence, older adults can gain support from their reciprocal relationships. Nurses can apply interdependence to the assessment for supportive services by focusing on older adults in the family context and the role of supportive services in maintaining residence in the community. Finally, interdependence can be used as a guiding framework for gerontological nursing research and practice to explore partnerships, reciprocal relationships, and service development and delivery.

Corser, W., Sikorskii, A., Olomu, A., and others. (2008, April). "Concordance between comorbidity data from patient self-report interviews and medical record documentation." (AHRQ grant HS10531). *BMC Health Services Research* 8(85).

Comorbid conditions have an important influence on patient outcomes such as quality of life, depression, and death. The researchers sought to determine if comorbidity data obtained from different sources was in agreement. For a select group of 719 hospitalized patients with acute coronary syndrome, they compared medical records and self-report interviews to determine concordant validity between the two sources.

They were especially interested in what patient characteristics predicted discordance between the results obtained from the two sources. The Charlton Comorbidity Index (CCI) was used to derive a composite comorbidity score from the medical records documentation, while the Katz self-report method was used to derive a score from the self-report interviews. The Katz method used the same 19 conditions and virtually the same individual item weightings as the CCI. The researchers found that the self-report interviews yielded reports of more comorbid conditions than the medical records. In addition, older age and higher levels of depressive symptoms were correlated with poorer data concordance.

Ellenbecker, C.H., Byleckie, J.J., and Samia, L.W. (2008). "Further psychometric testing of the home healthcare nurse job satisfaction scale." (AHRQ grant HS13477). *Research in Nursing and Health* 31, pp. 152-164.

Nurses' job satisfaction has been of interest since the 1960s when the first nurse shortage became a concern in the United States. To increase the understanding of nurses' job satisfaction, these researchers sought to improve the ability of the Home Healthcare Nurses' Job Satisfaction Scale (HHNJS) to measure satisfaction. They added and tested new items and revised or removed existing items from the 30-item previous version of the HHNJS. The theoretical framework suggested that there were eight factors involved in nurse satisfaction. Therefore, the researchers grouped each item into a subscale related to

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Research briefs

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one of these eight factors (relationships with peers, patients, physician and organization, autonomy and control, salary and benefits, stress and workload, and professional pride). More than 2,200 registered nurses and licensed practical nurses working in home healthcare in New England filled out the survey form. The researchers found that the internal consistency of six of the eight subscales was improved, compared with the earlier version, thus contributing to a better understanding of nurse satisfaction.

Feldstein, A.C. and Glasgow, R.E. (2008, April). “A practical, robust implementation and sustainability model (PRISM) for integrating research findings into practice.” (AHRQ grant HS11843). *The Joint Commission Journal on Quality and Patient Safety* 34(4), pp. 228-243.

Although numerous studies address the efficacy and effectiveness of health interventions, less research addresses successfully implementing and sustaining interventions. A barrier to progress is the absence of a model to help identify the factors that need to be considered and how to measure success. To help address this gap, these authors developed a comprehensive model for translating research into practice using concepts from the areas of quality improvement, chronic care, the diffusion of innovations, and measures of the population-based effectiveness of translation. The model incorporates five basic elements: program (intervention), the external environment, implementation and sustainability infrastructure, and recipients. PRISM – the Practical, Robust

Implementation and Sustainability Model—evaluates how the health care program or intervention interacts with the recipients to influence program adoption, implementation, reach, and effectiveness. The PRISM model provides a new tool for researchers and health care decisionmakers that integrates existing concepts relevant to translating research into practice.

Gibbons, R.D., Segawa, E., Karabatsos, G., and others. (2008). “Mixed-effects Poisson regression analysis of adverse event reports: The relationship between antidepressants and suicide. (AHRQ grant HS16973). *Statistics in Medicine* 27, pp. 1814-1833.

The primary tool used by the Food and Drug Administration (FDA) for post-marketing drug adverse event (AE) surveillance is the Adverse Event Reporting System (AERS). The AERS is a passive reporting system relying on reports by manufacturers, providers, and consumers and is therefore subject to selection bias as well as over- and under-reporting. To better understand the relationship between antidepressants and suicide (one of the most debated questions concerning adverse drug events), the researchers developed a data mining methodology different from that used by the FDA. This new method involves both empirical Bayes and fully Bayes estimation for each drug in a class of drugs, for a particular AE, based on a mixed-effects Poisson regression model. Using this method and data from the AERS, the researchers determined that newer antidepressants are associated with lower rates of suicide reports compared with older antidepressants. The researchers recommend that searches for other drug-AE interactions should use

mixed-effects modeling and analytic methods that correct for denominators.

Han, H-R., Kim, K.B., Kang, J., and others. (2007, October). “Knowledge, beliefs, and behaviors about hypertension control among middle-aged Korean Americans with hypertension.” (AHRQ grant HS13160). *Journal of Community Health* 32(5), pp. 324-342.

The researchers gathered baseline information on beliefs and modifiable lifestyle behaviors that affect hypertension control by use of focus groups with Korean Americans, interviews, and community observations. Overall, 63 percent of men and 82 percent of women had a family history of hypertension; more than 1 in 10 had diabetes and 1 in 20 had already had a stroke. Korean American women were more likely than men to have controlled blood pressure (BP) and to have been on antihypertensive medications.

Women also more commonly had lower rates of smoking, drinking, and overweight or obesity (43 vs. 56 percent) than men. One-fifth of the men were current smokers, over 8 percent drank more than 10 drinks per week, and only 12 percent engaged in moderate exercise such as brisk walking for at least 30 minutes a day on 5 or more days a week. About one-fourth of the group said that cutting down on salt was the most important behavioral factor for controlling BP, followed by exercise and antihypertensive medication.

Jensen, P.M., Saunders, R.L., Thierer, T., and Friedman, B. (2008, April). “Factors associated with oral health-related quality of life in community-dwelling elderly persons with disabilities.”

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(AHRQ grant HS10120). *Journal of the American Geriatrics Society*, 56(4), pp. 711-717.

To investigate factors that affect oral health-related quality of life (OHRQOL), researchers collected information on 641 disabled, elderly Medicare recipients, living in communities in 3 States, who were not cognitively impaired. The researchers administered the 14-item Oral Health Impact Profile to determine the participants' OHRQOL. The participants' mean age was 79 years, and they were dependent for help with nearly two activities of daily living, on average, such as bathing and dressing. Overall, 43.1 percent were toothless, 77.4 percent wore a denture, 40.4 percent felt they were in need of current dental treatment, and 84.7 percent had not had a dental checkup in the past 6 months. Poor OHRQOL was significantly associated with perceived need for dental treatment, poor self-rated health, poor and fair mental health, possessing fewer than 17 teeth (of the normal 32), and relatively poor cognitive status. Low OHRQOL was not associated with less life satisfaction, living alone, or low income. Because poor cognitive status served as a risk factor for low OHRQOL, the researchers suggested that more frequent recalls with the dentist, such as every 3–4 months, be used to monitor oral health in this population. They also noted that, because neither Medicare nor Medicaid covers most dental services, it is unlikely that either would pay for cognitive screening as part of dental care for the community-dwelling elderly.

Kim, E-Y., Han, H-R., Jeong, S., and others. (2007, September).

“Does knowledge matter? Intentional medication nonadherence among middle-aged Korean Americans with high blood pressure.” (AHRQ grant HS13160). *Journal of Cardiovascular Nursing* 22(5), pp. 397-404.

The Self-Help Intervention Program for high blood pressure care (SHIP-HBP) combines psychobehavioral education with self-monitoring of blood pressure and telephone counseling by bilingual nurses. Researchers found that intentional nonadherence to antihypertensive medication among the 445 middle-aged Korean Americans in the SHIP-HBP was primarily due to inadequate understanding of the medication. About 55 percent of the group was taking antihypertensive medication. Over half (54 percent) of the 208 who were not taking the medication endorsed one or more type of nonadherent behaviors. Of this group, 29.8 percent indicated unintentional nonadherence, 2.4 percent intentional nonadherence, and 21.6 percent both types of nonadherence. Those who purposely did not take their antihypertensive medication were significantly more likely to have medication-related adverse effects such as frequent urination at night, itching, heart pounding, dry mouth, and flushing of the face. Also, those who did not take their medication had significantly less knowledge about hypertension than those who did take it.

Lapane, K.L., Dube, C., Schneider, K.L., and Quilliam, B.J. (2007, August). “Patient perceptions regarding electronic prescriptions: Is the geriatric patient ready?” (AHRQ grant HS16394). *Journal of the*

***American Geriatrics Society* 55, pp. 1254-1259.**

Electronic prescribing (e-prescribing) involves the direct computer-to-computer transmission of prescription medication information from prescribers' offices to community pharmacies. This approach may provide opportunities for earlier and enhanced communication between geriatric patients and their clinicians. However, geriatric patients may need more education to fully engage in the prescribing process with their doctor and optimize use of e-prescribing technology. Researchers found that only about half (53 percent) of elderly patients at e-prescribing practices reported taking e-prescribed medications. Regardless of their e-prescribing experience, three-fourths of geriatric patients did not tell their physician if they did not want a prescription, and 85 percent would never tell their doctor if they did not plan to pick it up from the pharmacy. In the current study, elderly patients receiving e-prescriptions reported that their physicians checked their current medication use more frequently. They also reported discussing the importance of medication use with their doctors than patients in the same practices who did not receive an e-prescription.

Ma, J. and Stafford, R.S. (2008, May). “Screening, treatment, and control of hypertension in US private physician offices, 2003-2004.” (AHRQ grant HS11313). *Hypertension* 51(5), pp. 1275-1281.

Researchers analyzed National Ambulatory Medical Care Survey data to examine the rates of and factors associated with

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hypertension screening, treatment, and control during U.S. office visits in 2003 and 2004. Blood pressure was measured in over half (56 percent) of all visits by adult patients and in 93 percent of visits by patients with hypertension. Nearly two-thirds (62 percent) of patients with hypertension were treated. They were most commonly prescribed antihypertensive agents (46 percent), with 58 percent of them prescribed combination therapy during treatment visits. However, only 39 percent of patients at these treatment visits were at recommended blood pressure goals.

The likelihood of not being screened for hypertension was 10 times greater for visits with a provider other than a primary care physician or cardiologist and nearly 6 times greater for nonwell care visits. Patients in the South were 2.6 times more likely to go untreated for their hypertension than their counterparts in the Northeast. Also, those visiting a doctor for the first time were 1.6 times more likely to not be treated for hypertension than patients making return visits. Finally, patients who suffered from other medical conditions were nearly twice as likely to not have their blood pressure controlled than patients who suffered from hypertension alone.

Meropol, S.B. (2008). “Valuing reduced antibiotic use for pediatric acute otitis media,” (AHRQ grant HS10399). *Pediatrics* 121, pp. 669-673.

It has been suggested that between 7 and 20 children suffering from ear infections (acute otitis media, AOM) must be treated with antibiotics for 1 child to derive benefit. The AAP guidelines urge

clinicians to instruct parents to weigh the benefits and risks of withholding antibiotics for AOM. The author of this study performed a cost-utility analysis by describing AOM outcomes, using a common denominator of quality-adjusted life-days (QALDs), and then estimating the value of avoiding antibiotic resistance with the AAP guidelines, using a parental perspective. The study estimated that for the benefits of the AAP guidelines to at least balance the risks, the parents of a sick child considering foregoing a single antibiotic prescription must be willing to face the possibility that their child might be sick for between 7 hours and 4 days.

Although this might seem rational from a societal perspective, this trade-off might not be desirable from a parental perspective. This could be a barrier to successful implementation of the AAP AOM guidelines. Other approaches to reduce antibiotic use, such as wider use of influenza vaccine and improved rapid viral diagnostic techniques, might be more successful.

Minkovitz, C.S., Strobino, D., Mistry, K.B., and others. (2007, September). “Healthy Steps for Young Children: Sustained results at 5.5 years.” (AHRQ grant HS13086). *Pediatrics* 120(3), pp. e658-e668.

This study, based on telephone interviews with parents, found that, even though the Healthy Steps for Young Children (HS) program ended at 3 years, its impact was sustained among 5-year-old children. A smaller percentage of HS parents than parents in a non-HS group ever slapped the child in the face or spanked their child with an object (10.1 vs. 14.1 percent). Also, more HS than non-HS parents

often or almost always negotiated with the child (59.8 vs. 56.3 percent) and tended to often or almost always ignore misbehaviors (10.3 vs. 8.5 percent). HS parents were also more likely to encourage their child to read and to use appropriate car seat restraints. More HS than non-HS parents received desired anticipatory guidance about their child's health and safety (54.9 vs. 49.2 percent), agreed that the pediatrician or nurse practitioner provided support (82 vs. 79 percent), and ultimately remained at the HS practice (65.1 vs. 61.4 percent).

Mistry, K.B., Minkovitz, C.S., Strobino, D.M., and Borzekowski, D.L. (2007, October). “Children's television exposure and behavioral and social outcomes at 5.5 years: Does timing of exposure matter?” (AHRQ grant HS13086). *Pediatrics* 120(4), pp. 762-769.

This study found that one in five children 2.5 to 5.5 years of age watched television more than 2 hours a day. Also, one in six children viewed over 2 hours of television daily either at 2.5 years or at 5.5 years of age. In addition, over 40 percent of 5-year-old-children had televisions in their bedrooms. Timing of television exposure had varying impact. For example, heavy viewing by 2-year-olds was associated with later behavioral problems, but was not associated with fewer social skills at 5.5 years. However, 5-year-olds with current heavy television viewing had fewer social skills than peers without such heavy viewing. For children with only early heavy TV watching that was later reduced, there was no consistent link with later behavioral problems or social skills.

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Rhodes, K.V., Frankel, R.M., Levinthal, N., and others. (2007, November). “You’re not a victim of domestic violence, are you?” Provider-patient communication about domestic violence.” (AHRQ grant HS11096). *Annals of Internal Medicine* 147(9), pp. 620-627.

Researchers examined audiotapes of 293 visits to 2 emergency department (EDs), during which clinicians screened adult women for domestic violence. ED clinicians screened for abuse in a perfunctory manner 45 percent of the time. For example, they simply asked, “Are you a victim of domestic violence?” Providers also framed their questions negatively 10 percent of the time, such as, “He’s never hit you?” Moreover, ED providers probed for further information only one-third of the time, and rarely did they offer open-ended opportunities for women to talk. Most women who said they were at risk for abuse on the computer screening tool did not share this information with the provider. The opportunity to have a meaningful conversation about abuse was often diminished by provider factors. For example, ED clinicians sometimes screened women for abuse in the presence of their husband, ignored disclosure of abuse, did not assess women’s safety or level of risk, and failed to link abused women with available resources. The researchers found very few instances in which ED clinicians provided counseling or social work services to women who disclosed domestic abuse.

Richards, K.M. (2008, March). “RAP Project –An instrument development study to determine common attributes for pain assessment among men and women who represent multiple pain-related diagnoses.” (AHRQ grant HS10788). *Pain Management Nursing* 9(1), pp. 33-43.

Inadequate assessment of pain by nurses is a primary barrier to provision of optimum pain relief and may contribute to the problem of unrelieved pain. In addition, little is known about factors that may be common to the experience of pain among individuals who report a variety of pain problems. The author developed and tested an inductively derived multidimensional pain assessment instrument in patients with a variety of pain problems. The objective was to contribute to a systematic global assessment of all types of pain, which can potentially be used to inform standards for best practice in pain management nursing and improve patient outcomes. The author derived instrument items from interviews of patients suffering homogeneous pain (pain from a single illness), established the sensitivity of items to heterogeneous pain (pain from two or more illnesses) through focus groups and interviews with participants reporting multiple pain problems, and evaluated psychometric properties with those representing a variety of pain-related diagnoses. The preliminary evidence supported initial reliability and validity, indicating sensitivity of the Richards Assessment of Pain (RAP) instrument to heterogeneous pain.

Rose, J.S., Chassin, L., Presson, C., and others. (2007, August 2007). “A latent class typology of young women smokers.” (AHRQ grant HS14178). *Addiction* 102(8), pp. 1310-1319.

Researchers studied 443 Midwestern women who participated in a longitudinal tobacco-use study that began in 1980 and followed up with them in 1987, 1993, and 1999. They identified three subgroups among the women who smoked daily. The first group (48 percent of the sample) worked full time, were heavy smokers (more than half a pack each day), and were generally happy. The second group (19 percent) started smoking casually during their college years and exercised regularly. The third group (33 percent) were often mothers and smoked because they were addicted and received a psychological benefit from smoking.

Identifying these groups may help determine what smoking cessation interventions and messages are appropriate for reaching them. For example, women in the first group may respond to messages appropriate to their self-confidence as a means of empowering them to quit. The college-aged women may be receptive to education campaigns on the unacceptability of smoking, its negative health effects, and the danger of addiction. The women in the third group may best be deterred by smoking bans in public places and high taxes on tobacco and may be best served by medically supervised cessation programs that address addiction and depression. ■

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