Research Activities

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Agency for Healthcare Research and Quality

Highlights

Departments

Regular Features

Physicians want to learn from medical mistakes but say current error-reporting systems are inadequate

The perception that U.S. doctors are unwilling to report medical errors and learn how to prevent them is untrue, according to a new study funded by the Agency for Healthcare Research and Quality (HS11890 and HS14020). Because most doctors think that current systems to report and share information about errors are inadequate, they rely instead on informal discussions with their colleagues. Consequently, important information about medical errors and how to prevent them often is not shared with the hospital or the health care organization. As a result, such information is not aggregated for analysis and systematic improvement.

To assess physicians' attitudes about communicating errors with their colleagues and health care organizations, the study authors used a 68-question survey to poll a geographically diverse group of more than 1,000 physicians and surgeons currently practicing in rural and urban areas in Missouri and Washington State. The survey was conducted between July 2003 and March 2004.

Most physicians reported that they had been involved in an error (see Figure 1). Almost all (95 percent) physicians agreed that they needed to know about errors in their organization to improve patient safety, and 89 percent agreed that they should discuss errors with their colleagues. The majority of physicians (83 percent) said they had used at least one formal reporting mechanism, most commonly reporting an error to risk management (68 percent) or completing an incident report (60 percent).

Over half of physicians (61 percent) had used at least one informal mechanism to report an error to their hospital or health care organization, most commonly telling a supervisor or manager (40 percent) or physician chief or departmental chairman (38 percent). Physicians were more likely to

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Medical mistakes

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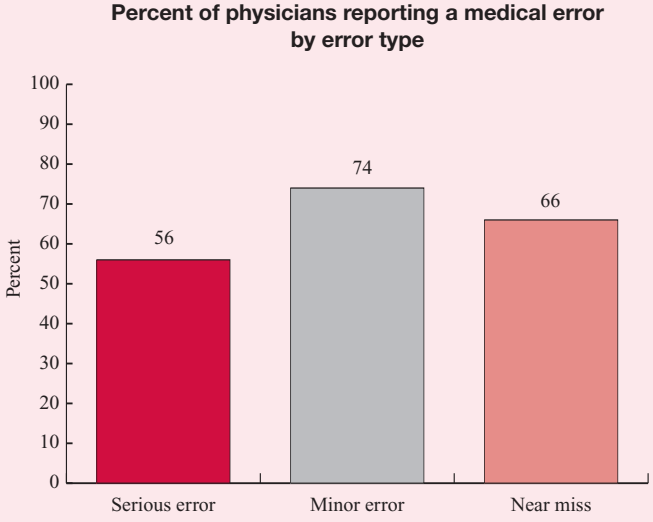
discuss serious errors, minor errors, and near misses with their colleagues than to report them to a risk management or to a patient safety official.

Few physicians believed that they had access to a reporting system that was designed to improve patient safety, and nearly half (45 percent) did not know if one existed at their organization. Only 30 percent agreed that current systems to report patient safety events were adequate.

When asked what would increase their willingness to formally report error information, physicians said they wanted:

- information to be kept confidential and non-discoverable (88 percent).
- evidence that such information would be used for system improvements (85 percent) and not for punitive action (84 percent).
- the error-reporting process to take less than 2 minutes (66 percent).
- the review activities to be confined to their department (53 percent).



See "Lost opportunities: How physicians communicate about medical errors," by Jane Garbutt, Amy D. Waterman, Julie M. Kapp, and others, in the January/February 2008 *Health Affairs* 27(1), pp. 246-255. ■

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Patient Safety and Quality

Pediatric outpatient medication errors are common and are often due to mistakes made at home

Errors made in drugs prescribed to children during pediatric visits are common, and most of them occur when parents administer the drugs at home, concludes a new study. This is in contrast to when children are in the hospital, where most errors are made at the drug ordering stage. A research team assessed the rates and types of adverse drug events (ADEs) in children seen at six office practices serving diverse socioeconomic, racial, and ethnic populations. Three percent of preventable ADEs and 13 percent of nonpreventable ADEs occurred among the 1,788 children who received a total of 2,186 prescriptions (1.2 per patient). About 16 percent of the children suffered side effects or allergic reactions to either preventable or nonpreventable ADEs. Preventable ADEs were most frequently caused by penicillin or a derivative followed by inhaled steroids; nonpreventable ADEs were most commonly caused by penicillin followed

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by cephalosporins (antibiotics) and inhaled bronchodilators. Of the preventable ADEs, none were life-threatening, although eight were serious.

The rate of preventable ADEs (3 per 100 patients) for children was similar to the rate found in a similar study of adults. However, a distinctive feature of pediatric ADEs, when compared with adult ADEs, was that they occurred most frequently at the drug administration stage. In fact, 70 percent of the preventable ADEs were due to errors in drug administration, mostly by the children's parents. For 104 of the 152 ADEs that had the potential to be ameliorated, parents either did not notify or delayed notifying the pediatric provider of side effects or an allergic reaction to the medication. Other research cited by the authors found that some parents were confused regarding the correct use of teaspoons, tablespoons, and dose cups. The authors concluded that 72 percent of the preventable ADEs could have been avoided by improved communication between the prescribing pediatric provider and the parent, while 21 percent could have been avoided by computerized physician order entry with clinical decision support systems. The study was supported in part by the Agency for Healthcare Research and Quality (HS11534).

See "Adverse drug events in pediatric outpatients," by Rainu Kaushal, M.D., Donald A. Goldmann, M.D., Carol A. Keohane, R.N., and others in the September 2007 *Ambulatory Pediatrics* 7(5), pp. 383-389. ■

Age, gender, and location are keys to predicting patient fall injuries in hospitals

Studies have suggested that serious injuries after a fall in a hospital can increase patient charges by about $4,000. A new study by Washington University School of Medicine researchers suggests hospitals keep close watch on older and female patients in bathrooms and patient care areas if they hope to quell the injuries that occur when patients fall.

The researchers studied 7,082 patient falls that occurred in 9 Midwestern hospitals of varying sizes, missions, and populations from 2001 to 2003. They found that patients were not harmed after more than half of the falls. However, 26.4 percent of patient falls resulted in some sort of injury, ranging from minor to major.

Most of the falls reported for the nine hospitals were unassisted, that is, no staff member was present to help break the fall. Unassisted falls tended to lead to injury. Injuries also ensued when falls occurred in bathrooms or in areas such as nurses' stations, hallways, and examination and treatment rooms. Women who fell were not likely to be injured; however, if they were injured, their injuries were serious.

Though all nine of the hospitals used the same fall reporting system, the researchers found variation in fall definitions. The team recommends standardizing definitions in systems that report patient falls, so research efforts can zero in on risk factors. They also suggest that if hospitals want to know how to prevent falls, their fall reporting systems should collect more descriptive information, including the patient's name, the hospital unit, location, a description of the fall, and the outcome. This study was funded in part by the Agency for Healthcare Research and Quality (HS11898).

See "Circumstances of patient falls and injuries in 9 hospitals in a Midwestern healthcare system," by Melissa J. Krauss, M.P.H., Sheila L. Nguyen, M.P.H., William Claiborne Dunagan, M.D., and others in the May 2007 *Infection Control and Hospital Epidemiology* 28(5) pp. 544-550. ■

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.

Also in this issue:

Blacks, Hispanics, and other minority groups are less likely to get strong pain medications in hospital emergency departments

Blacks and Hispanics who go to hospital emergency departments in pain are significantly less likely than whites to get pain-relieving opioid drugs, according to a new study supported in part by the Agency for Healthcare Research and Quality (HS16238). Opioids are narcotic pain medications used to treat patients with moderate to severe pain. The study, which analyzed treatments for more than 150,000 pain-related visits to U.S. hospitals between 1993 and 2005, found 23 percent of blacks and 24 percent of Hispanics received opioids compared with 31 percent of whites. Twenty-eight percent of Asians and other groups received opioids.

Study authors, led by University of California-San Francisco researcher Mark J. Pletcher, M.D., M.P.H., analyzed 374,891 emergency department visits over 13 years. Of those visits, 156,729, or 42 percent, were related to pain. Researchers analyzed the use of several commonly prescribed opioids, including hydrocodone, meperidine, morphine, codeine, and oxycodone.

While the use of opioids increased overall from 23 percent in 1993 to 37 percent in 2005, the differences in use between racial and ethnic groups did not diminish. In 2005, the last year of the survey, 40 percent of whites in pain received opioids compared with 32 percent of all others. Differences in prescribing between whites, Hispanics, and blacks were greater among people with the worst pain. Among patients in severe pain, opioids were prescribed to 52 percent of whites, 42 percent of Hispanics, and 39 percent of blacks.

The study did not conclude why Hispanics, blacks, and other minority groups were less likely to receive opioids but suggested racial and/or ethnic bias as a significant factor. However, the study authors note that the causes of disparities in medical care are complex, and simple racial/ethnic bias is unlikely to fully explain the problem. The researchers indicate that new strategies are needed to address pain management in emergency departments, perhaps including changes to pain treatment regimens or educating patients to specifically ask for pain relief.

See "Trends in opioid prescribing by race/ethnicity for patients seeking care in US emergency departments," by Mark J. Pletcher, M.D., M.P.H., Stefan G. Kertesz, M.D., M.Sc., Michael A. Kohn, M.D., M.P.P., and Ralph Gonzales, M.D., M.S.P.H. in the January 2, 2008 *JAMA* 299(1), pp. 70-78. ■

Children with special health care needs seem to benefit from Medicaid managed care programs with case managers

To control escalating health care expenditures, a handful of State Medicaid programs have implemented a managed care option for children with special health care needs (CSHCN), which includes case management services or care coordination. A new study concludes that CSHCN with disabilities in such programs have better access to and receipt of occupational and physical therapy at school than those in Medicaid fee-for-service (FFS) plans. Jean M. Mitchell, Ph.D., of Georgetown University, and colleagues evaluated use of speech, occupational, and physical therapy by CSHCN in the managed care or FFS plan of the District of Columbia Medicaid program that serviced only children (predominantly black) with disabilities.

Enrollment in the FFS rather than managed care plan reduced the likelihood that CSHCN received occupational therapy in school by 9.2 percentage points and physical therapy by nearly 11 percentage points. The marginal impact of plan type on speech therapy was not significant. Plan choice had no impact on the likelihood children would receive these services from the health care sector.

In addition, children in the FFS plan were 6 to 10 percentage points more likely to never receive speech, occupational, or physical

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Managed care programs

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therapy at school, and less likely to receive frequent occupational or physical therapy at school compared with managed care children. These differences are likely due to the availability of case management and care coordination that was an integral part of the partially capitated managed care plan, explain the researchers. For example, case managers typically coordinate the range of services reimbursed by Medicaid, including physicians, hospital, therapeutic services, transportation, dental, pharmaceutical, and mental health across multiple providers and sites. However, in FFS plans, caregivers of CSHCN must navigate the health care system on their own. The study was supported in part by the Agency for Healthcare Research and Quality (HS10912).

See "Partially capitated managed care versus FFS for special needs children," by Cynthia R. Schuster, M.P.P., Dr. Mitchell, and Darrell J. Gaskin, Ph.D., in the Summer 2007 *Health Care Financing Review* 28(4), pp. 109-123. ■

Study of young Head Start children links overweight to worsened asthma

A study of Head Start children in Arkansas, which has the highest national rate of overweight children, suggests a link between being overweight and worsened asthma in this group of low-income, disadvantaged children. It found that 19 percent of 3- to 5-year-old Head Start children with asthma were overweight (body mass index or BMI in the 95th percentile or greater) compared with 11 percent of a national sample of similar-aged children (National Health and Nutrition Examination Survey data) and 14 percent of Arkansas prekindergarten children not in Head Start.

Compared with Head Start children with asthma and a BMI less than the 85th percentile (normal weight), those with a BMI in the 85th percentile or greater, considered at risk for becoming overweight, had significantly worse indicators of asthma. For example, the at-risk group had more asthma-related emergency department visits, more lifetime hospitalizations, more school days missed, and more frequent activity limitations than their nonoverweight counterparts.

They also tended to have more daytime asthma symptoms and lower quality of life, but less use of oral corticosteroids (such as prednisone) than their nonoverweight counterparts. This finding suggests that oral corticosteroid use, which can cause weight gain, is unlikely to be responsible for significant weight gain in this group. It is more likely that the relationship between asthma and being overweight is an interaction of several factors including hormonal, mechanical, genetic, and environmental characteristics. The study was supported in part by the Agency for Healthcare Research and Quality (HS11062).

See "Relationship of body mass index with asthma indicators in Head Start children," by Perla A. Vargas, Ph.D., Tamara T. Perry, M.D., Elias Robles, Ph.D., and others in the July 2007 *Annals of Allergy, Asthma, and Immunology* 99, pp. 22-28. ■

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/.

Competing priorities, burnout, and collegial support all play a role in nursing career decisions

Significant staff shortages of registered nurses (RNs) have plagued hospitals for the past 10 years. The nurse shortage will worsen in the next 5 to 10 years, when a large part of the nursing workforce is expected to retire. Comments from 472 RNs who responded to a 2006 survey hint at factors that may impede nurse recruitment and retention. Nurses recounted several factors that played a large role in their nursing career decisions. These included competing family and work priorities and the struggle to balance them, practice deterrents such as inadequate staffing and work overload, and collegial support.

Many nurses loved nursing as a career and took great pride in it, notes Carol S. Brewer, Ph.D., of the University of Buffalo School of Nursing. However, at certain family stages, family needs took precedent over professional needs. When nurses had young children, they either stopped nursing for a while or worked part-time. Many pursued advanced education in the hope of a better schedule, less shift work on holidays and weekends, increased opportunities for promotion, and salary increases. However, many felt that the advanced degrees did not pay off as they expected. As nurses aged, some chose retirement in response to intolerable working conditions.

Nurses cited practice deterrents such as pay inequity (for degree of responsibility and skills), lack of respect for hospital nurses, and safety concerns for themselves and patients. They also voiced concerns about exhaustion, stress, excessive work demands and work-related injuries, increasingly ill patients, mandatory overtime, and nurse shortages. These problems gave them more negative attitudes toward nursing. On the other hand, Suzanne S. Dickerson, D.N.S., reported that collegial support encouraged nurses to stay in practice. Most nurses generally enjoyed their fellow nurses and were encouraged to remain in the profession because of them. Employers of RNs must find creative ways to respond to RNs' concerns in order to retain this skilled group. The study was supported by the Agency for Healthcare Research and Quality (HS11320).

See "Giving voice to registered nurses' decisions to work," by Suzanne S. Dickerson, D.N.S., R.N., Dr. Brewer, Christine Kovner, Ph.D., and Mary Way, M.S.N., in the July 2007 *Nursing Forum* 42(3), pp. 132-142. ■

Studies examine the impact of nurse staffing on complications, mortality, and length of hospital stay

Two new studies supported by the Agency for Healthcare Research and Quality (HS10153) add to the growing body of research linking nurse staffing to quality of care. The first study found that more hours of care provided by registered nurses (RNs) were related to fewer postoperative problems among hospitalized children. The second study revealed that, despite lower RN staffing in for-profit than not-for-profit hospitals, the mortality rates and length of stay were similar after controlling for population and market characteristics. The impact of managed care on both types of hospitals may have played a role. Both studies, led by Barbara A. Mark, Ph.D., R.N., F.A.A.N., of the University of North Carolina at Chapel Hill, are discussed here.

Mark, B.A., Harless, D.W., and Berman, W.F. (2007, May). "Nurse staffing and adverse events in hospitalized children." ***Policy, Politics, & Nursing Practice*** **8(2), pp. 83-92.**

More hours of care provided by RNs are related to significantly fewer postoperative pulmonary complications, pneumonia, and septicemia among hospitalized children, according to this study. The researchers used administrative data from 1996-2001 to examine discharges of 3.65 million children in 286 general and children's hospitals in California. In this group of children, septicemia occurred most often, followed by postoperative cardiopulmonary complications, deaths, postoperative pneumonia, and postoperative urinary tract infections.

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Nurse staffing

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Increasing hours of RN staffing had no effect on mortality rates. However, for three of the four complications (cardiopulmonary complications, postoperative pneumonia, and postoperative septicemia/other infections), there were significant staffing effects at the 25th, 50th, and 75th percentiles of nurse staffing. The increase in RN hours had the largest impact at the lowest level of RN staffing.

For example, the researchers estimated that from 425 to 596 fewer post-operative cardio-pulmonary complications (75th vs. 25th percentile) would have occurred during the 6-year study period with a 1-hour increase in RN hours per patient day. Similarly, from 95 to 124 postoperative pneumonia complications and from 719 to 787 postoperative septicemia and other infections might have been averted. These results are consistent with studies on the impact of nurse staffing on adverse outcomes for hospitalized adults.

Mark, B.A. and Harless, D.W. "Nurse staffing, mortality, and length of stay in for-profit and not-for-profit hospitals." (2007, Summer). *Inquiry* 44, pp. 167-186.

This study found that RN staffing (adjusted for case mix) was significantly lower in for-profit than not-for-profit hospitals. Yet, mortality rates and length of hospital stay were similar between the two types of hospitals, after controlling for population and market characteristics. Both types of hospitals also became more similar over time in terms of distribution of RN staffing and length of stay ratio.

The lack of differences in patient outcomes among the two types of hospitals found during the study period, despite RN staffing differences, may reflect the dramatic changes in the operating environment for both types of hospitals due to the growing dominance of managed care in the early to mid-1990s. Not-for-profit hospitals may have responded to increased competitive pressures by behaving more like their for-profit counterparts. For example, they may have implemented initiatives to improve the efficiency of their internal operations, such as changing the volume and mix of services, explain the researchers.

They suggest that future research examine the impact of RN staffing on other outcomes such as in-hospital complications and occurrence of certain adverse events. Their findings were based on analysis of the Healthcare Cost and Utilization Project (HCUP) National Inpatient Sample of U.S. community hospitals. A total of 422 hospitals were included in each of the study years 1990 through 1995. ■

Staffing levels and turnover are influenced by nursing home expenditure patterns

Direct care staffing levels and staff turnover rates in nursing homes are widely used as measures of care quality. Much previous research has found that the type of nursing home ownership (for-profit or not-for-profit) had influenced staffing levels and turnover, with not-for-profit nursing homes having higher staffing levels and lower turnover. A new study reveals that nursing home expenditure patterns also influence staffing levels and turnover.

Bita A. Kash, Ph.D., M.B.A., of Texas A & M University, and colleagues examined the relationship between 10 financial ratios (6 activity expense ratios, 2 growth and risk ratios, and 2 profitability ratios) and staffing levels and turnover in 1,018 Texas nursing homes. The researchers measured expenditures by the ratio of a given type of expenditure to net resident revenues. They found that higher administrative expenses (implying more management capacity) can reduce both staff turnover and staffing levels. Staff training and benefit expenses did not affect staff turnover, but higher staff benefit expenses were associated with higher levels of professional staff, that is, registered nurses (RNs) and licensed vocational nurses (LVNs). Higher profit margins were associated with reduced staffing levels. However, when the 10 financial ratios were factored in, the relationship between for-profit or not-for-profit ownership and staffing indicators was weakened. Depending on the particular staffing indicator, administrative expenses, activity expenses, operating profit margins, and benefit expenses all played a greater role than the type of ownership.

Nursing home administrators could use the different expense and profitability ratios identified in this study as predictors of staffing levels and staff turnover. For example, higher administrative expenditures produced lower LVN and certified nursing assistant (CNA) turnover and staffing levels without affecting RN staffing levels. Because higher RN staffing levels are associated with better quality, this implies that more management capacity may be associated with more cost-effective care, note the authors. They suggest that

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Staffing levels

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the financial ratio approach used in their study may eventually provide possibilities for practice guidelines and budgeting standards focused on improving staffing levels and reducing turnover in nursing homes. The study was supported by the Agency for Healthcare Research and Quality (HS16229).

See "Nursing home spending, staffing, and turnover" by Dr. Kash, Nicholas G. Castle, Ph.D., and Charles D. Phillips, Ph.D., M.P.H., in the July-September 2007 issue of *Health Care Management REVIEW* 32(3), 253-262. ■

Women's Health

Nurse midwives deliver more babies in hospitals than homes in Washington State

When a certified nurse midwife delivers an infant, a prevailing assumption is that the birth occurs in the home of an older married, educated white woman who expects an uncomplicated event. After examining Washington State's live birth files from 1995 to 2004, researchers found that this presumption is not rooted in fact. Carie G. Bussey, C.N.M., M.N., a midwife in Olympia, Washington, and colleagues looked at 590,943 vaginal, single births in the State over a 10-year period. They found that midwives delivered nearly 10 percent of Washington's babies, and 97 percent of those births happened in hospitals.

In addition, mothers who had midwife-attended births were likely to have characteristics associated with low socioeconomic status: young age, unmarried, low education level, minority, little prenatal care, and insurance from Medicaid. Because of these demographics, the women are considered to be at high risk for complications, dispelling the assumption that midwives tend only to low-risk births.

An increase in midwife-assisted births during the study period was attributed in part to Medicaid mandating reimbursement for midwife care beginning in 2004. Thirty-three States followed suit and required private insurers to reimburse for midwife care. The research team noted a small decline in the number of midwife-attended vaginal births from 2003 to 2004 (12.2 percent to 10.9 percent). They offer an upswing in cesarean births and fewer vaginal births after cesareans as a possible explanation. The authors recommend future studies of midwifery trends in other States and comparisons of outcomes of midwife-assisted births with physician-assisted births. This study was funded in part by the Agency for Healthcare Research and Quality (HS013853).

See "Certified nurse midwife-attended births: Trends in Washington State, 1995-2004," by Ms. Bussey, Janice F. Bell, M.P.H., Ph.D., and Mona T. Lydon-Rochelle, C.N.M., M.P.H., Ph.D., in the September/October 2007 *Journal of Midwifery & Womens Health* 52(5), pp. 444-450. ■

A combination of maternal, baby, and episiotomy factors contribute to high rates of maternal birth trauma in Iowa

Compared with national rates, the State of Iowa has lower rates of cesarean delivery, but higher rates of maternal trauma during birth, concludes a new study. Significant risk factors at Iowa hospitals for one type of maternal trauma—third/fourth-degree lacerations—included episiotomy (surgical incision through the perineum to enlarge the vagina to assist childbirth), artificial rupture of the amniotic membranes, obstructed labor, and late pregnancies (over 40 weeks gestation). Disproportionately large babies were also a risk factor.

Third- and fourth-degree lacerations are perineal tears that damage the anal sphincter muscles. This damage can lead to fecal incontinence, even if repaired, in some cases. The higher rates of maternal birth trauma at predominantly rural hospitals may in part be due to lack of infrastructure to perform cesareans for difficult deliveries. Faced with borderline

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Maternal birth trauma

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decisions, physicians may opt to use vacuum extraction, forceps, and episiotomy procedures, explain the University of Iowa researchers.

They analyzed patient safety indicators (PSIs) from Iowa's State Inpatient Datasets for the years 2002-2004, and national data from the 2003 Healthcare Cost and Utilization Project's Nationwide Inpatient Sample. They used PSI software to identify obstetric trauma with third/fourth-degree lacerations with and without instrument assistance (PSIs #27 and #28) and to quantify cesarean delivery rates for each hospital in the Iowa and national data. They also used the PSI software to flag 29 conditions (for example, diabetes) that are potential risk factors for maternal birth trauma. In addition, they examined birth-related diagnostic codes (for example, gestational diabetes), instrument/episiotomy procedure use, and birth-related complexities (such as late pregnancy more than 40 weeks gestation) as potential risk factors. The study was supported in part by the Agency for Healthcare Research and Quality (HS15009)

See "Factors contributing to maternal birth-related trauma," by Lance L. Roberts, M.S., John W. Ely, M.D., and Marcia M. Ward, Ph.D., in the September 2007 *American Journal of Medical Quality* 22(5), pp. 334-343. ■

Elderly/Long-Term Care

Medicare drug plans cover a good selection of drugs for nursing home residents, but plan vigilance should continue

The Medicare Part D drug plans (PDPs) provide nursing home residents with reasonably broad coverage across different drug classes, with minimal prior authorization requirements. However, a minority of PDPs are less generous, and some drug formulations important to nursing home residents are covered less well, note the Harvard Medical School researchers. Using national data that reflect initial coverage in Part D, they analyzed PDP formularies and utilization management practices across several categories of drugs commonly used by nursing home residents and older people. They focused on PDPs to which individuals dually eligible for both Medicaid and Medicare could be auto-assigned (those with premiums at or below regional benchmarks).

PDPs are required to cover at least two drugs in each therapeutic class. However, they must cover all drugs in six "protected" classes, such as antidepressants, antipsychotics, and HIV-related drugs. Of the nonprotected drug classes, 69 percent of plans covered at least four of five Alzheimer's medications. Most plans also covered at least three of four bisphosphonates (76 percent), at least three of five proton pump inhibitors (86 percent), and at least four of six statins (61 percent).

Nevertheless, 11 percent of plans covered only one or two of the six statins. The majority of plans required no prior authorization for covered medications in six of seven classes reviewed (except bisphosphonates). A minority of plans, once again, were more stringent. For example, 22 percent and 9 percent of PDPs required prior authorization for all covered Alzheimer's drugs and proton pump inhibitors, respectively. Random assignment of dually eligible residents to below-benchmark plans means that some residents will initially be enrolled in these more restrictive plans, and may find it difficult to identify and switch to a more appropriate plan. Thus, the researchers recommend vigilance to protect these frail Medicare patients as the transition to Part D proceeds. Their study was supported in part by the Agency for Healthcare Research and Quality (HS10803).

More details are in "Medicare Part D and nursing home residents," by David G. Stevenson, Ph.D., Haiden A. Huskamp, Ph.D., Nancy L. Keating, M.D., M.P.H., and Joseph P. Newhouse, Ph.D., in the July 2007 *Journal of the American Geriatrics Society* 55, pp. 1115-1125. ■

Financial incentives to physicians and long-term care facilities may foster adoption of computerized drug systems

Patient harm from medication errors is a common problem in nursing homes. Computerized physician/provider order entry (CPOE) with clinical decision support (CDS) has been proposed as one approach for reducing medication errors and preventable drug-related injuries. Various long-term care stakeholders share different costs and benefits of CPOE with CDS, concludes a new study by Sujha Subramanian, Ph.D., and colleagues.

Physicians and long-term care facilities are likely to bear a large burden of the costs. For example, nursing homes will have substantial start-up costs if these costs are not shared with other stakeholders such as the payer, laboratory, or pharmacy. They will also have training costs and lost productivity as staff become familiar with the system. Physicians (and nurse practitioners) are likely to devote more time to ordering medications using CPOE with CDS. If not compensated for these additional tasks, they will bear the cost burden. Some important benefits, including less need to clarify orders from the pharmacy and fewer requests to address pharmaco-therapeutic issues from the consultant pharmacist, may offset this increased effort by prescribers.

In contrast, long-term care residents and payers will enjoy a large portion of the benefits of these computerized systems. These benefits range from efficiency gains in nursing homes, laboratories, and pharmacies to a decrease in billing errors and reduction in adverse drug events and associated medical costs. Benefits also include better patient health-related quality of life, improved ability to produce patient education materials and medication lists, and more capacity to conduct research to further improve patient care. The study was supported by the Agency for Healthcare Research and Quality (HS10481 and HS15430).

See "Computerized physician order entry with clinical decision support in long-term care facilities: Costs and benefits to stakeholders," by Sujha Subramanian, Ph.D., Sonja Hoover, M.P.P., Boyd Gilman, Ph.D., and others, in the September 2007 *Journal of the American Geriatric Society* 55, pp. 1451-1457. Reprints (AHRQ Publication No. 08-R004) are available from AHRQ.* ■

Pharmaceutical Research

Doctors should remind patients about warfarin compliance, even those who claim to be taking the drug as directed

A substantial number of patients, even those monitored in specialized anticoagulation clinics, do not strictly follow their regimen of warfarin, an anticoagulant drug.

Yet, their doctors think they are more compliant with drug therapy than they are, according to a new study. Patients at three Pennsylvania-based anticoagulation clinics incorrectly took their warfarin medication on one of every five days of intended therapy. This level of nonadherence is enough to adversely alter the coagulation effect of the medication, potentially leading to hemorrhage or blood clots.

In this study, patients were six times more likely to miss taking pills than to take extra pills. This would put them at greater risk of blood thickening and thromboembolism (formation of a blood clot that breaks off and can travel to the lungs, heart, or other organs).

Not surprisingly, warfarin adherence was associated with anticoagulation control. Drug compliance tended to decrease over the 6 months after starting warfarin treatment, but then rebounded between 6 and 12 months. The reasons for change in drug compliance over time were unclear, note the University of Pennsylvania researchers.

Patient nonadherence was substantially worse when measured by electronic monitoring of pill container openings than by either clinician assessment or patient self-reports. For example, clinicians judged the 145 patients studied to be adherent to warfarin therapy at 82.8 percent of visits. These same visits were categorized as moderately nonadherent using electronic monitoring (over 20 percent of days were nonadherent). Similarly, patients who were deemed moderately nonadherent by electronic monitoring had

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Warfarin compliance

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self-reported perfect adherence 78.5 percent of the time. The researchers recommend that clinicians emphasize strict compliance with warfarin treatment, even among patients they think are already compliant. The study was supported in part by the Agency for Healthcare Research and Quality (HS11530).

See "Adherence to warfarin assessed by electronic pill caps, clinician assessment, and patient reports: Results from the IN-RANGE study," by Catherine S. Parker, M.S., Zhen Chen, Ph.D., Maureen Price, R.N., and others, in the September 2007 *Journal of General Internal Medicine* 22, pp. 1254-1259. ■

Three-tier formularies increase cost sharing for retirees in generous plans, with little effect on continued drug use

When retirees enrolled in employer-sponsored health plans with relatively generous drug coverage were switched from a two-tier to a three-tier drug formulary, more costs shifted from the plan to the retirees, according to a new study. However, the switch had relatively small effects on whether the retirees continued their medication. Drug formularies offer the lowest copayments for patients who choose first-tier (generic) drugs, over second-tier drugs (preferred brand-name drugs for which plans generally get discounts or rebates from drug companies) and third-tier drugs (non-preferred brand-name drugs with the highest copayments).

The researchers used 1999-2002 pharmacy claims data to compare retiree drug use and spending in four health plans that switched to a three-tier formulary with two plans that maintained a two-tier formulary during this period. They focused on seven drug classes used to treat common elderly conditions such as cardiovascular disease, arthritis, and depression. The switch from the two- to three-tier formularies resulted in copayment changes such as from $5/$10 to $5/$15/$30 or $15/$20 to $15/$20/$35.

Retirees who were switched to a three-tier plan were more likely to change from a tier three to lower-tier drug than non-switched retirees. For example, 47 percent of tier three statin users in one switched plan changed to a lower-tier drug compared with 27 percent of those who remained in two-tier plans. However, fewer than half of users of tier three drugs changed to a lower-tier drug, thus shifting drug costs from the plan to the patient for almost all drug classes and plans studied. For example, monthly angiotensin converting enzyme (ACE) inhibitor spending by enrollees increased by $1.01 (in Plan D) and by $6.28 (in Plan A), while monthly ACE inhibitor spending by plans decreased by $1.67 (in Plan D) and by $7.72 (in Plan A) compared with two-tier plans. The study was supported in part by the Agency for Healthcare Research and Quality (HS10803).

See "The effect of three-tier formulary adoption on medication continuation and spending among elderly retirees," by Haiden A. Huskamp, Ph.D., Patricia A. Deverka, M.D., M.S., Mary Beth Landrum, Ph.D., and others, in the October 2007 *HSR: Health Services Research* 42(5), pp. 1926-1942. ■

Emergency Medicine

Observational videos can identify ways to improve emergency endotracheal intubation

Analysis of 50 video recordings of real patient resuscitation at 1 trauma center revealed many breaks in protocol that could not have been discovered through traditional quality improvement (QI) methods such as medical record review and postprocedure interviews. The videos helped identify accident precursors, unsafe acts, and systems failures. Video-identified accident precursors included lengthy preoxygenation with a facemask before endotracheal intubation, which delayed recognition that the patient lacked sufficient oxygen after tube misplacement. Also, the ventilation circuit used before and after emergency intubation had no carbon dioxide analyzer connections.

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Observational videos

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These connections are needed to assess adequacy of bag-mask-valve ventilation and to confirm tracheal, not esophageal intubation.

The videos also revealed unsafe acts. For example, they showed that two anesthesia care providers did not carry a stethoscope to listen to the patient's chest (standard operating procedure), carbon dioxide analysis (standard criterion to detect lung ventilation) was delayed for 5 minutes after intubation, and no reoxygenation was established before reattempted intubation.

Colin F. Mackenzie, M.B.Ch.B., F.R.C.A., of the University of Maryland School of Medicine, and colleagues found 28 performance deficiencies that included communication failures, lack of timely vital signs monitoring, and lack of tracheal intubation equipment checks. When procedures were revised to include clinical examination by a laryngoscopist, communication of clinical findings, and carbon dioxide testing immediately after intubation, it mitigated task and communication deficiencies. These differences were observed on video records from 1995 and 2005 compared with 1993 and 1994. Limitations in using video for QI include lengthy video review processes, poor audio quality, and inability to analyze events outside the field of view, as well as significant medicolegal and confidentiality issues. The study was supported in part by the Agency for Healthcare Research and Quality (HS11562).

More details are in "Video as a tool for improving tracheal intubation tasks for emergency medical and trauma care," by Dr. Mackenzie, Yan Xiao, Ph.D., Fu-Ming Hu, M.S., C.N.E., and others, in the October 2007 *Annals of Emergency Medicine* 50(4), pp. 436-442. ■

Health Care Costs and Financing

Hospitals serving the uninsured and underserved need help with public reporting and pay-for-performance measures

The trend for hospitals to publicly report their data and be paid by insurers for how well they perform is a manageable chore for well-staffed hospitals. But safety-net hospitals, which serve large numbers of impoverished Medicaid clients or are located in rural areas, find that task burdensome.

A research team at the University of California at San Francisco conducted interviews with 37 executives from safety-net hospitals to determine their challenges with and solicit recommendations for reporting performance. Executives identified two clear benefits in reporting the information. First, data could be used to identify where improvements could be made. Second, they said reporting performance data addressed the concerns of consumers and public officials about hospital quality. These groups might question the hospitals' quality if safety net hospitals chose not to report performance data while other hospitals were reporting.

Hospital executives also voiced several concerns, mostly about inadequate staffing and data accuracy. For most of the hospitals, staff tasked with coding data did so as an additional duty. They often lacked the training and the time to do the job well. The researchers recommend that safety-net hospitals be offered grants to implement electronic records or subsidized training for data collectors, or share data collection personnel.

The executives also said financial incentives for reporting did not have the same effect for them as other hospitals. Because their customers do not have a choice of where to get their health care, reporting performance data would not increase their patient volume or profits as it might for other hospitals. Rural hospitals were especially concerned that, because of their small sample sizes, their statistics would appear worse than they were. For example, if one patient with kidney failure was admitted and died, they would have to report a 100 percent fatality rate for that condition. The researchers recommend letting safety-net hospitals report on special categories that highlight the unique role they play in their communities. This study was funded in part by the Agency for Healthcare Research and Quality (HS16117).

See "Public reporting and pay-for-performance: Safety-net hospitals executives' concerns and policy suggestions," by L. Elizabeth Goldman, M.D., M.C.R., Stuart Henderson, Ph.D., Daniel P. Dohan, Ph.D., and others in the Summer 2007 *Inquiry Journal* 44, pp. 137-145. ■

Managed care helps the elderly avoid preventable hospitalizations more than traditional Medicare

Preventable hospitalizations are hospital admissions that can potentially be prevented with adequate primary care. These admissions are generally used as an indicator of primary care access and quality. Elderly Medicare patients in three out of four States who were enrolled in HMOs were less likely to be hospitalized for preventable conditions than elderly persons in traditional fee-for-service Medicare plans. Moreover, in California and Florida, the two States with long experience with HMOs and the greatest Medicare HMO penetration, these reduced admissions were mainly concentrated among the more ill HMO patients.

These findings add to the evidence that managed care outperforms traditional Medicare among the elderly, rather than simply enrolling the healthiest populations, note Jayasree Basu, Ph.D., M.B.A., of the Agency for Healthcare Research and Quality (AHRQ), and Lee R. Mobley, Ph.D., of the Research Triangle Institute. The authors contend that this may be due to the better coordination of care and higher level of primary and preventive care services provided by HMOs. With the general backlash against managed care in the latter nineties and the more recent push by the Federal government to enroll more seniors in managed care plans, these findings demonstrate the effectiveness of Medicare HMO plans in three out of four study States. However, the authors caution that the data may not reflect changes that have taken place since 2001, such as the 2003 Medicare Modernization Act. This legislation may have resulted in some relevant changes, such as the Medicare prescription drug benefit and new plan participation and enrollment patterns. These changes might need to be taken into account when interpreting the relevance of the findings for the current Medicare program. The study findings were based on analysis of 2001 hospital discharge abstracts of elderly Medicare enrollees in New York, Pennsylvania, Florida, and California, from the AHRQ Healthcare Cost and Utilization Project database.

More details are in "Do HMOs reduce preventable hospitalizations for Medicare beneficiaries?" by Drs. Basu and Mobley, in the October 2007 *Medical Care Research and Review* 64(5), pp. 544-567. Reprints (Publication No. 08-R005) are available from AHRQ.* ■

Agency News and Notes

U.S. hospital bill is fast approaching $1 trillion

U.S. hospitals charged $873 billion in 2005 – a nearly 90 percent increase from the $462 billion charged in 1997 – according to a report from the Agency for Healthcare Research and Quality (AHRQ). The 2005 bill, which is adjusted for inflation, represents the total amount charged for 39 million hospital stays.

The average yearly rate of increase over the last several years in the national hospital bill was 4.5 percent. At this rate, researchers estimate that the annual national hospital bill may reach $1 trillion by 2008. The AHRQ report also found that:

Medicare paid the bulk of the national hospital bill ($411 billion), followed by private insurance ($272 billion) and Medicaid ($124 billion). Uninsured hospital stays accounted for $38 billion in charges. The remaining $28 billion was for other insurers, including Workers' Compensation, TRICARE, Title V, and other government programs.

One-fifth of the national hospital bill was for treatment of just five conditions—coronary artery disease ($46 billion), pregnancy and childbirth ($44 billion), newborn infant care ($35 billion), heart attack ($32 billion), and congestive heart failure ($30 billion).

For 10 conditions, the growth was greater than the average of all hospital stays:

- Sepsis – 189 percent
- Chest pain – 181 percent
- Respiratory failure – 171 percent
- Back pain – 170 percent
- Osteoarthritis – 165 percent
- Irregular heart beat – 131 percent
- Procedure complications – 120 percent
- Congestive heart failure – 117 percent
- Medical device complications – 113 percent
- Diabetes – 97 percent

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U.S. hospital bill

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The report, *The National Hospital Bill: Growth Trends and 2005 Update on the Most Expensive Conditions by Payer*, Statistical Brief No. 42 uses statistics from the 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. To read the report, and for more information, go to www.hcup-us.ahrq.gov/reports/statbriefs/sb42.pdf. ■

2006 HCUP Data Released

Select calendar year 2006 HCUP Statewide databases are now available for purchase, including:

- 10 State Inpatient Databases (SID): Arizona, Colorado, Iowa, Kentucky, Nevada, New Jersey, Oregon, Utah, Washington, and West Virginia
- 4 State Ambulatory Surgery Databases (SASD): Colorado, Iowa, Kentucky, and New Jersey
- 3 State Emergency Department Databases (SEDD): Arizona, Iowa, and New Jersey.

In addition, several 2005 HCUP databases were recently released, including:

- Statewide Inpatient Databases (SID): Hawaii, Kentucky, Nebraska, New York, Rhode Island, and South Carolina
- Statewide Ambulatory Surgery Databases (SASD): Kentucky, Nebraska, and South Carolina
- Statewide Emergency Department Databases (SEDD): Hawaii, Nebraska, and South Carolina.

These databases are available through the HCUP Central Distributor. More information can be found on the HCUP Web page at www.hcup-us.ahrq.gov/. ■

Half of Americans age 50 and older have never had a colonoscopy

Only half of all Americans age 50 and over have had a colonoscopy, one of several common screening tests for colon cancer, according to the latest News and Numbers from the Agency for Healthcare Research and Quality (AHRQ). The U.S. Preventive Services Task Force recommends that all people age 50 and over be screened for colon cancer—the second leading cause of cancer deaths.

An AHRQ survey reports the following about screening colonoscopy among Americans age 50 and older:

- Nearly 67 percent of Hispanics age 50 and older reported that they have never had a screening colonoscopy. This compares with 47.1 percent of whites and 55.8 percent of blacks.
- More than three-fourths (77 percent) of uninsured adults between the ages of 50 and 64 reported that they have never had a screening colonoscopy compared with people with private insurance (54.1 percent) or people covered by Medicaid and other public coverage (61 percent).
- Slightly more than half of people age 65 and older who had Medicare plus some other public insurance reported never having had a screening colonoscopy. Only 45 percent of people in the same age group who only had Medicare coverage and 34.6 percent of people who had Medicare plus some private insurance reported never having had a screening colonoscopy.

The data in this report 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, see *Screening Colonoscopy Among the U.S. Noninstitutionalized Adult Population Age 50 and Older, 2005*, Statistical Brief 188, at www.meps.ahrq.gov/. ■

Pulmonary heart disease hospitalizations increase by more than half between 1997 and 2005

Hospital admissions for people with chronic pulmonary heart disease rose from 301,400 to 456,500 stays between 1997 and 2005—an increase of more than 50 percent—according to the latest *News and Numbers* from the Agency for Healthcare Research and Quality. Pulmonary heart disease is a serious, often deadly lung blood vessel disorder that can cause shortness of breath, fatigue, chest pain, dizzy spells, and fainting. Most patients have an underlying heart or lung disorder. AHRQ data found that:

- About 20,000 hospital patients died from chronic pulmonary heart disease in 2005 (4.4 percent). This was two times higher than the overall death rate for all hospital patients (2.2 percent).
- Women accounted for 6 of every 10 hospital stays of patients with pulmonary heart disease.
- Hospitalizations for pulmonary heart disease cost $5.6 billion in 2005. A stay for a patient with this condition averaged $12,400 as compared with the $8,100 overall average cost of a hospital stay.

Additional information can be found in *Hospital Stays Involving Pulmonary Heart Disease, 2005* (www.hcup-us.ahrq.gov/reports/statbriefs/ sb43.pdf). The report uses statistics from the 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. The authors used AHRQ's Inpatient Quality Indicators to determine the in-hospital, risk-adjusted death rates. ■

Shingles sends nearly 1 million Americans to the doctor

Nearly 1 million Americans receive medical care for shingles or its complications, according to data from the Agency for Healthcare Research and Quality's Medical Expenditure Panel Survey (MEPS). Shingles comes from an infection with varicella-zoster virus, the same virus that causes chicken pox, and can result in burning or shooting pain, tingling, or itching. However, unlike chicken pox, shingles is not contagious. MEPS data indicate that:

- Americans make 2.1 million doctor visits a year because of shingles or its complications.
- The average cost for treating shingles is $525 per person or $566 million each year (in 2005 dollars), including prescription medicines.
- People age 65 and older are seven times more likely to get shingles than the non-elderly æ (1.5 percent compared with 0.2 percent, respectively).

For more information, see *Average Annual Health Care Use and Expenses for Shingles among the U.S. Civilian Noninstitutionalized Population, 2003-2005*, Statistical Brief 194 (www.meps.ahrq.gov/mepsweb/). MEPS is a set of large-scale surveys of families and individuals, their medical providers, and employers across the United States. These surveys provide 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. ■

Many osteoporosis medications prevent fractures, but none is proven best

Many medications reduce the risk of bone fractures in people with osteoporosis, but the most commonly used drugs—bisphosphonates—have not been proven more effective than alternatives, according to a new report funded by the Agency for Healthcare Research and Quality (AHRQ). The AHRQ report compared the effectiveness and risks of six bisphosphonates: alendronate (sold as Fosamax), etidronate (Didronel), ibandronate (Boniva), pamidronate (Aredia), risedronate (Actonel), and zoledronic acid (Zometa). The report also looked at estrogen, calcitonin (a man-made hormone), calcium, vitamin D, testosterone, parathyroid hormone, and selective estrogen receptor modulators (SERMs).

Not enough scientific evidence exists to establish whether bisphosphonates are better at preventing fractures than estrogen, calcitonin, or raloxifene, according to the report. Some agents, however, such as estrogen and raloxifene (a SERM), can have serious side effects such as strokes, blood clots in the lungs, or bleeding in the uterus. The effectiveness of calcium and vitamin D, meanwhile, may vary according to dosing, how often they are taken, and whether the patient taking them is at high risk for a fracture. There is limited evidence to compare the supplements with other therapies for preventing fractures.

The report also found that many osteoporosis patients stop taking their medications as prescribed. Some stop because they experience no osteoporosis symptoms. Others stop because of medication side effects or because dosing is too frequent. This finding was also true for supplements such as calcium. Not taking medications as prescribed increases the chances of bone fractures. Patients who take bisphosphonates in weekly formulations, rather than daily, are more likely to follow prescriptions.

Osteoporosis is a skeletal disease that affects about 44 million Americans, especially women who have finished menopause. It occurs when deteriorating tissue reduces bone density in the spine, hip, and other areas. Some people with the disease fracture bones, become disabled, or experience chronic pain. Overall, about half of women aged 50 and older will suffer an osteoporosis-related bone break in their lifetime. About one-fourth of those who fracture a hip will die within a year.

Bisphosphonates, the most commonly used medications for osteoporosis, are nonhormonal drugs that bind to bone to protect against tissue breakdown. AHRQ's analysis found that five bisphosphonates—alendronate, etidronate, ibandronate, risedronate, and zoledronic acid—plus calcitonin, parathyroid hormone, estrogen, and raloxifene prevent spinal fractures. Evidence also showed that alendronate, risedronate, and zoledronic acid, as well as estrogen and parathyroid hormone, prevent hip and other nonspinal fractures. Direct comparisons, however, have not shown bisphosphonates to be superior to other therapies in preventing bone fractures. No single bisphosphonate has been proven most effective in that class.

The AHRQ report, *Comparative Effectiveness of Treatments To Prevent Fractures in Men and Women With Low Bone Density or Osteoporosis*, summarized the scientific evidence in 101 published articles. It was authored by the Southern California Evidence-Based Practice Center at the RAND Corporation in Santa Monica, CA. Among the conclusions:

- Among post-menopausal women with osteoporosis, alendronate, etidronate, ibandronate, risedronate, calcitonin, teriparatide, and raloxifene reduce fracture risks.
- Not enough evidence exists to determine how exercise or taking testosterone compares with medications in preventing osteoporosis-related fractures.
- Calcitonin, risedronate, and teriparatide reduce fracture risks among men.
- For people at increased risk of falling, such as those with partial paralysis or Parkinson's disease, fracture risks are reduced if they are treated with alendronate, risedronate, or vitamin D.
- Patients who take raloxifene face increased risk of blood clots in the lungs and other areas as well as mild cardiac problems such as chest pains or palpitations.

The report on osteoporosis medications is the newest analysis from AHRQ's Effective Health Care program. That program represents an important Federal effort to compare alternative treatments for significant health conditions and make the findings public. The program is intended to help patients, doctors, nurses, and others choose the most effective treatments. Information on the program, including full reports, can be found at www.effectivehealthcare.ahrq.gov. ■

Ammar, K.A., Makwana, R., Jacobsen, S.J., and others. (2007, January). "Impaired functional status and echocardiographic abnormalities signifying global dysfunction enhance the prognostic significance of previously unrecognized myocardial infarction detected by electrocardiography." (AHRQ grant HS10239). *Annals of Noninvasive Electrocardiology* 12(1), pp. 27-37.

Unrecognized myocardial infarction (UMI, heart tissue damage) is diagnosed by electrocardiogram (ECG) in persons without clinically recognized MI (RMI). Common clinical practice discounts ECG-UMI as a false positive, if echocardiography does not demonstrate regional wall motion abnormalities (RWMA). However, a new study found that ECG-UMI patients had an increased risk of mortality independent of RWMA. Patients with ECG-UMI alone had a 3.7 times higher risk of dying, but 7.2 times higher risk of dying with UMI and abnormal functional status, and 9.5 times higher risk of dying with ECG-UMI, abnormal functional status, and any echocardiographic abnormality, not just RWMA. ECG-UMI was not associated with increased mortality if the echocardiogram was completely normal. These findings were based on a population-based random sample of 2,042 residents of 1 county who were 45 years and older. The researchers examined questionnaire responses, reviewed medical charts, ECGs, echocardiograms, scores on a functional activity scale, and 5-year mortality rates. They conclude that patients with UMI on an ECG should be further evaluated for functional status and any echocardiographic abnormality.

Barry, L.C., Lichtman, J.H., Spertus, J.A., and others. (2007, March/April). "Patient satisfaction with treatment after acute myocardial infarction: Role of psychosocial factors." (AHRQ grant HS11282). *Psychosomatic Medicine* 69, pp. 115-123.

Researchers found that assessing a patient's level of social support, inclination to be optimistic, and depression severity before hospital discharge may indicate which patients are likely to be more satisfied with posthospital cardiac care 1 month after a heart attack. The research team examined the association of psychosocial variables (social support, disposition to optimism, and depression) in 1,847 heart attack patients with their responses to the Treatment Satisfaction Scale of the Seattle Angina Questionnaire a month later. The patients were predominantly white men in their sixties, who participated in a multicenter study evaluating heart attack events and recovery. Satisfaction with posthospitalization treatment following heart attack increased as social support and disposition to optimism increased. Depressed participants were significantly less satisfied with posthospital care than nondepressed participants. The authors conclude that an available supportive network of people who can take on tasks such as daily chores, and/or be available to talk with, may decrease the patient's distress and ultimately translate into better treatment satisfaction.

Carney, P.A., Yi, J.P., Abraham, L.A., and others. (2007, February). "Reactions to uncertainty and the accuracy of diagnostic mammography." (AHRQ grant HS10591). *Journal of General Internal Medicine* 22, pp. 234-241.

Radiologists who have more discomfort with the uncertainty inherent in clinical medicine are more likely to recall women for additional evaluations after interpreting a recent screening mammogram for a potential abnormality, according to a new study. The researchers surveyed 132 radiologists from 3 States about their reactions to uncertainty. About half of the radiologists (52 percent) reported a prior medical malpractice lawsuit, but only 14 percent reported a previous mammography-related lawsuit. Radiologists with more years interpreting mammography and higher mammography volume had slightly lower uncertainty scores. Radiologists reporting any prior medico-legal experience had slightly higher uncertainty scores (30.4 vs. 28.7 out of 50), although this was not significant. A total of 131,482 diagnostic mammograms were included in the analysis. Radiologists less comfortable with uncertainty were more likely to interpret abnormalities as cancer that was later diagnosed (higher sensitivity), but were also more likely to interpret cancer for abnormalities later diagnosed as noncancerous (lower specificity).

Clancy, D.E., Huang, P., Okonofua, E., and others. (2007, March). "Group visits: Promoting adherence to diabetes guidelines." (AHRQ grant

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HS10871). *Journal of General Internal Medicine* 22, pp. 620-624.

Group visits may improve the quality of care for patients with type 2 diabetes because they have the advantage of being longer, more frequent, more organized, and more educational. Researchers evaluated the effect of group visits on clinical outcomes and adherence to American Diabetes Association (ADA) guidelines and cancer screening guidelines among 186 adults at the Medical University of South Carolina primary care center. The patients had poorly controlled diabetes (HbA1c greater than 8 percent). Patients were randomized either to group visits or to traditional physician-patient visits at the primary care center. A primary care doctor and registered nurse led the group visits of 14 to 17 patients, which met monthly for 2 hours for 1 year. The sessions included socialization, interactive discussion of topics such as foot care or healthy eating strategies, and 60 minutes for one-on-one consultations with the physician. One-on-one visits were available for care needed between group visits or for care not amenable to group visits, such as Pap smears or mammograms. By 1 year, group patients were more likely to have at least eight ADA process of care indicators performed compared with the patients who received usual care.

Clark, D.E., Lucas, F.L., and Ryan, L.M. (2007, March). "Predicting hospital mortality, length of stay, and transfer to long-term care for injured patients." (AHRQ grant HS15656). *Journal of Trauma* 62(3), pp. 592-600.

A recent time-phased model predicted an overall 56 percent hospital mortality rate and 8.5 day hospital stay, along with a 38 percent probability of discharge to long-term care (LTC) among traumatically injured patients. Prediction of length of stay (LOS) and other outcomes from the model was reasonably good for most patient subgroups, and explained about 17 percent of individual variation in LOS. Researchers analyzed National Trauma Data Bank records of 369,829 injured patients hospitalized in trauma centers from 1999 to 2003 to develop a multistate model divided into 4 time periods. The rate of death among hospitalized patients was highest on day 1, decreased during days 2 to 5, and gradually increased thereafter. The rate of discharge to LTC rose until days 6 to 11, and then gradually decreased. The rate of discharge home decreased steadily after the first day. Penetrating and vehicle trauma were associated with higher mortality on the first day, but lower mortality thereafter. Increased injury severity and coma at admission were associated with a lower probability of transfer to LTC for the first 11 days, but a higher probability thereafter. Increased age or female sex were associated with decreased rates of discharge home, but increased rate of discharge to an LTC facility.

Curtis, J.R., Patkar, N., Xie, A., and others. (2007, April). "Risk of serious bacterial infections among rheumatoid arthritis patients exposed to tumor necrosis factor α antagonists." (AHRQ grant HS10389). *Arthritis & Rheumatism* 56(4), pp. 1125-1133.

A new study reveals that patients prescribed tumor necrosis factor α (TNFα) antagonists are two to four times more likely to be hospitalized for a serious bacterial infection than those taking the more traditional rheumatoid arthritis (RA) drug, methotrexate (MTX). Researchers retrospectively studied U.S. RA patients enrolled in a large health care organization, who were taking either TNFα antagonists or MTX. They examined hospitalizations with possible bacterial infections over a median of 17 months, which infectious disease specialists confirmed by reviewing medical records. A total of 187 suspected bacterial infections were identified from medical records of the 2,393 patients in the TNFα antagonist group and the 2,933 patients in the MTX group. During the study period, 2.7 percent of TNFα antagonist patients compared with 2 percent of MTX patients were hospitalized with a serious bacterial infection. However, TNFα antagonist patients had a fourfold higher rate of hospitalization for bacterial infection within the first 6 months of starting TNFα antagonist therapy (2.9 versus 1.4 infections per 100 person-years, after adjusting for other factors).

Dillard, D., Jacobsen, C., Ramsey, S., and Manson, S. (2007, February). "Conduct disorder, war zone stress, and war-related posttraumatic stress disorder symptoms in American Indian Vietnam veterans." (AHRQ grant HS10854). *Journal of Traumatic Stress* 20(1), pp. 53-62.

Childhood conduct disorder (CD) may underlie greater posttraumatic stress disorder (PTSD) among American Indian (AI) Vietnam War veterans, concludes a new study. Researchers interviewed 591 men, who participated in the American Indian Vietnam Veterans Project, to examine factors related to PTSD in AIs. They used standard diagnostic

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tests to assess CD, PTSD, depression, anxiety disorder, and other mental health problems. CD was diagnosed with the presence of three or more symptoms before age 15, such as threatening or assaulting persons, being cruel to animals, willfully destroying property, or running away from home several times. AI veterans with CD had more war-related PTSD symptoms than those without CD (mean symptom score of 99.4 vs. 90.6), even after adjusting for level of war zone stress, premilitary traumatic experiences, and other factors potentially affecting PTSD. Both groups had similar age, education, employment status, and mental health before, at entry, and during the military, except that AI veterans with CD were more likely to be alcohol and/or drug dependent prior to military service.

Editor's note: Another AHRQ-supported study (HS10854) by the same researchers found that American Indians are more likely to participate in community-based research, if it is being conducted by a tribal college/university or national organization, an American Indian is leading the study, or the study is addressing health problems of concern to the community. More details are in: Noe, T.D., Manson, S.M., Croy, C., and others. (2007, Winter). "The influence of community-based participatory research principles on the likelihood of participation in health research in American Indian communities." *Ethnicity & Disease* 17 (Suppl.1), pp. S6-S14.

Graham, J., Bennett, I.M., Holmes, W.C., and Gross, R. (2007, May). "Medication beliefs as mediators of the health literacy-antiretroviral adherence relationship in HIV-infected individuals." (AHRQ grant HS10399). *AIDS and Behavior* 11, pp. 385-392.

Low literacy and mistaken beliefs about HIV medication affect adherence to antiretroviral drug regimens, according to a new study. Researchers found that 64 percent of those with at least a ninth-grade reading level complied with their complex, multidrug highly active antiretroviral therapy (HAART) regimen compared with 40 percent of those with less than a ninth-grade reading level. The study also suggests that erroneous beliefs about the use of HIV medications and their side effects may contribute to lower adherence rates among individuals with low literacy. Investigators at the University of Pennsylvania Center for Education and Research on Therapeutics and colleagues studied 87 predominantly black, low-income, HIV-infected men on HAART, who were cared for in 1 of the university's 2 HIV clinics in 2003. Patients completed a questionnaire about HAART medication beliefs. Researchers used pharmacy refills to measure medication adherence to a single index drug over the prior 3 months. Participants with 95 percent or greater adherence were significantly more likely to have undetectable viral loads than those with less than 95 percent adherence (73 vs. 45 percent). About 74 percent of participants had at least one mistaken belief about the medication.

Grossman, J.M., Gerland, A., Reed, M.C., and Fahlman, C. (2007, April). "Physicians' experiences using commercial e-prescribing systems." (AHRQ Contract No. 290-05-0007). *Health Affairs* 26(3), w393-w404.

This study indicates that substantial gaps may exist between advocates' vision of e-prescribing (electronic prescribing) systems and how physicians use them in practice. The findings were based on interviews with administrators and physicians at 15 e-prescribing practices and 6 practices without e-prescribing, as well as a few health plan, vendor, and pharmacy representatives in 2005 and 2006. All but one of the practices' e-prescribing systems offered some clinical decision support in the form of drug-drug interaction alerts. However, access to more advanced decision support was limited. Only half of practices reported being able to check for drug-allergy interactions, and only 20 percent could check for drug-condition contraindications. Finally, physicians in slightly more than half of the practices did not have electronic access to formulary data (indicating the specific drugs that are covered by health plans) when they wrote prescriptions. Either the systems did not have the feature or the practice had chosen not to enable it. Also, e-prescribing systems sometimes omitted the formularies of major health insurers, including Medicaid.

Gupta, R., Plantinga, L.C., Fink, N.E., and others. (2007, April). "Statin use and hospitalization for sepsis in patients with chronic kidney disease." (AHRQ grant HS08365). *Journal of the American Medical Association* 297(13), pp. 1455-1464.

Bloodstream infection (sepsis) is a major cause of problems and death in patients with chronic kidney disease who are on dialysis. However, when these patients use statins, they are less likely to be hospitalized for sepsis, according to this new study. The ability of statins to modulate the immune system may play a protective role, suggest the researchers. They prospectively studied 1,041 dialysis patients at 81

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U.S. not-for-profit outpatient dialysis clinics from 1995 to 1998, with followup in January 2005. They compared rates of hospitalization for sepsis between statin users and nonstatin users, after adjusting for other factors. Overall, there were 303 hospitalizations for sepsis. Rates of sepsis-related hospitalizations were significantly lower in patients receiving statins than in those not receiving statins (41 vs. 110/1,000 patient-years). With adjustment for demographics and dialysis modality, statin users were 59 percent less likely to be subsequently hospitalized for sepsis. After further adjustment for coexisting medical conditions and laboratory test results, statin users were 62 percent less likely to be hospitalized for sepsis.

Han, H.-R., Kang, J., Kim, K.B., and others. (2007). "Barriers to and strategies for recruiting Korean Americans for community-partnered health promotion research." (AHRQ grants HS13160 and HS13779). *Journal of Immigrant Health* 9, pp. 137-146.

Cultural, language, and community barriers make it difficult to recruit Korean Americans into health promotion research studies, conclude Johns Hopkins University researchers. Researchers analyzed barriers and facilitators to recruiting Korean Americans for 14 studies conducted between 1998 and 2005 that addressed prevalent problems of Korean Americans, such as high blood pressure. Aside from language barriers, the patriarchal Korean culture forbids women from participating in certain social activities, including research studies, or seeking preventive health care on their own. Many middle-aged Koreans work long hours and have little time to participate in research. Community barriers include low health care coverage (34 percent of this group lack insurance), lack of awareness of research studies, suspicions about consent procedures, and concern about privacy and confidentiality issues. Community gatekeepers, such as Korean physicians, church leaders, and grocery managers, can play a critical role in connecting researchers to potential participants, note the researchers.

Harris, C.B., Krauss, M.J., Coopersmith, C.M., and others. (2007, April). "Patient safety event reporting in critical care: A study of three intensive care units." (AHRQ grant HS11898). *Critical Care Medicine* 35(4), pp. 1068-1076.

Reporting of intensive care unit (ICU) events that have the potential to jeopardize patient safety doubled when a new voluntary card-reporting system was implemented, according to a new study. ICU events reported on SAFE (Safety, Action, Focus, Everyone) 5x8 inch two-sided cards included a combination of risky situations, near misses, and no-harm events. During a 14-month period, nurses, physicians, and other staff at 3 ICUs reported 714 patient safety events using the new card-based reporting system. They reported 41.7 events per 1,000 patient days compared with 20.4 events per 1,000 patient days with the previous online Web-based reporting system. This twofold rise in reporting using SAFE may be due to the simplicity, brevity, and ease of using the card system. Physicians were more likely than other ICU staff to boost their reporting of patient safety events with the new card system. Their reporting of such events increased 43-fold compared with 1.7-fold for nurses and 4.3-fold for other staff, relative to the prior period with Web-based reporting. Overall reporting of safety events varied by type of ICU and health care worker.

Labarere, J., Stone, R.A., Obrosky, D.S., and others. (2007, February). "Comparison of outcomes for low-risk outpatients and inpatients with pneumonia: A propensity-adjusted analysis." (AHRQ grant HS10049). Chest 131(2), pp. 480-488.

Physician judgment plays an important role in deciding which low-risk patients with pneumonia are hospitalized, this study concludes. Clinical guidelines generally recommend outpatient treatment for patients who are defined as low-risk based on the pneumonia severity index (PSI). Yet, based on their judgment, physicians sometimes hospitalize low-risk patients with community-acquired pneumonia (CAP). Researchers used data from a randomized trial conducted in 32 emergency departments to compare 30-day mortality rates, time to return to work and usual activities, and patient satisfaction with care between 944 CAP outpatients and 549 inpatients in PSI low-risk categories (I to III). After adjusting for likelihood of receiving outpatient or inpatient treatment, which eliminated significant differences in baseline characteristics, outpatients were twice as likely to return to work and nonworkers were 40 percent more likely to return to usual activities than inpatients. The overall mortality rate was higher for inpatients than outpatients (2.6 vs. 0.1 percent). Satisfaction with the site-of-treatment decision, with emergency department care, and with overall medical care was no different between outpatients and inpatients.

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Leverence, R.R., Williams, R.L., Sussman, A., and others. (2007, April). "Obesity counseling and guidelines in primary care: A qualitative study." (AHRQ grant HS13496). *American Journal of Preventive Medicine* 32(4), pp. 334-339.

Clinicians view their efforts to treat obesity as ineffective in light of family, cultural, social, and community barriers, suggests this new study. Researchers conducted in-depth interviews and 2 focus groups with 20 primary care clinicians caring for predominantly low-income minority patients. Clinicians were frustrated with lack of resources to help their patients lose weight, such as psychologists, health educators, dieticians, and exercise physiologists. They also cited lack of family concern about a child's weight problem or cultural differences in what is considered acceptable weight. Clinicians cited the importance of family-based interventions and addressing the problem of obesity at the community and social level. Patients often mention that their neighborhood is not safe when the clinician recommends 15 minutes of walking. Thus, clinicians had difficulty following obesity guidelines, which recommend diet and exercise counseling, and chose instead to apply their efforts and time to preventive or medical care that they perceived themselves to be more effective at delivering.

Payne, C.H., Smith, C.R., Newkirk, L.E., and Hicks, R.W. (2007, April). "Pediatric medication errors in the postanesthesia care unit: Analysis of MEDMARX data." (AHRQ grant HS10397). *AORN Journal* 85(4), pp. 731-740.

This new study reveals that medication errors involving infants and children in the postanesthesia care unit (PACU) occur once in 20 medication orders. In addition, these errors are more likely to cause harm than medication errors in the overall population. Researchers analyzed the MEDMARX medication error reporting system for pediatric medication errors originating in the PACU during a 6-year period from 1998 to 2004. During the study period, 42 hospitals reported 59 medication errors involving children in the PACU, of which 12 (20 percent) were harmful. During the same time period, 354 institutions reported 2,406 overall medication errors in the PACU, of which 6 percent were harmful. The five leading causes of medication errors in the pediatric and overall population were performance deficit, procedure/protocol not followed, communication problems, insufficient knowledge, and calculation error. Medication errors involving calculations, decimal points, and confusion about dosage were reported in higher percentages in the pediatric than overall population.

Powell, C.K., Hill, E.G., and Clancy, D.E. (2007, January). "The relationship between health literacy and diabetes knowledge and readiness to take health actions." (AHRQ grants HS13851 and HS10871). *The Diabetes Educator* 33(1), pp. 144-151.

Low health literacy is significantly associated with worse glycemic (HbA1c) control and poorer disease knowledge in patients with type 2 diabetes. However, researchers found that it does not seem related to their readiness to take action to manage their disease. The researchers examined demographic and clinical data as well as health care provider visits among 68 adults with type 2 diabetes at a general internal medicine clinic. The researchers also administered the Rapid Estimate of Adult Literacy in Medicine (REALM) literacy instrument; a Diabetes Knowledge Test (DKT); and a Diabetes Health Belief Model (DHBM) scale. The patients were predominantly black middle-aged women with an HbA1c level of 8.25 percent. Participants with lower health literacy scores had lower DKT scores and had HbA1c levels 1.21 to 1.36 percent higher than those with a REALM literacy level greater than or equal to the ninth grade. However, patients with the lowest literacy levels scored only 2.84 points lower on the DHBM scale than those with the highest literacy levels. This implies that patients with lower literacy are still willing to take action to manage their diabetes.

Clancy, D.E., Yeager, D.E., Huang, P., and Magruder, K.M. (2007, March). "Further evaluating the acceptability of group visits in an uninsured or inadequately insured patient population with uncontrolled type 2 diabetes." (AHRQ grant HS10871). *The Diabetes Educator* 33(2), pp. 309-314.

Disadvantaged patients with uncontrolled type 2 diabetes find group visits an acceptable way to receive diabetes care, concludes this study. The researchers surveyed a group of predominantly black, poor, or uninsured rural women with poorly controlled type 2 diabetes (HbA1c of 8 percent or more) at one university-affiliated primary care clinic. The researchers randomly assigned 96 patients to group visits and 90 patients to usual care (individual visits with the physician), and surveyed them at baseline, 6 months, and 12 months later. Group visits were co-led by

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one of six primary care internal medicine doctors and one of three registered nurses in the clinic. Group visits lasted for two hours. There were no significant differences between the groups at baseline. However, the patients attending group visits felt that their physicians were more knowledgeable about their community and were more culturally competent. Group patients also assessed their care better than the usual care patients, and had attendance rates at least as good as the general clinic population.

Raebel, M.A., McClure, D.L., Simon, S.R., and others. (2007, January). "Laboratory monitoring of potassium and creatinine in ambulatory patients receiving angiotensin converting enzyme inhibitors and angiotensin receptor blockers." (AHRQ grant HS11843). *Pharmacoepidemiology and Drug Safety* 16, pp. 55-64.

This study concludes that nearly one-third of patients dispensed angiotensin converting enzyme inhibitors (ACEIs) or angiotensin receptor blockers (ARBs) do not undergo laboratory monitoring at least once a year. Further, nearly half (46.3 percent) of patients with one test to evaluate serum potassium and creatinine levels did not have a second test. Therefore, the clinical stability of the serum potassium and creatinine levels could not be assessed. The researchers used administrative data and medical records to assess serum potassium and creatinine monitoring of 52,906 adults in 10 HMOs, who were dispensed ACEIs or ARBs for at least 1 year. Most patients were dispensed an ACEI (89.4 percent), with 7.8 percent dispensed an ARB. Also, 2.8 percent of patients were either codispensed an ACEI plus ARB or were switched from one drug class to the other during the study period. About two-thirds (68.4 percent) of patients received laboratory monitoring. The likelihood of monitoring increased with age; making more than 9 outpatient visits; hospitalization; concomitant therapy with potassium supplements, diuretics, or digoxin; and diagnosis of chronic kidney disease, diabetes, or heart failure.

Scott-Cawiezell, J., Pepper, G.A., Madsen, R.W., and others. (2007, February). "Nursing home error and level of staff credentials." (AHRQ grant HS14281). *Clinical Nursing Research* 16(1), pp. 72-78.

Certified medication technicians or aides (CMT/As) are no more likely to make medication errors than licensed practical nurses (LPNs) or registered nurses (RNs), according to this new study. Medication administration was observed by type of staff over 3 to 4 days at each of five different types and sizes of Missouri nursing homes, both across shifts and among various medication administrators. During the study period, 3,194 doses of medications were ordered to be given, including 3,101 doses observed and 93 omitted doses. Baseline observations involved 8 RNs, 12 LPNs, and 19 CMT/As. The RNs and LPNs more often administered specialized, complex medications such as insulin. CMT/As administered 61.3 percent of medication doses, whereas RNs administered the fewest doses (15.3 percent). RNs had the most interruptions (39.9 percent), which halted medication administration, whereas LPNs had the highest percentage of distractions (41.6 percent), which did not halt medication administration. Although there were no significant differences in medication error by level of credential, RNs had the highest proportion of error without wrong time error included.

Stewart, A.L., Dean, M.L., Gregorich, S.E., and others. (2007, March). "Race/ethnicity, socioeconomic status and the health of pregnant women." (AHRQ grant HS10856). *Journal of Health Psychology* 12(2), pp. 285-300.

A woman's race, education, income, and social status all interact to affect her health during pregnancy, concludes a new study. As part of the Project WISH (Women and Infants Starting Healthy), a research team studied 1,802 ethnically diverse women receiving prenatal care at 6 San Francisco Bay area delivery sites. The women were fairly healthy with low depression scores. Differences by race/ethnicity were pronounced, with whites and Asians/Pacific Islanders doing better on all measures. Higher percentages of Latinas and black women were in the lower economic and educational strata than whites and Asians/Pacific Islanders. Although women in all three minority groups reported higher levels of depression and lower self-rated health than white women, only Latinas and black women reported worse physical functioning. After adding socioeconomic status (SES) variables, racial disparities in depression remained for all minority groups, and disparities in self-rated health remained for Asians/Pacific Islanders. In contrast, disparities in self-rated health between blacks and whites and between Latinas and whites

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became nonsignificant when any SES measures were included. Subjective social standing was more highly correlated with education and income in whites and Asian/Pacific Islanders than in Latinas and blacks.

Stone, P.W., Mooney-Kane, C., Larson, E.L., and others. (2007, June). "Nurse working conditions, organizational climate, and intent to leave in ICUs: An instrumental variable approach." (AHRQ grant HS13114). *HSR: Health Services Research* 42(3), pp. 1085-1104.

The authors of this study analyzed survey responses from 837 nurses employed in 39 adult ICUs from 23 hospitals located in 20 separate metropolitan areas. They also examined hospital administrative, public use, and Medicare files to investigate causes of nurse intention to leave (ITL), while simultaneously considering organizational climate (OC) in ICUs. A total of 15 percent of ICU nurses indicated their intention to leave in the coming year, imposing potentially high hiring and training costs on hospitals. OC and the tightness of the labor market had significant roles in determining ITL. For example, improving the OC by one standard deviation was predicted to reduce nurses' probability of intent to leave their position by 13 percent. Furthermore, OC was positively affected by better regionally adjusted ICU wages, hospital profitability, and hospital teaching and Magnet status (Magnet hospitals have organizational characteristics associated with high nurse retention rates). Because higher wages did not reduce ITL, increased pay alone without attention to OC is likely insufficient to reduce ICU nurse turnover.

Stone, P.W., Mooney-Kane, C., Larson, E.L., and others. (2007, June). "Nurse working conditions and patient safety outcomes." (AHRQ grant HS13114). *Medical Care* 45(6), pp. 571-578.

This study is the first to link national data on nosocomial (hospital-acquired) infections and other patient safety problems to nurse working conditions. The authors surveyed 1,096 nurses from 51 adult ICUs in 31 hospitals about ICU working condition factors such as staffing, overtime, wages, and hospital profitability and Magnet accreditation. They then examined the impact of nurse working conditions on several patient safety measures among the 15,846 elderly Medicare patients treated at the ICUs. The ICUs with higher staffing had a lower incidence of central line associated bloodstream infections (CLBSIs), ventilator-associated pneumonia, 30-day mortality, and decubitus ulcers (pressure sores). Increased nurse overtime was associated with higher rates of catheter-associated urinary tract infections and decubitus ulcers, but slightly lower rates of CLBSIs. Physicians, rather than nurses, typically insert central lines, so CLBSIs are less likely to be affected by nursing care. Nurses' wages were not associated with any of the patient safety outcomes. The effects of organizational climate and profitability were not consistent. Improving the working conditions of nurses will most likely promote patient safety, conclude the researchers.

Teplin, V., Vittinghoff, E., Lin, F., and others. (2007, February). "Oophorectomy in premenopausal women: Health-related quality of life and sexual functioning." (AHRQ grant HS09478). *Obstetrics & Gynecology* 109(2), pp. 347-354.

This study found that women who underwent bilateral salpingo-oophorectomy (BSO), despite an initial decline in quality of life in the first 6 months after surgery, had no apparent differences in quality of life 2 years after surgery compared with women whose hysterectomy only involved removal of the uterus, not ovaries. For both groups, scores for all health-related quality-of-life outcomes improved after hysterectomy. Six months after surgery, the BSO group had less improvement than the non-BSO group in body image (2 points vs. 14 points), sleep problems (4 vs. 16), and the SF-36 Mental Component Summary (4 vs. 10). There were no differences in sexual functioning, hot flushes, urinary incontinence, or pelvic pain between the two groups. At the 2-year follow-up, both groups had similar scores on all measures of health-related quality of life and sexual functioning, irrespective of estrogen use. Researchers analyzed data among premenopausal women who underwent hysterectomy for benign gynecologic disease and participated in one of several hysterectomy studies. They measured women's quality of life outcomes at 4 weeks, 6 months, and 2 years after hysterectomy. ■

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