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Advancing Excellence in Health Care

RESEARCH ACTIVITIES

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Human factors challenges in home health care

We've been caring for each other in our homes since the dawn of time. It's what humans do.

But home health care in the 21st century is different.

Here are four reasons:

- One, we're living longer and more of us want to "age in place with dignity."
- Two, we have more chronic, complex conditions.
- Three, we're leaving the hospital earlier and thus need more intensive care.
- And four, sophisticated medical technology has moved into our homes. Devices that were used only in medical offices are now in our living rooms and bedrooms.

From babies leaving the hospital with heart monitors to war veterans returning with life-altering injuries to seniors struggling with chronic conditions, home health care—a cradle-to-grave issue—demands more attention.

The Agency for Healthcare Research and Quality (AHRQ) is leading the way by highlighting home health care with a focus in human factors research.

"By employing the field of human factors research—the discipline of applying what we know about human capabilities and limitations to designing products, processes, systems, and environments—we're learning how to achieve better, more effective and safer health outcomes in the home," says Kerm Henriksen, Ph.D., human factors advisor for patient safety at AHRQ.

Much of human factors research in the home involves information technology (IT). "Our homes aren't designed for health care activities. We're interested in learning what people really do in the home to take care of themselves and others and why, and applying that knowledge

to health IT design," says Teresa Zayas-Cabán, Ph.D., senior manager of health IT at AHRQ. "At the end of the day, our goal is to help ensure a good quality of life."

Committee tackles the issues

AHRQ awarded a contract to the National Research Council of the National Academies, which established the Committee on the Role of Human Factors in Home Health Care. The Committee examined the major trends and challenges influencing the growing home health sector.

"A number of interacting factors directly affect home health care—the capabilities of patients and caregivers, the tasks and medical

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Highlights

From the Director

Home health care is an area that literally hits home for almost everyone. Many of us face home care situations that would have been unthinkable even a decade ago.

We're coping with family members with more complex, chronic conditions, who typically leave the hospital earlier, and thus require more intensive care. We're also dealing with medical technology and devices that most of us have not been trained to use.

Sophisticated medical technology is now an integral part of home care. Home caregivers regularly manage dialysis treatments, infuse strong medications via central lines, and use computer-based equipment to monitor the health of loved ones.

For example, a few years ago before my father died, he went to stay with my sister while my stepmother visited her daughter. My dad, who had several chronic conditions, including a respiratory illness, didn't arrive at my sister's home with only his medications. He also had an oxygen tank.

I had been trying to educate my siblings about my father's chronic illness, but they didn't listen. So I talked to a physician friend who said, "Don't call your sister until day two," which is what I did. What was she the most freaked out about? The oxygen tank.

Once my sister got the oxygen tank home and working, she was fine—and so was my father. But that initial encounter was pretty traumatic. Every family has a story about how they're dealing with health situations at home that they didn't expect.

At AHRQ, we're using human factors research on human strengths and limitations and the unique home environment to design systems, devices, and technology to make our homes safer, more effective places for health care – whether that home is an efficiency in inner-city Chicago or a ranch in rural Texas.

We're looking into what's already happening in our homes and what home health care will be like in the future. How can we better use mobile apps? How can homes be designed with more health safety features such as grab bars, handrails, and better lighting? How can we better educate formal and informal caregivers?

From developing simple safety checklists to designing complex medical equipment that is easier to use, our ultimate goal is to make our homes safer and more effective places for care. After all, isn't home where we'd all prefer to be cared for?

Carolyn M. Clancy, M.D.

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Also in this issue:

Three Publications Highlight Human Factors Research

The Committee on the Role of Human Factors in Home Health Care produced three publications that highlight the importance of human factors considerations in home health care:

The Role of Human Factors in Home Health Care. This 308-page collection of papers provides an overview of a workshop where committee members and other experts discussed the broad range of issues associated with the migration of medical devices, technology, and care practices into the home. Published by the National Academies Press, 2010. www.nap.edu

Health Care Comes Home: The Human Factors. This 189-page book contains the Committee's conclusions and recommendations on the best use of human factors in home health care. Chapters also cover people involved in home health care, medical technologies, and the home environment. The report's recommendations range from guidance on the structure and usability of health IT and appropriate certification and training of formal home caregivers to facilitation of access to health- and safety-related home modifications. Published by the National Academies Press, 2011. www.nap.edu

Consumer Health Information Technology in the Home. This guide focuses on how designers and developers of health information technologies and home health professionals who select health IT for patients can apply human factors principles to select and improve tools for patients. Published by the National Academy of Sciences. A PDF of this publication for personal use is available free at www.nap.edu.

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therapies undertaken, the devices and technologies used, and the physical as well as community environment in which all this occurs," explains Henriksen. "The Committee was given the task of understanding the complexities of the home health care environment so that high quality and safe care can occur."

Our homes aren't designed for health care activities.

Caregivers and patients range in literacy and health, as well as cultural traits. Tasks range from simple feeding and bathing to managing home dialysis and complex intravenous drips. Environments range from those with low lighting or stairs that block wheelchair users, to homes with no Internet access for data transfer or remote monitoring. Finally, the home includes structural relationships with families and friends as well as the community.

As part of the Committee's work, Zayas-Cabán asked the National Research Council to develop a guide for designers and developers of health IT systems used in the home, which shows how to incorporate human factors design into products to facilitate use by home caregivers. Future systems may include everything from mobile devices that track nutrition to "aware" refrigerators that can suggest menus or warn about food allergies.

The Committee recommended ways to improve the usability and effectiveness of technology systems and devices that include guidance on the structure and usability of health IT and standards for medical device labeling, among other recommendations. Common health IT applications range from in-home monitoring and self-management systems to telemedicine and mobile phone applications.

Research Activities spoke to Committee members and AHRQ grantees involved in applying human factors research to the home.

Looking at home care through a broad lens

"Home health care is a burgeoning issue that will continue to grow," says Committee member Sara J. Czaja, Ph.D., of the University of Miami. "We can't look at it from a narrow lens. We need a broad, multi-disciplinary approach."

Yet, home health care involves many factors, as Czaja points out, from the use of technology, including telemedicine, robotic aids, virtual coaches, respiratory equipment, and other approaches, to the people involved. "We have to think about the diversity of the people we deal with—their language, literacy, and support—both technical and social. The benefits to understanding the

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characteristics of home health populations' care receivers and providers are essential for developing equipment and technology," says Czaja.

Putting home health care into practice

Eric De Jonge, M.D., director of geriatrics at the Washington Hospital Center and Committee member, is part of a House Call team in Washington, DC, caring for 600 patients, most of whom are ill, frail, and elderly and have multiple chronic conditions. His practice is similar to those of other geriatricians, but De Jonge and his team care for all patients in the patients' homes.

"Mobile technology allows so much to be done in the home. We have portable blood testing, EKGs, vital signs, and home x rays," says De Jonge. "We can communicate wirelessly to the medical record."

De Jonge is convinced that home-based medical care works better for the elderly who can't get to medical appointments. "Our care is more convenient, costs less than office-based health care, and helps prevent hospitalization," he says.

A national study backs up the savings that De Jonge sees in his practice. He says, "The national VA (Veterans Administration) program of home-base primary care has shown annual cost savings of 24 percent using this mobile model of care for ill elders."

The cost savings of home care to society are also substantial—and rising. A recent report, *Valuing the Invaluable: 2011 Update, The Growing Contributions and Costs of Family Caregiving*, by AARP estimates that the economic value of family caregivers' unpaid contributions was approximately $450 billion in 2009, up from $375 billion in 2007.

Our care is more convenient, costs less than office-based health care, and helps prevent hospitalization.

A checklist for the home

"The home is the fastest growing health care setting in America," says Robyn Gershon, M.H.S., Dr.P.H., professor, University of California, San Francisco and AHRQ grantee, "but it's tremendously overlooked. We really need to focus on safety in the home health care sector."

Gershon, formerly at the Mailman School of Public Health at Columbia University, focused her research on health and safety hazards faced by home health care workers and 100 patients in public housing units in New York City. She didn't have to look hard. "We often realized there were potential harms the minute we walked in," she says.

Gershon developed a household safety checklist for households of patients enrolled in home health care, most of whom are elderly. The checklist included photos of potential hazards or safety risks, ranging from pictures of excessive clutter and rotten food to bedbugs and cockroaches.

"We wanted a tool that was easy to use and respectful of the fact that for many home health care aides, English is a second language" says Gershon. "Using the tool was an eye opener for many of the aides. In fact, many were flabbergasted. They said, 'Oh my goodness, I never saw the mold, the mouse droppings, or realized the apartment was so dark.'"

Even the patients were supportive. "We were surprised at how engaged

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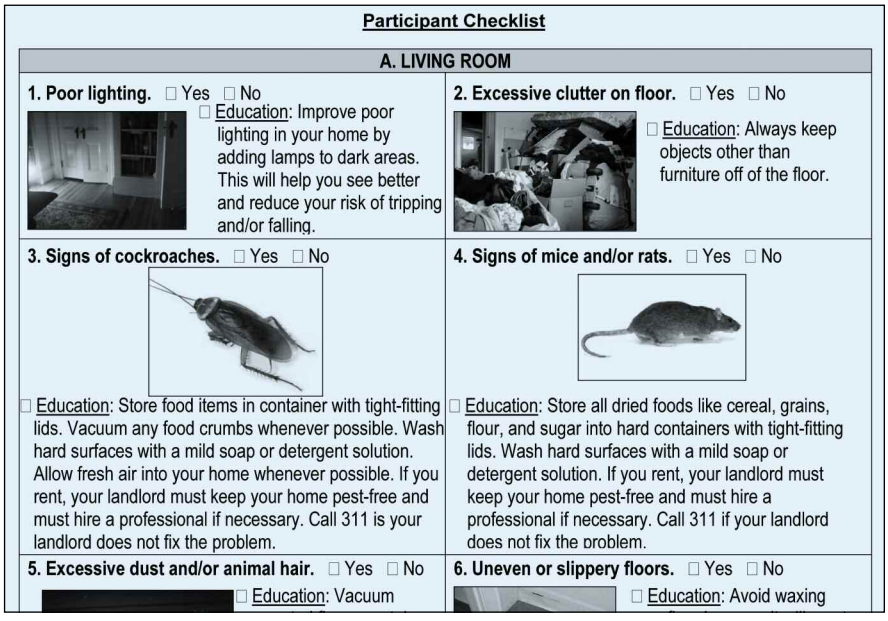

Participant Checklist

A. LIVING ROOM

1. Poor lighting. ☐ Yes ☐ No

☐ Education: Improve poor lighting in your home by adding lamps to dark areas. This will help you see better and reduce your risk of tripping and/or falling.

2. Excessive clutter on floor. ☐ Yes ☐ No

☐ Education: Always keep objects other than furniture off of the floor.

3. Signs of cockroaches. ☐ Yes ☐ No

☐ Education: Store food items in container with tight-fitting lids. Vacuum any food crumbs whenever possible. Wash hard surfaces with a mild soap or detergent solution. Allow fresh air into your home whenever possible. If you rent, your landlord must keep your home pest-free and must hire a professional if necessary. Call 311 is your landlord does not fix the problem.

4. Signs of mice and/or rats. ☐ Yes ☐ No

☐ Education: Store all dried foods like cereal, grains, flour, and sugar into hard containers with tight-fitting lids. Wash hard surfaces with a mild soap or detergent solution. If you rent, your landlord must keep your home pest-free and must hire a professional if necessary. Call 311 if your landlord does not fix the problem.

5. Excessive dust and/or animal hair. ☐ Yes ☐ No

☐ Education: Vacuum

6. Uneven or slippery floors. ☐ Yes ☐ No

☐ Education: Avoid waxing

Section of participant checklist developed by Dr. Gershon.

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they were," says Gershon. "We often fail to see hazards we see every day. The checklist helps identify hazards in the household that can harm us. By identifying them, we can address them and potentially save money by preventing accidents that may result in more medical care, including costly hospitalizations."

Although Gershon's checklist was low-tech paper, she says, "This would easily work on an iPhone or computer." After completing her study, Gershon put together safety kits for the homes using materials donated by local agencies and businesses, including such items as smoke detectors.

She urges us all to check on the safety of the household—not only for ourselves and our families but for others. "It's more than a nice thing to do; it's the right thing to do." ■ *KM*

Health Information Technology

Many challenges remain in the design and use of consumer health informatics interventions

A growing number of people are using Web-based programs, such as Microsoft HealthVault and Google Health to monitor their health in conjunction with devices such as blood pressure cuffs, weight scales, and pedometers. However, patients may have trouble using these consumer health informatics (CHI) interventions at home—as partially evidenced by Google's choice to discontinue Google Health as of January 1, 2012. A new study finds that such interventions can pose a variety of human factors challenges in their use. Agency for Healthcare Research and Quality (AHRQ) researcher Teresa Zayas-Cabán, Ph.D., and Jenna L. Marquard, Ph.D. from the University of Massachusetts Amherst, found significant challenges on a number of levels for consumers using these interventions.

They developed four CHI intervention use cases for individuals with diabetes and high blood pressure and also for bariatric surgery patients. Two student volunteers acted as patients while a third student acted as the provider. The three students tested each intervention for 10 days. Each intervention involved a variety of tasks, such as taking blood pressure and glucose readings, recording pedometer and weight readings, and recording their food intake online using HealthVault and Google Health. The students then recorded their challenges while completing each task and rated the severity of each challenge. Two independent evaluators then classified the challenges into one of three well-known human factors areas: cognitive, macroergonomic, or physical.

A total of 122 challenges were identified. Half of these were classified as cognitive, 38 percent macroergonomic (e.g., using the interventions in the context of their daily life), and 12 percent physical. Approximately a third of all challenges were reported by the students as being at least moderately severe. HealthVault posed more severe challenges than Google Health for both the diabetes and bariatric surgery use cases. The physical challenges most often related to the use of linked devices, such as blood pressure cuffs and weight scales. Cognitive challenges were associated the most with one-time activities, such as learning to use these devices and their applications. Most of the macroergonomic challenges involved repeated activities such as uploading device data. The researchers' evaluation approach identified a significant number of challenges likely to interfere with lay people's ability to use a particular CHI intervention. These identified challenges provide designers with a starting place from which to begin redesigning the intervention.

More details are in "Commercial off-the-shelf consumer health informatics interventions: Recommendations for their design, evaluation and redesign," by Dr. Marquard and Dr. Zayas-Cabán, in the July 1, 2011 *Journal of the American Medical Informatics Association*. [Epub ahead of publication.] Reprints (AHRQ Publication No. 11-R075) are available from AHRQ.* ■ *KB*

Transitioning to new electronic health records can result in potential safety problems

Federal incentives for meaningful use of electronic health records (EHRs) are prompting many health care providers to upgrade from older EHR systems. The incentives require newer systems to include electronic prescribing (e-prescribing) capabilities. However, transitioning to newer technology may result in some unexpected effects on prescribing safety. A recent case study has found that safety issues can occur 12 weeks into implementation of a new system.

The study involved 17 physicians practicing at an academic ambulatory clinic. During an 18-month period, they transitioned from an older EHR system with minimal clinical decision support (CDS) for e-prescribing to a newer system with expanded e-prescribing capabilities. Researchers reviewed prescriptions and patient charts to identify prescribing errors at baseline, 12 weeks after implementation of the new system, and then again 1 year later.

Rates of prescribing errors were highest at baseline (35.7 per 100 prescriptions). At one year, however, this rate was significantly lower (12.2 per 100 prescriptions). No differences were observed among the time periods for rates of near misses and rule violations. In addition, no preventable adverse drug events were identified.

The majority of prescribing errors during all three time periods involved the inappropriate use of abbreviations. These were highest at baseline (24.1 per 100 prescriptions). However, since the newer system automatically corrected for these, the rate dropped to 10.6 at 12 weeks and 5.9 after 1 year. The researchers then excluded inappropriate abbreviation errors in a separate analysis. As a result, the non-abbreviation prescribing error rate was lowest at baseline (8.5) and highest at 12 weeks (17.7). After a year of implementation, there was no significant difference in the error rate compared to baseline.

Physicians had mixed reactions to implementation of the new system. Only a third felt the newer system improved safety over the older system. Two-thirds felt that the speed in ordering and refilling medications was slower with the new system. The researchers suggest that vendors tailor the design of the CDS to promote more safety gains. This might mean focusing on certain types of errors. Such strategies should be combined with additional provider education. The study was supported in part by the Agency for Healthcare Research and Quality (HS17029).

See "Transitioning between electronic health records: Effects on ambulatory prescribing safety," by Erika L. Abramson, M.D., M.S., Sameer Malhotra, M.D., M.A., Karen Fischer, R.N., and others in the *Journal of General Internal Medicine* 26(8), pp. 868-874, 2011. ■ *KB*

Pediatric care providers identify desired characteristics for computerized flu vaccination alerts

Influenza vaccination rates among children remain suboptimal, partially due to missed vaccination opportunities. One way to identify children in need of vaccination at the point of care is through the use of computerized vaccination alerts. However, such alerts have met with only modest success, possibly due to design problems or unrelated workflow issues. A team of Columbia University researchers conducted focus groups and interviews with 21 pediatric health care providers to identify desired characteristics and concerns regarding immunization alerts. The pediatric care providers suggested that an immunization alert should: appear early in the visit; facilitate ordering; be based on the electronic health record (EHR) as well as immunization registry; and allow the provider to document reasons the vaccine was not given by pasting back into the EHR note.

The providers also identified a number of barriers to vaccination delivery: remembering to vaccinate during sick or other walk-in visits; having the time needed to check multiple sources to find out if a child had already received the vaccination; limited staff to provide vaccine delivery; and limited supplies of the influenza vaccine. They noted that some of these barriers could be alleviated by well-designed vaccination alerts linked to electronic health records. The study was supported by the Agency for Healthcare Research and Quality (HS18158).

See "FluAlert: A qualitative evaluation of providers' desired characteristics and concerns regarding computerized influenza vaccination alerts," by Eileen Birmingham, M.D., Marina Catallozzi, M.D., Sally E. Findley, Ph.D., and others in *Preventive Medicine* 52, pp. 274-277, 2011. ■ *MWS*

Volume of paid outpatient malpractice claims underscores need for greater patient safety efforts in this area

The outpatient setting generates as many paid malpractice claims as the inpatient setting, reveals a new study. In 2009, there were 4,910 claims paid for events in the outpatient setting, compared to 4,448 inpatient paid claims, according to a Weill Cornell Medical College research team. Paid claims in the inpatient setting averaged $362,965 vs. $290,111 for outpatient claims. The outcomes of outpatient events were not trivial—major injury or death accounted for almost two-thirds of paid claims for events in the outpatient setting.

The most common reason for a paid claim in the outpatient setting was diagnostic (45.9 percent), and surgery in the inpatient setting (34.1 percent). The number of claims decreased significantly from 2005 to 2009, but the rate of decline was greater in the inpatient setting (from 6,515 in 2005 to 4,910 in 2009) than the outpatient setting (from 5,511 in 2005 to 4,448 in 2009).

The study's findings provide empirical support for suggestions that patient safety initiatives should focus on the outpatient setting, not just on inpatient care. Also, more attention should be paid to adverse events related to diagnostic errors. This study was supported in part by the Agency for Healthcare Research and Quality (HS18546).

See "Paid malpractice claims for adverse events in inpatient and outpatient settings," by Tara F. Bishop, M.D., Andrew M. Ryan, Ph.D., and Lawrence P. Casalino, M.D., Ph.D., in the June 15, 2011 *Journal of the American Medical Association* 305(23), pp. 2427-2431. ■ *MWS*

Evidence-based strategies substantially reduce the incidence of ventilator-associated pneumonia in ICUs

Ventilator-associated pneumonia (VAP) is a significant and common cause of patient sickness and death, as well as increased health care costs. A new study found that an intervention to boost the use of five evidence-based strategies to reduce VAP accomplished just that. In 112 intensive care units (ICUs), the overall median VAP rate declined from an average of 6.9 to 3.4 cases per 1,000 ventilator days at 16-18 months after implementation of the intervention. There was a further decrease from 3.4 to 2.4 cases from 16-18 months to 28-30 months. Compliance with evidence-based therapies increased from 32 percent at baseline to 75 percent at 16-18 months after implementation to 84 percent at 28-30 months.

The five evidence-based strategies were: semirecumbent positioning to decrease the risk of VAP; stress ulcer prophylaxis to decrease gastrointestinal bleeding; prophylaxis to decrease deep venous thrombosis (blood clots in the leg); adjustment of sedation until the patient can follow commands; and daily assessment of readiness to extubate, to reduce the duration of mechanical ventilation.

The intervention was implemented through an AHRQ-funded collaborative known as the Keystone Project that included 112 ICUs, mostly in Michigan, along with Johns Hopkins University and the Michigan Health and Hospital Association. Local ICU improvement teams were established that included the ICU director and nurse manager, an ICU physician and nurse, and the senior hospital executive. The teams were trained through meetings, coaching by study investigators, and conference calls.

The study demonstrated that VAP can be successfully prevented across a large and diverse cohort of ICUs. The multifaceted intervention was implemented without expensive technology or funding for the

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Ventilator-associated pneumonia
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participating ICUs. This study was supported by the Agency for Healthcare Research and Quality (HS14426).

See "Collaborative cohort study of an intervention to reduce ventilator-associated pneumonia in the intensive care unit," by Sean M. Berenholtz, M.D., Julius C. Pham, M.D., Ph.D., David A. Thompson, D.Sc.N., R.N., and others in the April 2011 *Infection Control and Epidemiology* 32(4), pp. 305-314. ■ *MWS*

Trauma patients are more likely to die after a major complication in high-mortality hospitals

Patients hospitalized for trauma can die after a major complication. This is called "failure-to-rescue." A new study concludes that failure-to-rescue is a primary driver of differences in the hospital outcomes of trauma patients. It found that hospitals with higher trauma mortality rates had higher failure-to-rescue rates than low-mortality hospitals.

Researchers analyzed 54,713 patient records from the National Trauma Databank in 2007. They categorized hospitals as low-, average-, and high-mortality institutions. Hospital quality was determined based on the incidence of mortality among trauma patients. Adjustments were made for injury severity, trauma mechanism, and patient physiology. The two most common trauma mechanisms were blunt trauma and motor vehicle accidents. However, patients in high-mortality hospitals were more likely to have experienced a gunshot wound compared to patients at low-mortality hospitals.

The study's findings suggest that the primary driver of differences in hospital quality for trauma patients is failure-to-rescue as opposed to differences in complication rates. Patients in low-mortality hospitals had similar rates of major complications compared to patients in hospitals with high mortality rates. On the other hand, patients in low-mortality hospitals were significantly less likely to die after major complications compared to patients in high-mortality hospitals. The study was supported by the Agency for Healthcare Research and Quality (HS16737).

See "Variation in hospital complication rates and failure-to-rescue for trauma patients," by Laurent G. Glance, M.D., Andrew W. Dick, Ph.D., J. Wayne Meredith, M.D., and Dana B Mukamel, Ph.D., in the April 2011 *Annals of Surgery* 253(4), pp. 811-816. ■ *KB*

Hospital boards adopt practices to enhance oversight on quality of care

In response to external pressures for better care quality and patient safety, hospital governing boards have sought to enhance their oversight function on quality of care by adopting a variety of practices. A new study found that a number of specific practices, not examined in prior research, showed significant association with better performance on process of care and/or mortality rates (adjusted for patient risk factors). These practices included: requiring major new clinical programs to meet quality-related criteria; setting some quality goals at the "theoretical ideal" level; requiring both the board and the medical staff to be as involved as management in setting the agenda for discussion on quality; and requiring the hospital to issue public quality/safety performance reports.

The study combined survey data of hospital governance collected by The Governance Institute (TGI) with hospital performance data drawn from The Agency for Healthcare Research and Quality (AHRQ) and the Centers for Medicare & Medicaid Services.

Of the 13 board practices examined in the TGI survey, the one most commonly adopted was regular review of the hospital's quality performance. Ninety-six percent of the responding hospitals conducted such reviews at least once a year. There are other areas, however, that appear to fall short of expectations, note Joanna Jiang, Ph.D., and Irene Fraser, Ph.D., AHRQ researchers, and Carlin Lockee, M.P.H., formerly of TGI. For example,

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Quality of care
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only around 60 percent of the responding hospitals had a board committee focused specifically on quality. Less than 40 percent of the responding hospitals reported their quality/safety performance to the general public. Another area for improvement is engagement of physician leadership in both oversight activities and quality improvement efforts.

See "Enhancing board oversight on quality of hospital care: An agency theory perspective," by Drs. Jiang, Lockee, and Fraser in *Health Care Management Review* [epub ahead of print], 2011. Reprints (AHRQ Publication No. 11-R068) are available from AHRQ.* ■ *DIL*

Pharmacy, medical, and nurse practitioner students need more education on drug-drug interactions

Many adverse events, hospitalizations, and even deaths are attributed to drug-drug interactions (DDIs) that could have been avoided. It is the task of the pharmacist and the prescriber to identify and prevent DDIs. In a test of 15 drug pairs, most of which have known interactions, pharmacy students scored significantly better than medical and nurse practitioner students on their ability both to recognize DDIs and to select appropriate management strategies. This result may be because pharmacy school curriculum primarily focuses on drugs and mechanisms of action and there is more time spent on DDI education, note the study authors.

Although most clinicians have access to drug information software, studies have demonstrated that DDI screening software systems are not perfect. For example, these programs can overwhelm the user by recognizing many drug interaction alerts of moderate to minor potential severity. This makes it difficult to identify which ones are clinically important interactions. Because of such shortcomings, it is important to prepare prescribers and pharmacists to identify and manage potential DDIs independently from these resources, assert the authors. They evaluated and compared the DDI knowledge of 64 pharmacy, 72 medical, and 29 nurse practitioner students beginning clinical practice. They concluded that there is much room for improvement in all groups, since they all fell short of being able to correctly identify all interactions. The study was supported by the Agency for Healthcare Research and Quality (HS17001).

See "Medical, nursing, and pharmacy students' ability to recognize potential drug-drug interactions: A comparison of healthcare professional students," by Terri L. Warholak, Ph.D., Lisa E. Hines, Pharm.D., Mi Chi Song, Pharm.D., and others in the *Journal of the American Academy of Nurse Practitioners* 23, pp. 216-223, 2011. ■ *MWS*

For-profit dialysis chains have higher mortality rates than non-profit dialysis chain

Concerns have been raised about the quality of care being delivered to end-stage renal dialysis (ESRD) patients, given that most large dialysis providers are for profit (FP) entities. Of the five largest dialysis chains, the lowest mortality risk was found among patients treated at a nonprofit (NP) chain, according to Yi Zhang, Ph.D., and colleagues at the Medical Technology and Practice Patterns Institute in Bethesda, MD. Compared with the nonprofit chain, mortality risk was 19 percent higher at one FP chain and 24 percent higher at a second FP chain. Overall, patients from FP facilities, regardless of chain status, had a 13 percent higher risk of mortality than NP facilities.

Most U.S. patients with ESRD receive hemodialysis treatment three times a week from Medicare-certified dialysis facilities. Since 1991, the number of chain-owned dialysis facilities has grown more than 11-fold. Today, roughly 85 percent of the FP and nearly one-third of the NP facilities are operated by large corporations. Some contend that lower resource use in the delivery of dialysis by FP facilities compromises the health outcomes of dialysis patients. A number of earlier studies have suggested that factors related to practice patterns, such as dialysis dose, vascular access, and injectable drugs (including epoetin therapy, vitamin D, and iron) can influence patient outcomes.

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Renal dialysis

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This study evaluated and compared the use of all three major injectable drugs among dialysis facilities. The findings suggest that patients from the NP chain who used the least amount of injectable drugs had the best survival. If all other chains were to follow the resource use of the NP chain, costs of injectable drugs might be reduced without compromising patient outcomes, with the caveat that the provider will not excessively lower doses.

The study included 3,601 free-standing dialysis facilities and 34,914 Medicare patients with ESRD during 2004. The study was supported in part by the Agency for Healthcare Research and Quality (HS18697).

See "The effect of dialysis chains on mortality among patients receiving hemodialysis," by Dr. Zhang, Dennis J. Cotter, M.S.E., and Mae Thamer, Ph.D., in the June 2011 *HSR: Health Services Research* 46(3), pp.747-767. ■ *MWS*

Chronic Disease

Overweight or obese patients have higher health care expenditures

Annual health-care expenditures related to obesity are estimated to range from $11-14 billion for children and $75-93 billion for adults. A new study reveals that mean annual health-care expenditures for both sexes increased by age within each body mass index (BMI) class and were highest among obese individuals. In all BMI classes, females were more likely to incur expenditures and had higher expenditures than males.

The researchers analyzed data from 2000 to 2005 on a nationally representative sample of 80,516 persons (ages 6 to 85) from the Medical Expenditure Panel Survey of the Agency for Healthcare Research and Quality. They estimated health care expenditures across the life cycle to identify the age at which expenditures of overweight and obese males and females become greater than their normal-weight peers. For females, overweight-associated annual expenditures became significantly higher than normal-weight peers at age 22 ($85), peaked at age 66 ($671), and remained significantly higher until age 77 ($623). For males, overweight-associated annual expenditures became significantly higher than normal-weight peers at age 48 ($168) until age 67 ($612), but were lower or similar at other ages.

Obesity-associated expenditures for obese females were significantly lower than normal-weight peers from age 6 (-$156), to age 10 (-$109), similar from age 11 to age 20, but significantly higher from age 21 ($88) until age 82 ($1,497). Obesity-associated expenditures for obese males were significantly lower than normal-weight peers from age 6 (-$288) to age 16 (-$77), similar from age 11 to age 20 (-$109), but higher from age 25 ($88) until age 83 ($3,236).

Both the overweight-associated crossover age (age 22 for women and age 48 for men) and the obesity-associated crossover age (age 21 for women and age 25 for men) occurred earlier for women than for men and remained significantly higher over a much longer period (55 vs. 19 years). The cost figures reflect higher expenditures for ambulatory care, inpatient care, and prescription drugs.

The researchers conclude that their findings may inform clinical practice by specifying when and for whom to target preventive and weight-loss interventions. Their study was supported by the Agency for Healthcare Research and Quality (HS13853).

See "Health care expenditures of overweight and obese males and females in the Medical Expenditures Panel Survey by age cohort," by Janice F. Bell, Ph.D., Frederick J. Zimmerman, Ph.D., David E. Arterburn, M.D., M.P.H., and Matthew L. Maciejewski, Ph.D., in the *Obesity Journal* 19(1), pp. 228-232, 2011. ■ *MWS*

Note: Only items marked with a single (*) asterisk are available from the AHRQ Clearinghouse. 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.

Fewer than 1 in 5 emergency departments implement recommendations for HIV screening

Fewer than 20 percent of emergency departments (EDs) perform recommended routine screening of certain populations for HIV infection, according to a new study. This is a problem, since an estimated 21 percent of persons with HIV infection are undiagnosed, especially members of racial and ethnic minorities, the socioeconomically disadvantaged, and the uninsured—many of whom use EDs as their main source of primary care. The Centers for Disease Control and Prevention (CDC) issued recommendations in 2006 that called for routine (nontargeted) rapid HIV screening, with opt-out provisions, for populations whose undiagnosed HIV infection prevalence was at least 0.1 percent.

The researchers surveyed a national sample of EDs to examine their familiarity with the CDC recommendations and practices regarding HIV screening of patients. Of the 99 academic and 150 community EDs that responded, a larger proportion of the academic EDs (64 percent) than community EDs (40 percent) reported being familiar with the 2006 CDC recommendations. Yet only 26 percent of academic EDs and 37 percent of community EDs reported having implemented any part of the recommendations.

Belief that HIV testing was necessary was held by a larger proportion of academic EDs (42 percent) than community EDs (25 percent), but a larger proportion of both groups (65 percent and 50 percent, respectively) actually provided HIV testing. Most performed the tests for diagnostic testing, dropping by half for EDs conducting targeted screening, and falling to 16 percent of academic EDs and 6 percent of community EDs conducting any nontargeted screening. Academic EDs comprise only 3 percent of EDs in the United States. Based on their findings, the researchers recommend increased efforts to improve the ability of community EDs to perform HIV testing. The study was funded in part by the Agency for Healthcare Research and Quality (HS17526).

More details are in "HIV testing in emergency departments in the United States: A national survey," by Jason S. Haukoos, M.D., M.Sc., Emily Hopkins, M.S.P.H., Amber Hull, B.A., and others in the July 2011 *Annals of Emergency Medicine* 58(1), pp. S10-S16. ■ *DIL*

Patients with myelodysplastic syndrome have shorter survival times if they have coexisting medical conditions

Patients with myelodysplastic syndrome (MDS), a group of disorders of the blood-forming stem cells that can transform into acute myelogenous leukemia (AML), survive less long if they have coexisting medical conditions, according to a new study. Previous studies estimate that 3-4 persons per 100,000 are diagnosed with MDS annually, increasing with age to 20 per 100,000 individuals older than 70 years. The University of Texas M.D. Anderson Cancer center researchers analyzed clinical information on all 600 patients with MDS (67 percent male and 87 percent white) seen at the Center during a 3-year period.

They found that the overall median survival was 18.6 months. However, it was 31.8, 16.8, 15.2, and 9.7 months for individuals with no, mild, moderate, and severe coexisting conditions (measured by the Adult Comorbidity Evaluation-27). In fact, patients with severe coexisting conditions had a 50 percent decrease in survival, independent of age and risk group. Overall, 23 percent of patients had no coexisting conditions, 42 percent had mild, 21 percent had moderate, and 14 percent had severe coexisting conditions. Although MDS transformed to AML in 20 percent of patients, there was no significant association between the severity of coexisting illness and leukemic transformation.

The findings were based on clinical data on all patients with a diagnosis of MDS seen at the M.D. Anderson Cancer Center in Houston from January 2002 through December 2004. The study was funded in part

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Myelodysplastic syndrome
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by the Agency for Healthcare Research and Quality (HS16093) to the Houston Center for Education and Research in Therapeutics (CERT). For more information on the CERTs program, visit www.certs.hhs.gov.

More details are in "Association of comorbidities with overall survival in myelodysplastic syndrome: Development of a prognostic model," by Kiran Naqvi, M.D., Guilliermo Garcia-Manero, M.D., Sagar Sardesai, M.D., and others in the June 1, 2011 *Journal of Clinical Oncology* 29(16), 2240-2246. ■ *DIL*

Child/Adolescent Health

The increase in pediatric stimulant use since 1996 mostly linked to treatment of ADHD in adolescents

Pediatric use of stimulant medication, the first line of treatment for children with attention-deficit/hyperactivity disorder (ADHD), increased slowly over the most recent 12 years for which data is available, according to a new study. Stimulant use grew from 2.9 percent of United States children in 1996 to 3.5 percent in 2008. Among the estimated 2.8 million children under age 19 taking stimulants for ADHD, growth in stimulant use was highest for adolescents (13–18 years old), growing 6.5 percent annually, from 2.3 percent of this age group in 1996 to 5.0 percent in 2008.

Samuel H. Zuvekas, Ph.D., of the Agency for Healthcare Research and Quality, and Benedetto Vitiello, M.D., of the National Institute of Mental Health, point out that the highest rate of use was still among younger school-age children (6–12 years old), rising from 4.2 percent in 1996 to 5.1 percent in 2008. However, this was not a significant rise in stimulant use. For children under 6 years old, prescription stimulant use remained low, declining to 0.1 percent after 2004. Stimulant use for ADHD in 2008 was consistently highest among non-Hispanic white children (4.4 percent) compared to black and Hispanic children (3.0 percent and 2.1 percent, respectively).

Although the rate of prescribed stimulant usage increased for girls between 1996 and 2008, usage by boys remained three times greater than for girls, consistent with greater prevalence of ADHD among boys. Usage varied considerably across the United States in 2008 as well, with highest use in the northeastern States (4.6 percent) and lowest use in the western States (1.6 percent). Data for the study was drawn from AHRQ's Medical Expenditure Panel Survey (MEPS) covering the years 1996 through 2008. The MEPS sample is representative of the civilian noninstitutionalized population for each year. The study was funded in part by the Agency for Healthcare Research and Quality (HS16964).

More details are in "Stimulant medication use among U.S. children: A twelve-year perspective" by Drs. Zuvekas and Vitiello in the September 2011 *American Journal of Psychiatry* (epub ahead of print). Reprints (AHRQ Publication No. 12-015) are available from AHRQ.* ■ *DIL*

Most children receiving palliative care live for more than a year after beginning such treatment

Palliative care for adults, mostly cancer patients over age 60, is usually thought of as short-term care to ease the patient's dying. In contrast, most children receiving palliative care—with the exception of infants—are alive for more than a year after beginning care, a new multicenter study shows. Only in the past decade have children's hospitals begun offering palliative care services to address the needs of children with advanced, life-threatening conditions and their families.

Chris Feudtner, M.D., Ph.D., M.P.H., of Children's Hospital of Philadelphia, and colleagues followed 515 children, who received palliative care at six children's hospitals during a 3-month enrollment period, for 12 months or until death. Of these, 36 percent were new to the pediatric palliative care programs while 64 percent were established patients. Ages ranged from less than 1 month (5 percent) to 19 years or older (16 percent). Genetic/congenital problems accounted for 41 percent of the group, followed by neuromuscular disorders (39 percent), cancer (20 percent), respiratory problems (13 percent), and gastrointestinal disorders (11 percent). More than half of the children had more than one condition, resulting in problems totaling more than 100 percent of patients. Nearly half of the patients (47 percent) were cognitively impaired and 31 percent suffered chronic pain.

Thirty percent of the children died within 12 months of their palliative care consult, with a median time-to-death of 107 days. The children who died within 30 days of the consult were more likely to be infants, and their consultation goals were more likely to be decisionmaking support, near-death recommendations, or parental and sibling bereavement. The study was funded in part by the Agency for Healthcare Research and Quality (HS18425).

More details are in "Pediatric palliative care patients: A prospective multicenter cohort study," by Dr. Feudtner, Tammy I. Kang, M.D., Kari R. Hexem, M.P.H., and others in the June 2011 *Pediatrics* 127(6), pp. 1094-1101. ■ *DIL*

Good communication with the doctor treating their child for cancer improves parental satisfaction with their role in decisions

Most parents of children in their first year of cancer treatment participate in decisionmaking to the extent that they wish. However, nearly one-fourth hold a more passive role than they would like, according to a new study of 192 parents of youngsters with childhood cancer. It further found that a parent's satisfaction with their role in decisionmaking did not depend on whether the doctor accurately identified the parent's preferred role, but depended instead on whether the parent perceived that doctor–parent communication was high-quality.

The researchers found that 66 percent of the parents studied wanted a collaborative decisionmaking process with their child's oncologist and 64 percent said they had their preferred role in decisionmaking. The 70 parents who did not have their preferred decisionmaking roles were likely to have more passive roles than desired (67 percent). Even when the doctor correctly identified the parent's desired involvement level, parents were no more likely to have their preferred role.

Parents who felt that communication with their child's oncologist was high-quality were 61 percent less likely to hold a more passive decisionmaking role than they wished. Also, parents who held more passive roles than desired were 54 percent less likely to trust the doctor's judgments. The findings were based on a survey of 194 responses of 276 eligible parents of children in the first year of treatment for childhood cancer between April 2004 and September 2005, as well as the children's physicians (20 of 21 responded). The study was funded in part by the Agency for Healthcare Research and Quality (T32 HS00063).

More details are in "Parents' roles in decision making for children with cancer in the first year of cancer treatment," by Jennifer W. Mack, M.D., M.P.H., Joanne Wolfe, M.D., M.P.H., E. Francis Crook, Sc.D., and others in the May 2011 *Journal of Clinical Oncology* 29(15), pp. 2085-2090. ■ *DIL*

Moving adolescents with sickle cell disease from pediatric to adult care hampered by lack of knowledgeable adult hematologists

Approaches to the transition of an adolescent patient from pediatric to adult care differ widely among large pediatric sickle cell disease (SCD) clinics, a new study finds. Until the 1970s few children with this hereditary disease survived into adulthood. But due to improvements in medical care, most patients with SCD now live into their 40s or beyond. Because many pediatric hospitals require pediatric patients to find adult care for acute and chronic illnesses around the age of legal maturity, pediatric SCD clinics have been working to develop programs to assist their transition to adult care.

The researchers examined survey responses from 30 of 45 (67 percent) large pediatric SCD centers. The majority of responding centers were affiliated with a free-standing children's hospital and 10 were part of a combined pediatric/adult hospital. Nearly three-fifths (57 percent) of the responding centers were part of systems with an age cutoff of 18–22 years for transition to adult care.

Discussion of transition with the patient began at an average age of 15.7 years (range = 13–18 years), with transition taking place at a mean age of 19.6 years (range = 18–25 years). One center continues to see adult patients, because the area lacks an adult provider able to care for patients with SCD. A third of the centers allow patients to stay in pediatric care past the deadline for certain reasons, such as cognitive or developmental delay, to complete a transition program, to graduate high school, or while they find an adult provider. Nearly all (97 percent) of the centers had identified at least one adult provider who would accept patients from pediatric care, but only 60 percent transferred their patients to an adult hematologist specializing in SCD. Another 10 percent of the clinics transferred patients to an internist, because no SCD-trained adult hematologist was available. The study was funded in part by the Agency for Healthcare Research and Quality (T32 HS00063).

More details are in "Transition from pediatric to adult care for sickle cell disease: Results from a survey of pediatric providers" by Amy Sobota, M.D., M.P.H., Ellis J. Neufeld, M.D., Ph.D., Philippa Sprinz, M.D., and others in the June 2011 *American Journal of Hematology* 86(6), pp. 512-515. ■ *DIL*

Acute Care/Hospitalization

Increased estradiol levels during critical illness are associated with higher mortality

Studies have found that estradiol (serum E2) levels are elevated in critical illness and that higher levels are linked to death in the critically ill, regardless of sex.

Now, a new study reports that serum E2 level at hospital admission and increases in serum E2 over the course of hospitalization of critically ill or injured patients are more strongly associated with the probability of death than a single admission E2 level. The study also found a positive association between levels of cytokines (hormone-like proteins involved in the body's inflammatory response) and mortality. But the researchers concluded that serum E2 was a clinically preferable indicator of mortal threat, partly because of the relatively short half-life of cytokines relative to E2.

The researchers cautioned that whether E2 is actually a mediator of the inflammatory process and contributes to outcome or is simply a marker of disease severity is not known and could not be determined from their data.

Their study examined the correlation of serum E2 levels during the hospital course of surgical critical illness and changes in E2 with in-hospital 28-day all-cause mortality in a population of 1,408 critically ill and injured surgical patients who required intensive care unit care.

Hormone levels were collected twice weekly until death, discharge, or day 28, whichever came first. This study was supported, in part, by the Agency for Healthcare Research and Quality (HS13833).

See "Trends in estradiol during critical illness are associated with mortality independent of admission estradiol," by Rondi M. Kauffmann, M.D., Patrick R. Norris, Ph.D., Judith M. Jenkins, M.S.N., and others in the *Journal of the American College of Surgeons* 212, pp. 703-713, 2011. ■ *MWS*

Hospital lung cancer surgery volume is not correlated with lower mortality

Studies correlating higher hospital lung surgery volume with significantly lower mortality risk have suffered from serious methodological limitations, assert the authors of a new study. They found that higher lung cancer surgery volume is not a predictor of lower mortality and should not be used as a proxy measure for hospital surgical quality. Benjamin Kozower, M.D., and George Stukenborg, Ph.D., of the University of Virginia, examined the outcomes of more than 40,000 lung cancer surgery patients. They found that the most important predictors of mortality following lung cancer resection were a patient's age and coexisting diseases.

The new study described three different methods for measuring lung cancer resection volume and evaluated how the manner in which volume was measured affected the significance of the relationship between hospital procedure volume and mortality after lung cancer resection.

One of the problems with earlier studies was that procedure volumes were placed into arbitrarily defined categories rather than treating volume as a continuous variable. Another problem was that the quality and performance of the statistical models used and the contribution of procedure volume to explained variance were not rigorously evaluated.

The researchers concluded that the impact of procedure volume on mortality is dependent on how the volume variable is defined and entered into the regression equation. They call for more research to determine the strength and validity of the volume-outcome relationship. This study was supported by the Agency for Healthcare Research and Quality (HS18049, HS17693).

See "The relationship between hospital lung cancer resection volume and patient mortality risk," by Drs. Kozower and Stukenborg, in the May 2011 *Annals of Surgery*, pp. 1528-1540. ■ *MWS*

Disparities/Minority Health

Enrollment in Medicare Advantage managed care plans reduces racial/ethnic disparities in primary care quality in some States

Patients enrolled in Medicare Advantage (MA) plans had a lower incidence of preventable hospitalizations than those enrolled in fee-for-service (FFS) Medicare across all racial/ethnic groups, found a new study. In California, white MA patients were 19% less likely than white FFS patients to have preventable admissions (versus marker admissions), while blacks and Hispanics were 29 percent and 28 percent respectively less likely than their FFS counterparts to have preventable admissions. In Florida, black and Hispanic MA patients were 16 percent and 25 percent, respectively less likely than their FFS counterparts, and white MA patients were 11 percent less likely than white FFS patients to have preventable hospitalizations. In New York, white and Hispanic MA patients were 7 percent and 14 percent respectively less likely than their FFS counterparts to have preventable admissions.

Since these hospitalizations are typically prevented by access to quality primary care, the finding suggests that MA plans may improve the quality of primary care across races, notes study author, Jayasree Basu, Ph.D., M.B.A., of the Agency for Healthcare Research and Quality (AHRQ). It appears that minorities may have benefited more from these managed care plans than whites, given that the negative association between MA enrollment and the likelihood of preventable hospitalization is stronger for minorities than whites. The author notes that greater efforts at care

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Medicare Advantage

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coordination and provision of primary and preventive care in managed care plans may actually be more beneficial for minorities, especially since they are the vulnerable groups needing such supports.

Since many previous studies reported that minorities have higher rates of preventable hospitalizations, a lower risk among minorities than among whites could hold the potential for MA plans to lessen racial/ethnic inequalities in primary care, notes Dr. Basu. Her findings were based on analysis of 2004 hospital discharge data from AHRQ's Healthcare Cost and Utilization Project State Inpatient Database for the three States. Dr. Basu notes that, through 2005, health maintenance organizations—created to provide better care coordination than other types of MA plans—were the dominant form of MA option.

More details are in "Medicare managed care and primary care quality: Examining racial/ethnic effects across states," by Dr. Basu, in *Health Care Management Science* published online September 3, 2011. [Epub ahead of print]. Reprints (AHRQ Publication No. 12-R014) are available from AHRQ.* ■ *DIL*

Deaf patients who use American Sign Language receive more preventive care if their clinician also uses sign language

Linguistic differences pose a challenge for deaf American Sign Language (ASL) users and the clinicians who care for them. Use of the same language by clinicians and patients (linguistic concordance) is an important determinant of whether patients seek, understand, and adhere to providers' preventive services recommendations. In an ASL-accessible survey of 89 deaf respondents, those with an ASL-fluent clinician were more likely to report a greater number of preventive services, when compared to those with a non-ASL-fluent clinician. However, influenza vaccination was the only one of three preventive services included in the survey to be individually significantly associated with ASL-concordant communication, according to a team of researchers from the University of Rochester.

Their analysis included three non-gender-specific preventive services (influenza vaccination in previous 12 months, if ever colonoscopy/sigmoidoscopy, and cholesterol screening) that were recommended for adults aged 50-75 in 2008. The survey respondents included 89 deaf persons in this age group.

The researchers believe that increasing the number of clinicians fluent in ASL and expanding their geographic reach through the use of tele-health technology would likely improve use of health care services and health in this underserved language-minority population. This study was supported by the Agency for Healthcare Research and Quality (HS15700).

See "Impact of communication on preventive services among deaf American Sign Language users," by Michael M. McKee, M.D., M.P.H., Steve L. Barnett, M.D., Robert C. Block M.D., M.P.H., and Thomas A. Pearson, M.D., Ph.D., M.P.H., in the *American Journal of Preventive Medicine* 41(1), pp. 75-79, 2011. ■ *MWS*

Financial performance has modest effect on nursing home quality improvement

Today, there is an increased emphasis on improving nursing home quality via a number of market-based incentives, including public reporting of quality scores. Efforts to improve quality can be expensive. However, a new study found that better financial performance had only a modest effect on producing higher nursing home quality of care. Also, this effect was only seen when public reporting was in place.

Researchers examined facility characteristics and quality measures from the Online Survey and Certification Reporting System. They analyzed cost-related and financial report information from the Medicare Cost Reports, which are filed by all Medicare-certified skilled nursing facilities (SNFs). The researchers studied profit margins and four quality measures for 11,275 Medicare-certified freestanding SNFs: total staff hours per resident day, incidence rates of pressure sores, restraint use, and the total number of deficiency citations.

Financial performance was a significant predictor of quality for three measures after public reporting. A 1 percentage point increase in profit margin resulted in an increase in total staff hours per resident day by 0.12. It also translated into a reduction in the incidence of pressure sores by 0.16 percentage points and a significant decline in deficiency citations. The study was supported in part by the Agency for Healthcare Research and Quality (HS16478).

See "Changes in the relationship between nursing home financial performance and quality of care under public reporting," by Jeongyoung Park, Ph.D. and Rachel M. Werner, M.D., Ph.D., in *Health Economics* 20, pp. 783-801, 2011. ■ *KB*

Similarly effective international guidelines for managing cardiovascular risk factors in type 2 diabetes vary in costs

A comparison of international guidelines for management of the cardiovascular risk factors (high blood-lipid levels and high blood pressure) in patients with type 2 diabetes finds them equally effective. However, they differ substantially in expected medication costs, according to a new study. The researchers found that all of the guidelines were comparable in efficacy, with a range of cardiovascular or stroke events per 1,000 patients treated ranging from 132.3 to 153.9 for males and 133.0 to 154.3 for females.

The number of events avoided with immediate treatment were 81.0 and 70.7 per 1,000 for males and females, respectively. The medication costs per event avoided were highest using the Australian guideline ($157,186 for males and $163,775 for females), with various U.S. guidelines ranging from $117,269–$141,185 for males and from $115,999–$147,011 for females. The researchers estimated that the additional cost to treat 1 million males (newly diagnosed with type 2 diabetes) with the Australian guideline rather than the current U.S. guidelines would be $3.3 trillion and lead to 2,518 fewer people experiencing a cardiovascular event.

The researchers compared four sets of U.S. clinical practice guidelines—and one set each from Canada, Europe (multinational), Great Britain, and Australia—for treatment efficacy and cost, with the initiation of hyperlipidemia and hypertension treatment at the diagnosis of type 2 diabetes. Their models used some 15,000 measurements, taken over 10 years, of cholesterol levels, blood pressure, and glycosylated hemoglobin (a measure of blood-sugar level) from 663 patients with type 2 diabetes. They used the data to calculate probabilities of cardiovascular and stroke events and rates of death. The study was funded in part by the Agency for Healthcare Research and Quality (HS17628).

More details are in "Comparative effectiveness of guidelines for the management of hyperlipidemia and hypertension for type 2 diabetes patients," by Nilay D. Shah, Ph.D., Jennifer Mason, M.Sc., Murat Kurt, Ph.D., and others in *PLoS ONE* 6(1), 2011. ■ *DIL*

Heart disease, cancer, and trauma-related disorders among the most costly conditions for men

The cost of treating men for heart disease topped $47 billion in 2008, leading a list of the 10 most expensive conditions for men age 18 and older, according to the latest News and Numbers from the Agency for Healthcare Research and Quality. The Federal agency also found that among the top 10 costliest conditions for men in 2008:

- Cancer was the second most costly disease to treat ($34 billion), followed by trauma-related disorders ($33 billion) and osteoarthritis ($23 billion).
- Among these conditions, overall costs were lowest for back problems ($14 billion), followed by chronic obstructive pulmonary disease and asthma ($18 billion).
- On a per-patient basis, the average annual treatment cost ranged from $4,873 for cancer to $838 for high blood pressure.

The data in this AHRQ News and Numbers summary are taken from the Medical Expenditure Panel Survey (MEPS), 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. You can view Statistical Brief #331: *Top 10 Most Costly Conditions Among Men and Women, 2008: Estimates for the U.S. Civilian Noninstitutionalized Adult Population, Age 18 and Older*, on the MEPS Web site at www.meps.ahrq.gov.

For more information, or to speak with an AHRQ data expert, please contact Linwood Norman at linwood.norman@ahrq.hhs.gov or call (301) 427-1248. ■

Knee replacements up dramatically among adults 45 to 64 years old

Women and men ages 45 to 64 were 2.5 times more likely to be hospitalized for knee replacement surgery in 2009 than in 1997, according to the latest News and Numbers from the Agency for Healthcare Research and Quality (AHRQ).

AHRQ's analysis of hospital stays for knee replacement surgery from 1997 to 2009 found that:

- The rate for women ages 45 to 64 jumped from 16 to 42 stays per 10,000 people, while for men the same age, the rate climbed from 11 to 28 stays per 10,000 people.
- The rates for women and men 65 to 84 rose by 69 percent and 55 percent, respectively—from 72 to 122 stays and from 58 to 90 stays per 10,000 people.
- Among those age 85 years and older, rates increased by 23 percent for women (from about 27 to 33 stays per 10,000 people) and 36 percent for men (from about 27 to 36 stays per 10,000 people).

This AHRQ News and Numbers summary is based on data from *HCUP Facts and Figures: Statistics on Hospital-Based Care in the United States, 2009*, which provides highlights of the latest data from the 2009 Nationwide Inpatient Sample, a part of AHRQ's Healthcare Cost and Utilization Project. The report, which can be accessed at the HCUP Web site at www.hcup-us.ahrq.gov, provides data on leading reasons for hospitalization, such as arthritis, asthma, childbirth, cancer, diabetes, depression, and heart conditions; on procedures performed on hospital patients; and other related topics. For additional information, or to speak with an AHRQ data expert, please contact Linwood Norman at linwood.norman@ahrq.hhs.gov or (301) 427-1248. ■

Hospitalizations for eating disorders declined, but big increase seen in pica disorder

Eating disorders as the primary reason for entering the hospital declined by 23 percent from 2007 and 2009, after a steep and steady increase from 1999 to 2007, according to the latest News and Numbers from the Agency for Healthcare Research and Quality. (AHRQ) The severity of eating disorders also lessened, with symptoms like irregular heartbeat and menstrual disorders declining by 39 percent and 46 percent, respectively.

However, from 1999 to 2009, hospitalizations jumped 93 percent for patients with an eating disorder called pica, which causes them to eat largely non-edible substances such as clay, dirt, chalk, and feces. Women and children, including those with autism and other mental or developmental disorders, are most likely to suffer from pica. According to data from AHRQ, between 1999 and 2009:

- The number of hospital stays for patients with pica increased from 964 to 1,862 during the decade, and there was an overall increase of nearly 25 percent in cases of eating disorders.
- Patients diagnosed with eating disorders were generally hospitalized for other conditions such as depression, fluid and electrolyte disorders, schizophrenia, or alcohol-related disorders.
- Hospitalizations increased 13 percent for anorexia and decreased 14 percent for bulimia.

Although 9 in 10 cases of eating disorders were among women, those in men increased by 53 percent.

This AHRQ News and Numbers summary is based on data from Statistical Brief #120, *An Update on Hospitalizations for Eating Disorders, 1999-2009.* The report uses data from the Nationwide Inpatient Sample. For information about this AHRQ database, go to www.ahrq.gov/data/hcup/datahcup.htm.

For additional information, or to speak with an AHRQ data expert, please contact Linwood Norman at linwood.norman@ahrq.hhs.gov or call (301) 427-1248. ■

Birth defects may be linked to high blood pressure, not use of ACE inhibitors in early pregnancy

Women who take angiotensin-converting enzyme (ACE) inhibitors to treat high blood pressure in the first trimester of their pregnancies are at no greater risk of having babies with birth defects than are women who take other types of high blood pressure medication or who take no blood pressure drugs, according to a new study from the Agency for Healthcare Research and Quality (AHRQ). The study suggests that the underlying high blood pressure itself may increase the risk of birth defects, rather than blood pressure medications taken during the first trimester of pregnancy.

ACE inhibitors are among the most widely prescribed drugs used to treat high blood pressure, particularly for people who also have diabetes. ACE inhibitors are known to raise the rate of birth defects in the second and third trimesters of pregnancy, and one earlier study reported a link between the use of ACE inhibitors and birth defects in the first trimester of pregnancy. But the new AHRQ report, based on a study of a larger population, did not find a unique link between first-trimester ACE inhibitor use and birth defects.

Results of the study, prepared for AHRQ's Effective Health Care Program by the HMO Research Network, a member of AHRQ's Developing Evidence to Improve Decisions about Effectiveness (DEcIDE) Network, were published in the October 18 issue of the *British Medical Journal*.

"Some women of child-bearing age have high blood pressure, and about half of them will get pregnant while taking one or more medications to treat it," said AHRQ director Carolyn M. Clancy, M.D. "This report should lead to more informed discussions by women, in consultation with their doctors, about the best way to manage their high blood pressure, particularly if they become pregnant.

ACE inhibitors are also used to treat heart failure and to protect some people from diabetes complications. Yet because they work by inhibiting an enzyme in the kidney, physicians caution patients about taking them in the second and third trimesters of pregnancy, a crucial period of development for the unborn baby.

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Birth defects

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ACE inhibitors carry a "black box" warning from the Food and Drug Administration—that agency's strongest warning—against their use in the second and third trimesters of pregnancy.

However, the new AHRQ study, which examined more than 465,000 babies born over 13 years in the Kaiser Permanente Northern California region, found no correlation between ACE inhibitor use during the first month of pregnancy and birth defects. The new report found that birth defects occurred at the same rate among all women with high blood pressure, regardless of whether they took ACE inhibitors, other drugs to treat high blood pressure, or no blood pressure drugs.

While the AHRQ study did not conclude that high blood pressure is explicitly to blame for increased birth defects, researchers said that the findings suggest that underlying high blood pressure likely results in increased birth defects. Thus, taking steps to reduce blood pressure before pregnancy—including losing weight and reducing sodium intake—may reduce the risk of birth defects.

The study, "Maternal Exposure to Angiotensin Converting Enzyme Inhibitors in the First Trimester and Risk of Malformations in Offspring: A Retrospective Cohort Study," is the latest study from AHRQ's Effective Health Care Program. More information about the program can be found at www.effectivehealthcare.ahrq.gov. ■

Children's use of asthma controller drugs doubles

The proportion of children who used a prescribed controller drug to treat their asthma doubled from 29 percent in 1997–1998 to 58 percent in 2007–2008, according to the latest News and Numbers from the Agency for Healthcare Research and Quality (AHRQ).

Asthma controller drugs, such as corticosteroids, control inflammation, thereby reducing the likelihood of airway spasms; asthma reliever drugs, such as short-acting beta-2-agonists, open up the airways to make breathing easier; and leukotrienes help prevent asthma symptoms from occurring.

AHRQ also found that during the 1997–1998 and 2007–2008 timeframes:

- Use of inhaled corticosteroids, a type of controller drug, increased from 15.5 percent to 40 percent. Use of other controller drugs also increased: beta agonists (from 3 percent to 13 percent) and leukotrienes (from 3 percent to 34 percent).
- Use of reliever and oral corticosteroid drugs declined from 44 percent to 30 percent and from 17 percent to 9 percent, respectively.
- Average annual total spending for all asthma drugs more than quadrupled from $527 million to $2.5 billion. Specifically, spending for controller drugs grew from $280 million to $2.1 billion and for reliever drugs, the increase was $222 million to $352 million (all in 2008 dollars).
- Spending for oral corticosteroids fell from $25 million to $8 million (2008 dollars).

The data in this AHRQ News and Numbers summary 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, view Statistical Brief #341: *Changes in Children's Use and Expenditures for Asthma Medications, United States, 1997-1998 to 2007-2008* at www.meps.ahrq.gov. For more information, contact Bob Isquith at bob.isquith@ahrq.hhs.gov or call (301) 427–1539. ■

Thin evidence on non-drug strategies for treatment-resistant depression

A new Agency for Healthcare Research and Quality (AHRQ) research review has found there is insufficient evidence to evaluate whether non-pharmacologic treatments are effective for treatment-resistant depression. The Effective Health Care Program review summarizes evidence on the effectiveness and efficacy of four non-pharmacologic treatments: electroconvulsive therapy, repetitive transcranial magnetic stimulation, vagus nerve stimulation, and cognitive behavioral therapy or interpersonal psychotherapy. Limited evidence suggests that electroconvulsive therapy produced better outcomes than pharmacotherapy. Given that treatment-resistant depression research is in its infancy, the comparison of potential interventions is hampered by the variability of treatment-resistant depression definitions. These findings and future research needs are summarized in the review, *Non pharmacologic Interventions for Treatment-Resistant Depression in Adults*.

You can read and download the full review and other publications from AHRQ's Effective Health Care Program Web site at www.effectivehealthcare.ahrq.gov. ■

Evidence lacking on transition-of-care programs for heart attack and stroke patients after hospital discharge

There are few studies that support the adoption of any specific transition-of-care program as a matter of health policy, according to a new Agency for Healthcare Research and Quality (AHRQ) report on transition-of-care services for stroke and heart attack patients after hospital discharge. Despite advances in the quality of acute-care management of stroke and heart attacks, there are gaps in knowledge about effective programs that improve the post-hospitalization quality of care for these patients. Researchers at the AHRQ-supported Duke Evidence-based Practice Center conducted the evidence review of transition-of-care programs for heart attack and stroke patients and found no interventions that consistently improved functional recovery after stroke or heart attack. None seemed to consistently improve quality of life or factors such as anxiety or depression, according to the report. Led by DaiWai M. Olson, Ph.D., researchers found that some components of care transition, such as early supported discharge from the hospital with rehabilitation at home following stroke, appear to shorten the length of hospital stay without increased death rates or adverse effects on functional recovery. Additionally, specialty care followup after a heart attack was associated with reduced mortality. Researchers noted that additional research is needed before any conclusion can be reached that a specific care transition approach is effective and worthy of widespread adoption. A copy of the report, *Transition of Care for Acute Stroke and Myocardial Infarction Patients: From Hospitalization to Rehabilitation, Recovery, and Secondary Prevention*, is available online at http://effectivehealthcare.ahrq.gov. ■

AHRQ awards $34 million to expand fight against healthcare-associated infections

The Agency for Healthcare Research and Quality (AHRQ) recently awarded $34 million to expand the fight against healthcare-associated infections (HAIs). These infections affect patients in all health care settings including, at any one point in time, 1 in 20 patients in hospitals. These projects and others funded by the Agency help to attain the goals of the Department of Health and Human Services' (HHS) Partnership for Patients initiative, a nationwide public-private partnership that aims to make care safer for patients and reduce unnecessary return visits to the hospital, while making care less costly.

"Infections are not an inevitable consequence of health care; they are preventable," said AHRQ Director Carolyn Clancy, M.D. "With this investment, we are building on proven strategies to give doctors and health care teams the help they need to ensure that patients are safe from infections."

These awards include projects to develop, test, and spread the use of new modules of the Comprehensive Unit-based Safety Program (CUSP), a proven method to prevent and reduce HAIs. Since 2008, AHRQ has been promoting the nationwide adoption of CUSP to reduce central line-associated blood stream infections (CLABSIs). The new modules target three additional infections that are also areas of focus for the Partnership for Patients:

- Catheter-associated urinary tract infections, the most common HAI, which can occur in patients with urinary catheters.
- Surgical site infections, a complication of surgery that can occur at the incision site or deeper within the body.
- Ventilator-associated pneumonia, which can occur in patients who require mechanically assisted breathing and, as a result, have a higher risk of developing health care-associated pneumonia.

CUSP is a multipronged program that promotes a culture of patient safety; improved communication and teamwork among unit staff members; and the use of tools, including checklists, to support implementation of evidence-based practices for HAI prevention, such as hand washing and removing unnecessary catheters. A recent report from the ongoing AHRQ-funded project that is implementing CUSP to reduce CLABSIs found that these infections were reduced by an average of 33 percent. You can read the report at www.ahrq.gov/qual/clabsiupdate. AHRQ is continuing to fund this project to reduce CLABSIs, which is also an area of focus for the Partnership for Patients. For more information on CUSP, go to www.ahrq.gov/qual/cusp.htm.

Other newly funded projects include research on ways of reducing infections with methicillin-resistant *Staphylococcus aureus* (MRSA), a bacterium that is resistant to certain antibiotics, and *Clostridium difficile*, an organism that often affects patients on prolonged antibiotic treatment; the use of health care facility design to reduce HAIs; and alignment of work system factors to maximize and sustain successful HAI reduction efforts. A novel 36-month project will synthesize the results of AHRQ-funded HAI projects in fiscal years 2007-2010 to identify and promote the application of effective HAI prevention approaches and identify gaps in the HAI science base that can be filled with additional research. AHRQ is also continuing to fund research on HAIs in long-term care, dialysis facilities, and ambulatory care. A complete list of the projects funded in fiscal year 2011 can be found at: www.ahrq.gov/qual/haify11.htm.

AHRQ has funded research to fight HAIs since 2003. The Agency's ongoing work helps attain the goals of the Partnership for Patients, a national, public-private partnership of hospitals, employers, physicians, nurses, consumers, State and Federal governments, and other key stakeholders. More information on the Partnership for Patients is available at www.healthcare.gov/compare/partnership-for-patients.

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The fiscal year 2011 AHRQ-funded projects also contribute to implementing the strategies outlined in the HHS Action Plan to Prevent Healthcare-Associated Infections (www.hhs.gov/ash/initiatives/hai/index.html), which is aligned with the goals of the Partnership for Patients. Together, these HHS initiatives represent a broad partnership of Federal entities aiming for the common goal of improving health care, including the Administration on Aging, AHRQ, the Centers for Disease Control and Prevention, the Centers for Medicare & Medicaid Services, Department of Defense, Food and Drug Administration, Health Resources and Services Administration, Indian Health Service, the National Institutes of Health, and others. ■

AHRQ awards grants for the redesign and transformation of primary care practice

AHRQ has awarded four cooperative grants to support model State-level initiatives using primary care extension agents in small- and medium-sized independent primary care practices to assist with redesign and transformation. These "Infrastructure for Maintaining Primary Care Transformation (IMPaCT)—Support for Models of Multi-sector, State-level Excellence" grants are targeted to support four successful, established programs that will serve as models to others. They are:

- HEROs: New Mexico's Health Extension as a Model for Primary Care Transformation (University of New Mexico Health Sciences Center)
- North Carolina IMPaCT: Advancing and Spreading Primary Care Transformation (University of North Carolina)
- PA SPREAD: PA Spreading Primary Care Enhanced Delivery Infrastructure (Pennsylvania State Hershey College of Medicine)
- Primary Care Extension in Oklahoma: An Evidence-Based Approach to Dissemination and Implementation (University of Oklahoma Health Sciences Center). ■

AHRQ report shows that parent training is effective for treating young children with ADHD

A new AHRQ research review has found that formal parenting strategies are low-risk, effective methods for treating young children with attention deficit hyperactivity disorder (ADHD). Parenting strategies, also known as parent behavior therapy (PBT), are supported by strong evidence for children under the age of six, with no reported complications or harms. However, one large barrier to success of PBT is parents dropping out of therapy programs, the report found.

For children older than age six, the report found low evidence that medications such as methylphenidate (sold under the trade name Ritalin®) and atomoxetine (sold as Strattera®) used to treat ADHD symptoms are generally safe and effective for improving behavior. Evidence is unclear about the long-term effects of medications used for ADHD beyond 1 to 2 years.

The review prepared for AHRQ's Effective Health Care Program summarizes evidence on the effectiveness and adverse events of interventions for preschoolers at high risk for ADHD. The review also compares long-term effectiveness and adverse events of interventions for ADHD among persons of all ages, and summarizes patterns of identification and treatment for ADHD. These findings and future research needs are summarized in the review, *Attention Deficit Hyperactivity Disorder: Effectiveness of Treatment in At-Risk Preschoolers; Long-Term Effectiveness in All Ages; and Variability in Prevalence, Diagnosis, and Treatment.*

You can read and download the full review and other publications from AHRQ's Effective Health Care Program Web site at www.effectivehealthcare.ahrq.gov. ■

Updated report compares the effectiveness and risks of popular hypertension medications

A new, updated review from the Agency for Healthcare Research and Quality (AHRQ) compares the effectiveness and risks of popular hypertension medications. The review concludes that there is insufficient evidence to support a clinically meaningful difference in long-term outcomes associated with the use of angiotensin-converting enzyme inhibitors (ACEIs), angiotensin II receptor antagonists (ARBs), and direct renin inhibitors in individuals with essential hypertension, and calls for further research in the field.

A 2007 AHRQ research review compared two leading categories of treatment for high blood pressure—ACEIs and ARBs. The 2011 update, *Comparative Effectiveness of Angiotensin-Converting Enzyme Inhibitors (ACEIs), Angiotensin II Receptor Antagonists (ARBs), and Direct Renin Inhibitors for Treating Essential Hypertension*, includes new data comparing a third category—direct renin inhibitors. AHRQ also has released new clinician and consumer summaries of the review.

The research review, patient summary, clinician summary, continuing medical education activity, faculty slide set, and other materials are available on AHRQ's Effective Health Care Program Web site at www.effectivehealthcare.ahrq.gov. ■

New guides compare benefits and risks of GERD treatments

New plain-language publications from the Agency for Healthcare Research and Quality (AHRQ) compare the benefits and risks of treatments for gastroesophageal reflux disease (GERD), a digestive condition that affects millions of Americans and can be treated with medications or surgery. The publications are based on an updated evidence report recently released by AHRQ.

The report concluded that established drug-based therapy is effective. It also concluded that a type of surgical treatment known as laparoscopic fundoplication is at least as effective as drug-based medical treatment for some patients, but also had a higher risk of serious side effects. Another surgical treatment using an endoscopic variation of fundoplication also has been used to treat GERD, but AHRQ's analysis found there is not enough evidence to compare this type of surgery's effectiveness with other treatments.

GERD affects as many as 4 percent of Americans, making it one of the most common conditions in the United States. Those who have GERD can spend a significant amount of money on treatments—estimated at $3,355 annually per patient, the report noted. Approximately two-thirds of these costs are related to prescription drugs. However, it is commonly recognized that some drugs used to treat GERD, such as proton pump inhibitors (PPIs), are overused, according to the report.

"Because it affects so many Americans, GERD is an important disease both in terms of public health and cost," said AHRQ director Carolyn M. Clancy, M.D. "These new publications will help patients and their clinicians work together to find the best treatment option based on patient preferences and needs."

The AHRQ report found that PPIs tend to be more effective than other drugs, but comparisons show few consistent differences between PPI types or dosages. PPIs cause some side effects, such as diarrhea and headaches, but these were generally not serious.

GERD, sometimes known as acid reflux disease, occurs when stomach contents frequently back up into the esophagus. GERD often causes heartburn, which occurs when stomach acid irritates the esophagus. Some patients with GERD develop a condition called Barrett's esophagus, a disorder in which the lining of the esophagus is damaged by stomach acid, which can increase the risk of esophageal cancer.

Many patients have frequent, severe symptoms requiring long-term regular use of antireflux medications. For these people with chronic GERD, the goals of therapy usually are improvement in symptoms

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and quality of life and the prevention of complications such as Barrett's esophagus. However, experts remain unsure how best to achieve this.

The report also found that fundoplication, in which the upper portion of the stomach is wrapped and sewn around the esophagus, decreased, but did not eliminate, the use of antireflux medications. In addition, some patients who underwent antireflux surgery demonstrated improvement in reflux symptoms and quality of life. However, the report found severe side effects associated with surgery, including postoperative infections, difficulty swallowing, and postmeal bloating.

The new publications—a summary for consumers and a companion publication for clinicians—are based on the findings of a comprehensive report updated for AHRQ's Effective Health Care Program by the Tufts Medical Center Evidence-based Practice Center. The report and the consumer and clinicians publications are available at www.effectivehealthcare.ahrq.gov.

The report, *Comparative Effectiveness of Management Strategies for Adults with Gastroesophageal Reflux Disease*, is an update of a 2005 AHRQ report. It is the latest comparative effectiveness review from AHRQ's Effective Health Care Program. More information about the program can be found at www.effectivehealthcare.ahrq.gov. ■

AHRQ's announces CERTs awards

The Agency for Healthcare Research and Quality (AHRQ) recently awarded $30 million over the next 5 years in cooperative agreement grants to continue the Centers for Education and Research on Therapeutics (CERTs) Program. Kaiser Permanente's Center for Health Research in Portland, OR, will serve as the CERTs Scientific Forum to provide expanded scientific and logistical support for the CERTs National Steering Committee and CERTs-wide collaborations and outreach originating from six CERTs research centers. The six research centers and their therapeutic foci are:

- Brigham and Women's Hospital in Boston (health information technology)
- Cincinnati's Children's Hospital Medical Center (pediatric health care quality)
- Duke University (cardiovascular disorders)
- Rutgers, The State University of New Jersey (mental health disorders)
- University of Alabama at Birmingham (musculoskeletal disorders)
- University of Illinois at Chicago (medication safety).

The CERTs program, overseen by AHRQ in partnership with the U.S. Food and Drug Administration, was originally authorized by Congress in 1997 to examine the benefits, risks, and cost-effectiveness of therapeutic products; educate patients, consumers, doctors, pharmacists, and other clinical personnel; and improve quality of care while reducing unnecessary costs by increasing appropriate use of therapeutics and preventing adverse effects and their medical consequences. For more information about the CERTs Program, go to www.certs.hhs.gov. ■

AHRQ awards $4.5 million to create clinical preventive services research centers

The Agency for Healthcare Research and Quality (AHRQ) awarded 3-year grants totaling $4.5 million to support research in three centers that will focus on improving clinical preventive services and practices such as screening, counseling, and use of preventive medications for patients. The project will be led by three universities and includes a separate award for coordination and evaluation of the research.

The innovation for these centers is made possible through the Prevention and Public Health Fund, part of the Affordable Care Act, and is designed to expand and sustain the necessary capacity to prevent disease, detect it early, and manage conditions before they become severe. States and communities are also funded to acquire the resources they need to promote healthy living. Through this initiative, the National Prevention Strategy was established to bring together leaders across the government to establish priorities for the new frontiers of knowledge and implementation of preventive health.

Consistent with the National Prevention Strategy of the U.S. Department of Health and Human Services,

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Clinical preventive services research centers

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AHRQ planned a significant research effort to establish the Research Centers for Excellence in Clinical Preventive Services that are located in Chicago, IL, Chapel Hill, NC, and Aurora, CO. The centers will serve to advance the national research agenda in clinical preventive services in three specific areas:

- Health equity—to learn more about how to reduce disparities in the use of clinical preventive services.
- Patient safety—to better the understanding of risks and harms associated with clinical preventive services.
- Health systems implementation—to study how primary care practices, public health resources, and the larger health care system can improve the delivery of evidence-based clinical preventive services.

The centers will be located at the following institutions:

- Northwestern University, Chicago—Award: $1.4 million. The Center for Advancing Equity in Clinical Preventive Services will develop and test interventions to achieve equity in clinical preventive services by focusing on health literacy, health communication, quality improvement methods, and health information technology.
- University of North Carolina (UNC) at Chapel Hill—Award: $1.5 million. The UNC Research Center for Excellence in Clinical Preventive Services will focus on research to improve patient safety and reduce potential harms to patients by improving the appropriate use of clinical preventive services in primary health care practices.
- University of Colorado, Anschutz Medical Campus—Award: $1.5 million. The Center for Excellence in Research in Implementation Science and Prevention will involve primary care and public health experts to conduct research on how to increase use of preventive health services within primary health care settings while meeting national public health goals.

In addition, Abt Associates, Cambridge, MA, has received an award to help coordinate and evaluate the research being conducted at the three centers. More information about AHRQ's Center for Primary Care, Prevention, and Clinical Partnerships, is available at www.ahrq.gov/about/cp3. ■

HCUP releases 2009 facts and figures report on hospital-based care

The Agency for Healthcare Research and Quality (AHRQ) recently released *HCUP Facts and Figures: Statistics on Hospital-Based Care in the United States, 2009* available on the HCUP-US Web site (http://hcup-us.ahrq.gov/reports.jsp). The report is an update and expansion of the HCUP Facts and Figures 2008 report and uses the Nationwide Inpatient Sample (http://hcup-us.ahrq.gov/nisoverview.jsp) to present information about hospital care in 2009 and trends in care between 1993 and 2009.

HCUP Facts and Figures contains an overview of hospital-related topics, including general characteristics of U.S. hospitals and the patients treated; the most common diagnoses, conditions, and procedures associated with inpatient stays; the costs and charges associated with hospitalizations; and the payers for inpatient stays. This year's report features a special chapter on women's health.

For more information, please visit the HCUP-US Web site (www.hcup-us.ahrq.gov) or contact HCUP User Support at hcup@ahrq.hhs.gov. ■

HCUP releases 2009 Nationwide Emergency Department Sample

The Healthcare Cost and Utilization Project (HCUP) released its 2009 Nationwide Emergency Department Sample (NEDS). The NEDS is the largest all-payer emergency department (ED) database in the United States. The NEDS was created to enable analyses of ED utilization patterns and support public health professionals, administrators, policymakers, and clinicians in their understanding and decisionmaking about this critical source of health care.

Constructed using records from both the HCUP State Emergency Department Databases and the State Inpatient Databases, the 2009 NEDS contains data from nearly 29 million ED visits and encompasses all encounter data from more than 950 hospital-based EDs in 29 States. It approximates a 20-percent stratified sample of EDs from community hospitals. Weights are provided to calculate national estimates pertaining to

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Nationwide Emergency Department Sample

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the approximately 130 million ED visits that took place in 2009. The NEDS provides information on "treat-and-release" ED visits, as well as ED visits in which the patient was admitted to the same hospital for further care.

The NEDS has many research applications as it contains information on hospital and patient characteristics, geographic region, and the nature of the ED visits (e.g., common reasons for ED visits, including injuries). The database includes information on all visits to the ED, regardless of payer—including persons covered by Medicare, Medicaid, private insurance, and the uninsured.

The 2009 NEDS can be purchased through the HCUP Central Distributor at http://hcup-us.ahrq.gov. More information about the NEDS can be found on the HCUP-US Web site at http://hcup-us.ahrq.gov/nedsoverview.jsp. ■

AHRQ's health IT 2010 annual report is available

AHRQ's Health Information Technology Portfolio has released its 2010 Annual Report. This Annual Report describes health information technology (IT) research areas and progress at both the portfolio and project levels. The Portfolio is summarized by a number of broad categories of projects, including portfolio strategic goals, AHRQ business goals, funding mechanisms, geographic distribution, and lifetime funding as of 2010.

The report also describes activities that took place throughout the year and synthesizes challenges, outputs, and successes of the 180 active projects. The report also includes an individual project summary for each of the 121 grants and 59 contracts, as well as project overviews and other information. The report also highlights the dissemination activities of the projects and the AHRQ Health IT team. You can view the abridged report at http://healthit.ahrq.gov/portal/server.pt/community/ahrq-funded_projects/654/health_it_portfolio_annual_report/16758. ■

Comparative effectiveness report on osteoarthritis updated

An updated review from the Agency for Healthcare Research and Quality (AHRQ) compares the effectiveness and safety of analgesics in the treatment of osteoarthritis. Overall, no clear differences in effectiveness of different non-steroidal anti-inflammatory drugs were found, but there were potentially important differences in the risk of serious harms.

The update, *Comparative Effectiveness and Safety of Analgesics for Osteoarthritis—An Update of the 2006 Report,* includes new research that better addresses the comparative effectiveness and safety of oral and topical medications for osteoarthritis. This and many other evidence-based decisionmaking resources are available on AHRQ's Effective Health Care Program Web site at www.effectivehealthcare.ahrq.gov. ■

AHRQ releases new CME/CE courses

The Agency for Healthcare Research and Quality (AHRQ) has released three new continuing medical education/continuing education (CME/CE) modules based on comparative effectiveness research reviews from the Effective Health Care Program:

- *Comparative Effectiveness of Pain Management Interventions for Hip Fractures: A Feedback-Based Learning Activity* (video).
- *Updates on the Comparative Effectiveness of Renin-Angiotensin-Aldosterone System Therapies for Essential Hypertension: A Feedback-Based Learning Activity* (video).
- *Updates on the Treatment of Essential Hypertension: A Summary of AHRQ's Comparative Effectiveness Review of Angiotensin-Converting Enzyme Inhibitors, Angiotensin II Receptor Blockers, and Direct Renin Inhibitors* (print monograph).

The modules are available free of charge at www.ce.effectivehealthcare.ahrq.gov.

Copies of the reports and more information on AHRQ's Effective Health Care Program are available at www.effectivehealthcare.ahrq.gov. ■

Bannunu, R.R., Dvorak, T., Obadan, N., and others. (2011, August). "Comparative evaluation of radiation treatments for clinically localized prostate cancer: An updated systematic review." (Contract No. 290-07-10055). *Annals of Internal Medicine* 155(3), pp. 171-178.
A systematic review of 10 randomized, controlled trials and 65 nonrandomized studies focusing on radiation treatments for localized prostate cancer found a lack of high-quality comparative evidence. It is therefore difficult to make any definitive statements on the effectiveness of radiation treatment compared to no treatment in patients with localized prostate cancer.

Berkman, N.D., Sheridan, S.L., Donahue, K.E., and others. (2011, July). "Low health literacy and health outcomes: An updated systematic review." (Contract No. 290-07-10056). *Annals of Internal Medicine* 155(2), pp. 97-107.
A new review of 96 studies finds that low health literacy is associated with not only a poorer ability to understand and follow medical advice, but also poorer health outcomes. Patients with low health literacy tend to have more hospitalizations and emergency care visits, as well as lower rates of mammograms and flu shots. The review also found that low health literacy can explain racial disparities in some outcomes.

Blustein, J., Weissman, J.S., Ryan, A.M. and others. (2011, June). "Analysis raises questions on whether pay-for-performance in Medicaid can efficiently reduce racial and ethnic disparities." (AHRQ grant HS18546). *Health Affairs* 30(6), pp. 1165-1175.
Massachusetts took pay-for-performance to a new level by using it as a way to target racial and ethnic disparities in hospital care for Medicaid patients. Researchers recently described how this innovative program was implemented, the challenges it encountered, and what outcomes were achieved. Although early in its implementation, the pay-for-performance program has found little evidence of racial or ethnic disparity in hospital care in Massachusetts.

Marawar, S., Girardi, F.P., Sama, A.A., and others. (2011). "National trends in anterior cervical fusion procedures." (AHRQ grant HS15114). *Spine* 35(15), pp. 1454-1459.
An analysis of national trends in anterior cervical discectomy and fusion (ACDF) surgery for degenerative disc disease found the highest increase in utilization among patients 65 years of age and older. Between 1990 and 2004, there was an 8-fold increase in the total number of ACDF surgeries performed. The age of patients undergoing the procedure increased from 47 to 50, according to data from the National Hospital Discharge Survey.

McBee-Strayer, S., Gardner, W., Kelleher, K., and others. (2011). Monitoring pediatric antidepressant use. (AHRQ grant HS17258). *Behavioral Healthcare* 30(10), pp. 19-21.
This article describes the Pharmaceutical and Safety Tracking System (PhaST), an automated voice-response computer system that has been programmed to call new pediatric patients prescribed antidepressant medications and to page a triage staff member to do risk assessment if a concern is detected. The researchers report on the status of a randomized trial that compares monitoring using PhaST with usual care in a large, urban pediatric health care system.

Percac-Lima, S., Aldrich, L.S., Gamba, G.B., and others. (2011). Barriers to follow-up of an abnormal Pap smear in Latina women referred for colposcopy. (AHRQ grant HS19161). *Journal of General Internal Medicine* 25(11), pp. 1198-1204.
Researchers have identified four primary barriers to women having colposcopy: (1) anxiety or fear of the test; (2) difficulty scheduling the test around work and/or child care commitments; (3) poor communication with patients regarding the appointment—including lack of explanation about the reason for the new test; and (4) concern about pain. The study participants were 40 Latina women, of whom 75 percent spoke only Spanish.

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Selker, H.P., Ruthazer, R., Terrin, N., and others. (2011). "Random treatment assignment using mathematical equipoise for comparative effectiveness trials." (AHRQ grant HS10280). *Clinical Translational Science* 4(1), pp. 10-16.
This study explored whether patients for whom there is no clear preference among treatment options (equipoise) could be included in a trial when the average superiority or inferiority of a therapy has been established. To illustrate this approach, the researchers used logistic regression models of treatment outcomes for acute ST elevation myocardial infarction for which either thrombolytic therapy of percutaneous coronary intervention is potentially life-saving.

Sexton, J.B., Berenholtz, S.M., Goeschel, C.A., and others. (2011). "Assessing and improving safety climate in a large cohort of intensive care units." (AHRQ grant HS14246). *Critical Care Medicine* 39(5), pp. 934-939.
This study evaluated the impact of a comprehensive unit-based safety program (CUSP) on safety climate in a large cohort of intensive care units across the State of Michigan. Over a 2-year period (2004-2006), mean safety climate scores significantly improved from 42.5 percent to 52.2 percent. Five of seven safety climate items significantly improved in this period.

Sorenson, A.V., Harrison, M.I., Kane, H.L., and others. (2011). "From research to practice: Factors affecting implementation of prospective targeted injury-detection systems." *British Medical Journal of Quality and Safety* 20, pp. 527-533. Reprints (AHRQ Publication No. 11-R069) are available from the Agency for Healthcare Research and Quality.*
This paper describes factors shaping the implementation of prospective targeted injury-detection systems (TIDS) for adverse drug events (ADEs) and nosocomial pressure ulcers (PrU). The five participating hospitals were more successful in implementing the low-complexity PrU-TIDs than the high-complexity ADE-TIDs. In the latter case, the complexity of TIDS and alignment with existing workflows affected implementation and prospects for sustainability.

Street, R. L., and Haidet, P. (2011). "How well do doctors know their patients? Factors affecting physician understanding of patients' health beliefs." (AHRQ grant HS10876). *Journal of General Internal Medicine* 26(1), pp. 21-27.
Using the recently developed CONNECT survey instrument, the researchers examined the degree of concordance between physicians' perceptions of their patients' health beliefs and patients' own reports of those beliefs. They found that physicians had a relatively poor understanding of their patients' beliefs. On four of six measured domains, physicians assumed a shared understanding when this was not the case.

Stukenborg, G.J. (2011). "Hospital mortality risk adjustment for heart failure patients using present on admission diagnoses." (AHRQ grant HS17693). *Medical Care* 49(8), pp. 744–751.
The author uses California hospital discharge records for heart failure from 2007 to test whether more comprehensive use of diagnoses noted as "present on admission" (POA) can improve mortality rate comparisons among hospitals. The author's study of 91,511 discharges from 365 California hospitals confirms that the use of POA secondary diagnoses in mortality risk adjustment reduced the number of hospitals originally identified as having higher-than-expected mortality for heart failure by 50 percent.

Teruya, C., Longshore, D., Andersen, R.M., and others. (2011). "Health and health care disparities among homeless women." (AHRQ grant HS08323). *Women & Health* 50(8), pp. 719-736.
The objective of this study was to provide data to boost understanding of racial/ethnic disparities among homeless women by comparing blacks, Latinas, and whites according to a broad range of population, health, and health care measures. The researchers also sought to identify factors associated with unmet needs for health care. The study found that white, non-Latina women were more likely to report unmet needs than blacks and Latinas. Women suffering from drug abuse, violence, or depression were most in need of care.

Trivedi, R.B., Nieuwsma, J.A., and Williams, J.W. (2011). "Examination of the utility of psychotherapy for patients with treatment resistant depression: A systematic review." (AHRQ grant T32 HS00079). *Journal of*

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***General Internal Medicine* 26(6), pp. 643-650.**
This systematic review aimed to determine whether substituting or augmenting current antidepressant treatment with psychotherapy is effective for treating adults with treatment-resistant depression. The researchers found that current evidence is sparse and reveals mixed results. Three good quality studies, one fair quality study, and two poor quality studies demonstrated that psychotherapy may be beneficial either as a substitution or an augmentation strategy. Psychotherapy, the authors concluded, appears to be effective and is a reasonable treatment option for treatment-resistant depression.

Warholak, T.L., Menke, J.M., Hines, L.E., and others. (2011). "A drug-drug interaction knowledge assessment instrument for health professional students: A Rasch analysis of validity evidence." (AHRQ grant HS17001). *Research in Social and Administrative Pharmacy* 7, pp. 16-26.
The objective of this study was to assess the validity of a drug-drug interaction (DDI) knowledge assessment instrument in a health professional student population. Given 15 medication pairings, students were asked to identify an appropriate management strategy and to identify specific DDIs. The instrument showed good reliability and validity, but the ability of the participants to identify DDIs and select an appropriate management strategy was low.

Weingart, S.N., Zhu, J., Chiapetta, L., and others. (2011). "Hospitalized patients' participation and its impact on quality of care and patient safety." (AHRQ grant HS17950). *International Journal for Quality in Health Care* 23(30), pp. 269-277.
The researchers examined the nature and extent of patient participation and its impact on care by conducting a multi-faceted study of patient safety in U.S. acute care hospitals. They found that most hospitalized patients participated in some aspects of their care, such as assessment of overall quality of care and the presence of adverse events. Participation was strongly correlated with favorable judgments about hospital quality and reduced the risk of experiencing an adverse event.

Werner, R.M., Konezka, R.T., Stuart, E.A., and Polsky, D. (2011, April). "Changes in patient sorting to nursing homes under public reporting: Improved patient matching or provider gaming?" (AHRQ grant HS16478). *Health Services Research* 46(2), pp. 555–571.
This study found a significant change in patient sorting to skilled nursing homes (SNFs) after public reporting was initiated in nursing homes in 2002. The researchers compared the percentages of short-stay patients at a SNF without moderate to severe pain, without delirium, and whose walking remained independent or improved. Beginning in 2002, there was increased matching of patients for pain risk, with high-risk patients going more often to high-quality SNFs. However, increased matching was not seen for risk of delirium or impaired walking.

Westreich, D., Cole, S.R., Funk, M.J., and others. (2011). "The role of the c-statistic in variable selection for propensity score models." (AHRQ grant HS17950). *Pharmacoepidemiology and Drug Safety* 20, pp. 317-320.
The authors discuss the estimation of the propensity score itself and the use and misuse of the c-statistic in this process. They argue that the c-statistic, neither necessary nor sufficient to ensure the control of confounding, is of limited value for covariate selection into a propensity score model. It provides no certainty that all measured confounders have been balanced between treatment groups, or that interactions among covariates or higher-order terms have been balanced.

Williams, C., Larsen, U., and McCloskey, L.A. (2011). "The impact of childhood sexual abuse and intimate partner violence on sexually transmitted infections." (AHRQ grant HS11088). *Violence and Victims* 35(6), pp. 787-798.
The researchers investigated how different forms of violence experienced by women across the lifespan are associated with sexually transmitted infections (STIs), building on prior literature considering childhood sexual abuse (CSA) and adult victimization separately. Having an STI was associated with experiencing both CSA and intimate partner violence

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(IPV). Women who experienced both CSA and IPV were much more likely to have been diagnosed with an STI during their current relationship compared with non-abused women.

Winthrop, K.L., Baxter, R., Liu, L., and others. (2011). "The reliability of diagnostic coding and laboratory data to identify tuberculosis and nontuberculous mycobacterial disease among rheumatoid arthritis patients using anti-tumor necrosis factor therapy." (AHRQ grant HS17552). *Pharmacoepidemiology and Drug Safety* 20, pp. 229-235.

The researchers developed and validated algorithms to identify tuberculosis and nontuberculous mycobacterial disease in an effort to facilitate future drug safety studies assessing these opportunistic infections associated with immunosuppressant therapies used for rheumatoid arthritis and other conditions. Their findings suggest that in health care systems where microbiologic information is electronically recorded, search strategies identifying positive mycobacterial culture results provide highly sensitive and accurate ways to identify these infections.

Zheng, H., Zhang, W., Ayanian, J.Z., and others. (2011, June). "Profiling hospitals by survival of patients with colorectal cancer." (AHRQ grant HS09869). *HSR: Health Services Research* 46(3), pp. 729-746.

The study's objective was to profile hospitals by survival rates of colorectal cancer patients in multiple periods after initial treatment. The researchers found that the quality of care provided by a hospital system is somewhat consistent across the immediate postoperative and long-term follow-up periods. They concluded that combining mortality profiles across longer periods may improve the statistical reliability of outcome comparisons. ■

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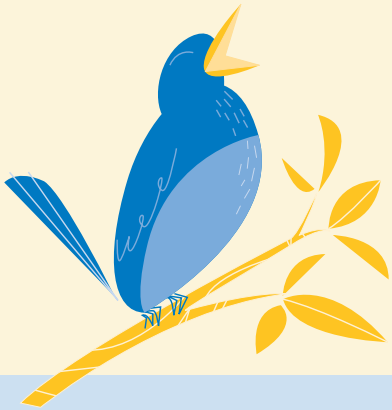

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