



RESEARCH ACTIVITIES

U.S. Department of Health and Human Services | No. 369, May 2011

Social media use is one of many innovations in care delivery transforming the frontlines of care

For many of us, medical innovations mean genetically engineered drugs, novel devices like neuroprosthetic brain implants, and cutting-edge procedures such as robotic surgery. But a new type of innovation is also transforming the frontlines of care—innovation in how care is delivered. These innovations range from telemedicine visits with sick children while they are at school to use of social media to deliver therapy and manage and monitor chronic disease.

These innovations are profiled on the Agency for Healthcare Research and Quality’s (AHRQ) Health Care Innovations Exchange Web site

(www.innovations.ahrq.gov). The site offers busy health professionals and researchers opportunities to share, learn about, and ultimately adopt evidence-based innovations and tools suitable for a range of health care settings and populations. Individuals can report innovations and recount their successes and failures on the Web site. Others can learn from their innovations and/or offer comments, as well as participate in interactive Webinars and the Web-based discussion series, “Chats on Change.” “The focus is on changing service delivery or adopting an innovation in any setting,” says Judi Consalvo, AHRQ Program Analyst.

sessions to improve their memory and other cognitive functions.

Using an Internet-based secure instant messaging platform, an office-based therapist conducts the rehabilitation session with patients typically sitting at their home or library computer. During the sessions, the therapist and patient work through a memory notebook to improve memory. The patient can indicate emotions such as frustration or satisfaction during the course of the sessions via “smiley” faces, font color, or font size. After completing 60 online sessions, the pilot group of 14 adults were rated by their families as having fewer memory problems and better mood, as well as improved use of compensation strategies, such as calendar use.

Notes Dr. Bergquist, “One of our participants with a history of severe traumatic brain injury from a motor vehicle crash several years ago reported that the calendar training she received helped her to better structure and organize her life. This allowed her to feel a better sense of self-efficacy and mastery.... She told us recently, ‘I still miss our times together.... I will forever utilize all the help and

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Instant messaging to treat traumatic brain injury

“Social media innovations, such as instant messaging and mobile phone applications, can engage patients and improve their health,” says Mary Nix, M.S., AHRQ lead on the Health Care Innovations Exchange project. For example, Thomas Bergquist, Ph.D., A.B.P.P., and his colleague, Sherrie Hanna, M.A., at the Mayo Clinic have investigated the feasibility of providing adults with moderate-to-severe traumatic brain injury with remote cognitive rehabilitation

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From the Director



We are approaching a critical juncture in the confluence of technology and health care.

Innovative use of Web-

based and mobile technology is enhancing delivery of care by putting consumers at the center of their own care and allowing them to get data when and where they need it.

And they and their doctors are ready for it. According to a 2010 study released by PricewaterhouseCoopers:

- Forty-two percent of consumers surveyed by the Health Research Institute said they would pay for remote monitoring devices and a monthly service fee to send data automatically to their doctors.
- About 88 percent of physicians would like their patients to be

able to monitor their health on their own.

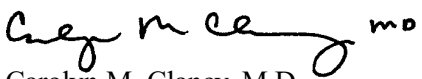
- Nearly 80 percent of Medicaid patients are texting regularly, and about 70 percent of people with two or more chronic illnesses own cell phones.

Web-based and mobile technology, critical to the future of health system transformation, is one of numerous types of innovations featured on AHRQ's Health Care Innovations Exchange Web site. The site provides clinicians and researchers with opportunities for sharing, learning about, and ultimately adopting evidence-based innovations and tools suitable for a range of health care settings and patient populations.

As our cover story illustrates, patients with traumatic brain injury can instant message with their doctor to track progress and get feedback while doing memory-improvement exercises. Distressed patients can use mobile phone applications to assess their mood

and access cognitive behavioral therapies to improve it at that moment. Asthma patients can track their breathing capacity and get immediate feedback from clinicians via mobile phone on how they are doing and, if necessary, instructions on medication adjustment, thus avoiding trips to the emergency department.

This is just the tip of the iceberg when it comes to the work going on at AHRQ to make the most of and learn from leaders in technological, social media, and other innovations that put the patient at the center of health care. I urge clinicians to be champions of technology and innovation to make sure that we reach as many people as possible while we have the momentum for system transformation. At AHRQ we will continue to seek out and learn from private-sector innovations in care delivery that put the patient at the center of care.


Carolyn M. Clancy, M.D.

Research Activities is a digest of research findings that have been produced with support from the Agency for Healthcare Research and Quality. *Research Activities* is published by AHRQ's Office of Communications and Knowledge Transfer. The information in *Research Activities* is intended to contribute to the policymaking process, not to make policy. The views expressed herein do not necessarily represent the views or policies of the Agency for Healthcare Research and Quality, the Public Health Service, or the Department of Health and Human Services. For further information, contact:

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things I learned from you during our project!”

Persons with brain injury often live far from specialized rehabilitation services and find travel-related activities challenging, so receiving therapy using technology such as instant messaging can potentially supplement some of their clinic visits, thereby reducing the burden. Also, once treatment gains have been realized in a traditional outpatient clinical setting, continuing treatment using this approach helps generalize those treatment gains into day-to-day life.

“This approach has the potential to provide treatment to persons who otherwise might not receive it,” notes Dr. Bergquist. “Further research is required and there are still hurdles to overcome in terms of reimbursement and issues with cross-State licensure. For example, we could provide these services anywhere in the country, but health care professionals are typically licensed to provide care only in the State in which they practice. If the patient is located in another State from where the psychologist or practitioner is licensed, this would limit the ability to submit claims for those telehealth services.” Dr. Bergquist also points out that the Centers for Medicare & Medicaid Services and many other private payers are reimbursing psychologists and other health care providers for telehealth services across the United States. However, Medicaid reimbursement varies from State to State.

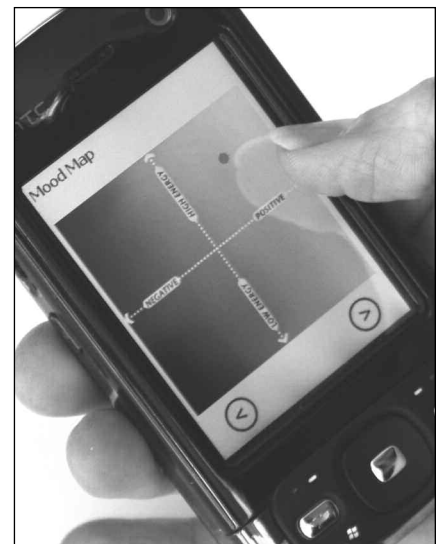
Cognitive behavioral therapy via mobile phone

Driven by “an interest in interaction design to destigmatize therapy and

make it more playful,” Margaret E. Morris, Ph.D., of Intel Corporation, is developing and testing mobile phone applications that mirror cognitive behavioral therapy techniques for people to use who can’t or don’t want to see a therapist and as an adjunct to weekly face-to-face therapy sessions. These applications prompt individuals to assess their moods throughout the day and provide in-the-moment support. The touchscreen Mood Map, which Dr. Morris will soon test with larger groups on the Android and iPhone, invites people to plot their mood throughout the day and view trends to investigate what circumstances spark a drop or rise in mood. Based on their emotional state, individuals can select from a variety of self-directed therapeutic applications involving cognitive restructuring and relaxation exercises.

The Mind Scan exercise encourages cognitive reappraisal of thoughts that can lead to anger and depression. For example, one prompt asks the person to consider, “Might I be exaggerating the urgency of the situation?” In the breathing exercise on the application, a blue circle expands and contracts slowly to encourage deliberate and slower breathing, which may help reduce anxiety. The Body Scan includes an outline of a human figure with rhetorical questions about where the user might be holding tension, for example, “Are you furrowing your brow?” Participants can activate the breathing, Body Scan, and Mind Scan features directly or can select “coaching” to access a series of visual prompts for effective handling of interpersonal conflict. All of these exercises can be completed in a minute or less.

In a 1-month pilot study,



The touchscreen mood map people can use to track their daily moods.

participants described greater self-awareness of their emotional patterns. Based on these insights, many used the mobile therapies to improve specific relationships and deal more effectively with stressful situations. Case studies reported in a recent paper (www.jmir.org/2010/2/e10) illustrate how these tools were used to manage personal and professional stress.

“The project was motivated by a need to extend the reach of psychotherapy—to bring therapy tools to far more people than those who have access today and to create short mobile experiences that are helpful in specific situations during daily life rather than or in addition to weekly therapy sessions,” notes Dr. Morris. When asked about technology replacing human care, she responds, “I don’t expect mobile therapies to replace or put psychologists out of business, but these tools may make their work more effective.”

Dr. Morris points out that the therapy session is a snapshot in time, in which the therapist sees a

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person in a supportive environment. But how are they doing 2 or 3 days later in different circumstances? The mobile phone application allows a person to assess how they are feeling at any point in time. Tracking daily moods allows the person and the therapist to see a pattern over time and the person's strengths and weaknesses during certain parts of the day or in certain circumstances.

For example, if a patient with social anxiety realizes from viewing her mood trends that she is most confident when walking home from work each day, she and her therapist may decide that this is a particularly apt time to practice social risk taking, such as initiating a conversation with a stranger. Ethan Gorenstein, Ph.D., of Columbia University, whose treatment protocols informed the mobile therapies, has also tested the application as an adjunct to brief cognitive therapy for anger reduction.

Individuals not in therapy may benefit from these applications as well. "I was impressed by how quickly people internalized the content and how creatively they applied it to the nuances of their lives," said Dr. Morris. She cites the example of one woman who used the conflict mapping and constructive confrontation exercises with her son to help process an argument that they had and his frustration with a teacher.

Dr. Morris found that once individuals mapped and understood their own moods and reactions to situations, they started thinking about how they would map someone else's mood and started using it with their partners or friends to share Mood Map

information and improve relationships. "Any tools we give people are going to be used interpersonally. The sharing that we observed in our studies makes me hopeful about the viral nature of these tools and their potential to benefit a lot of people," enthuses Dr. Morris.

Mobile phone management of adolescent asthma

A social media project to improve asthma control was led by Jonathan Mesinger, Ph.D., of the San Mateo Medical Center Asthma Project, and Gregory J. Seiler of BeWell Mobile Technology, Inc. They pilot-tested the mobile phone disease management application software developed by BeWell on 50 Hispanic adolescents with severe, persistent asthma. The patients recorded their symptoms on a mobile phone at least once a day by answering 20 questions in an electronic diary, which they found fun and convenient to use.

"The use of mobile technology for chronic disease self-management was a definite life-changer for some of our adolescent patients with asthma," comments Dr. Mesinger. "Since they were so comfortable with the technology already, the few who successfully completed the program actually were helpful in customizing the application for their own cohort."

Using their mobile phones, the adolescents keyed in their peak breathing capacity (peak flow meter reading), medication used, activity level, and symptoms such as wheezing. An asthma care coordinator received and monitored patient information. The goal was to better manage the adolescents' asthma to prevent exacerbations that can lead to frightening and

AHRQ's Health Care Innovations Exchange (HCIE) (www.innovations.ahrq.gov)

- HCIE project began September 2006 and HCIE Web site went live April 2008.
- Panel of 13 experts and 8-member Editorial Board provide guidance to HCIE (www.innovations.ahrq.gov/about/experts).
- Searchable database of more than 550 innovations and 1,575 quality tools that can help solve problems, improve health care quality, and reduce care disparities.
- The database can be searched by medical condition, population group, setting or stage of care, care process, quality tools, and other categories.
- Includes Webinars and Web-based discussions, "Chats on Change."
- Hosts the Community Care Coordination Learning Network, which helps communities identify and connect at-risk populations to needed care.
- AHRQ supports some innovations, but many are supported by other organizations.
- You can submit an innovation or quality tool or send questions or comments to info@innovations.ahrq.gov.

costly emergency department (ED) visits and hospitalizations.

The disease management platform allowed the coordinator to give adolescents instant feedback based

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on their electronic diary information. Patients could be rewarded or encouraged for stable health status, could receive a near-instant message on suggested changes to medication or other minor modification to their regimen if symptoms increased, as well as reminders to refill prescriptions, schedule tests, or order medical supplies. If the patient submitted information that indicated a risk to their health, for example, a substantial drop in peak flow, the nurse would alert the patient and typically call them about next steps.

After 8 months, this approach enhanced compliance with

medication, which, in turn, led to better patient outcomes (e.g., improved average peak flow and less use of rescue inhalers). Patients also had fewer than five total unscheduled physician or ED visits for asthma-related conditions. By comparison, the typical child or adolescent with severe persistent asthma has three to five ED visits each per year. Participants missed an average of 0.38 school days per year due to asthma-related complications, well below the national average of 3.7 days for similar populations.

“Because many of our patients are monolingual Spanish speakers, the attention paid by BeWell Mobile in translating all the screens and

instructions into Spanish was key to making this work, especially for the parents of the younger patients who participated,” notes Dr. Mesinger. “If the application is available for every platform, so that any cell phone could be used to upload and download information from the portal, some of the initial hurdles related to cost and access could be overcome. Increased widespread use of mobile technology at all levels of society makes this application a critical piece in patient care and empowers patients to control and report on their own health.” ■ *GSM*

Outcomes/Effectiveness Research

Patient Web portals improve diabetes care and outcomes

The care and outcomes for patients with diabetes can be improved by providing access to patient Web portals (PWP), concludes a new study. PWPs are secure Web sites that give patients access to their electronic health record, medical records, explanatory health information, and their health care providers (via e-mail), according to a new systematic review. The authors reviewed 26 articles that assessed either the impact of PWPs on care quality or outcomes, or the usability of the portals, on a total of 2,436 participants.

Among the 15 studies (involving 2,165 patients) that sought to evaluate the clinical impact of PWPs was a randomized, controlled trial (with 104 participants followed for 1 year) of a PWP that delivered a diabetes self-management program. This study found that diabetes patients given access to the PWP—and who actually used the portal—had a significant decline in diabetes distress compared with patients who had access to the portal, but did not use it. Another evaluation study found that, over a 6-month period, a composite process score representing the quality of diabetes care (in terms of clinical diabetes monitoring)

improved for 62 percent of patients given access to a PWP, but only 43 percent for patients in the “usual care” control group.

Another 11 studies (involving a total of 271 patients or health care providers) assessed the usability of such systems through focus groups, interviews, surveys, or “think aloud” procedures. Several of these studies highlighted the value patients and providers place on relationships, with many exploring the extent to which PWPs might hamper or augment patient-provider relationships. The usability studies also allowed PWP developers to better understand the needs of patients, and to give providers a collaborative role in developing and improving the portal. The study was funded in part by the Agency for Healthcare Research and Quality (HS18168).

More details are in “Patient Web portals to improve diabetes outcomes: A systematic review,” by Chandra Y. Osborn, Ph.D., M.P.H., Lindsay Satterwhite Mayberry, M.S., Shelagh A. Mulvaney, Ph.D., and Rachel Hess, M.D., M.S., in the December 2010 *Current Diabetes Reports* 10(6); pp. 422-435. ■ *DIL*

Genotype information can make the predicted therapeutic dose of warfarin more accurate

When treating patients with the anticoagulant warfarin, it is important that the dose is therapeutic, that is, enough to prevent abnormal blood clotting, but not so much that it causes bleeding. Including genotype information along with clinical information for patients requiring warfarin treatment may produce a more accurate estimated therapeutic dose of the drug than clinical information alone, but may not appreciably change patient outcomes, according to a new study. Until very recently, warfarin had been the only oral drug available for anticoagulation therapy. However, its optimal dosage can vary widely among patients.

Previous studies show that 35 percent of the variation among patients in therapeutic warfarin dose is due to differences in three drug-metabolizing enzyme genes

(CYP2C9, CYP4F2, and VKORC1). Calculations that took into account the presence of these gene variants—the intervention arm of the trial—gave estimates closer to the actual therapeutic dose twice as often as did estimates in the control arm that relied on clinical information only (65.3 percent vs. 34.7 percent).

Using genotype information did not improve the patient's time in the therapeutic target range during the first 14 days of treatment (a median of 28.6 percent for patients in both trial arms) or the risk of adverse events (8 in each trial arm) compared with clinical information alone.

The researchers collected blood samples at enrollment in the trial from 230 new patients who needed anticoagulant therapy. The patients randomly assigned to the intervention arm had their blood sample immediately genotyped for

the three gene variants. Those randomized to the control arm had their blood samples frozen for later use. Primary endpoints were the absolute prediction error relative to the therapeutic dose and the time the drug dose was in the therapeutic range during the first 14 days of therapy. Secondary endpoints included time to a stable therapeutic dose, time to the first out-of-range International Normalized Ratio (INR)—a measure of clotting speed—and the number of warfarin-related adverse events. The study was funded in part by the Agency for Healthcare Research and Quality (HS16335).

More details are in “A randomized controlled trial of genotype-based Coumadin initiation,” by James K. Burmester, Ph.D., Richard L. Berg, M.S., Stephen H. Yale, M.D., and others in the March 16, 2011 *Genetics in Medicine*. ■ *DIL*

Emergency department patients and visitors are most interested in education about stress and depression

Researchers and policymakers have increasingly viewed emergency departments (EDs) as high-yield venues for providing preventive health education to a population at risk for unhealthy behaviors and unmet primary care needs. To determine the preferred health education topics and teaching modalities among ED patients and visitors, a team of researchers surveyed ED patients and visitors in four Boston EDs. They found that respondents were most interested (32 percent) in hearing about stress and depression among health conditions and about exercise and nutrition (42 percent) among health topics. ED patients and visitors had relatively little interest in injury prevention, sexual health, and substance abuse, which account for a high proportion of directly preventable ED visits.

The preferred learning modalities were brochures/books (34 percent), video (25 percent),

speaking with an expert (24 percent), and computer (14 percent). Despite the many advances in health education, traditional brochures and books were the preferred method, both overall and for 20 of the 28 health conditions and topics included in the survey.

Among Hispanic participants and those with less than high school education, speaking with an expert was the preferred modality. Elder respondents also preferred speaking with an expert on the subjects of strokes and falls. This may reflect the complexity of these issues for older patients. The 1,010 survey respondents were ED patients (56 percent) or visitors (44 percent).

Since 98 percent of ED patients and visitors in this study were interested in receiving some health education, ED waiting rooms may prove an excellent

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Emergency department patients

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venue to deliver health information to a captive and interested audience. Given the high acceptance and low cost of printed materials, the researchers suggest that brochures may be a feasible way to implement health education more broadly in the ED. This study was supported by a grant from the Agency for Healthcare Research and Quality (T32 HS00028).

See “Multicenter study of preferences for health education in the emergency department population,” by M. Kit Delgado, M.D., Adit A. Ginde, M.D., M.P.H., Daniel J. Pallin, M.D., M.P.H., and Carlos A. Camargo, M.D., Dr.P.H. in *Academic Emergency Medicine* 17, pp. 652-658, 2010. ■ MWS

Nurse survey identifies important but underused end-of-life care skills

Improving end-of-life care has become a major goal of the health care community. Compared with other health care providers, nurses often have the most contact with patients and their families at the end of life. Thus, it is important for nurses to be skilled in end-of-life care. In a survey, nurses identified 19 extremely important end-of-life care skills as being underutilized. Researchers from the University of Washington and the Medical University of South Carolina questioned 717 nurses in four States to determine the specific end-of-life skills that practicing nurses consider important, but that are currently underutilized.

Their survey was adapted from the Quality of End-of-life Care Questionnaire, which was designed for patients, families, and nurses to measure physician skill at end-of-life care. The 45-item survey included 5 areas: communications skills, technical skills, affective

skills, patient-centered values, and patient-centered care systems. The highest number of skills identified as extremely important and underutilized came from the areas of communications skills and patient-centered care systems. To be extremely important, an item had to be endorsed by 60 percent or more of the respondents; to be considered underutilized, no more than 25 percent of respondents could say that the skill was “already practiced.”

Nurses’ professional characteristics (such as practice setting, years of professional experience, and amount of continuing education) were significantly associated with importance ratings on eight underutilized skills, including “being comfortable with people who are dying,” “not blaming or being judgmental about lifestyles,” and “telling patients how their illness may affect their life.” For example, nurses with the most professional

experience were significantly more likely to report “being comfortable with dying patients” as an underutilized skill.

The researchers suggest that the skills identified as underutilized could serve as a template to develop targeted curricula. These skills focus on communications, symptom management, and patient-centered care systems. Once the curricula are developed, they could then be taught to practicing nurses within the context of the setting and the patient population they serve. This study was supported in part by the Agency for Healthcare Research and Quality (HS11425).

See “Nurses’ identification of important yet under-utilized end-of-life care skills for patients with life-limiting or terminal illnesses,” by Lynn F. Reinke, Ph.D., Sarah E. Shannon, Ph.D., R.N., Ruth Engelberg, Ph.D., and others in the *Journal of Palliative Medicine* 13(6), pp. 753-759, 2010. ■ MWS

Note: Only items marked with a single (*) asterisk are available from the AHRQ Clearinghouse. Items with a double asterisk (**) are available from the National Technical Information Service. See the back cover of *Research Activities* for ordering information. Consult a reference librarian for information on obtaining copies of articles not marked with an asterisk.

Practice setting, ownership, and specialty all affect volume of charity care provided by physicians

Charity care is a crucial source of health care for the uninsured, with private practice physicians providing upwards of 80 percent of all of the care delivered to the nation's uninsured. As the number of uninsured persons has grown, the percentage of physicians providing charity care nationwide has declined from 76.3 percent in 1996 to 68.2 percent in 2005. Among physicians providing any charity care, a higher hourly wage was associated with a greater amount of charity care, regardless of salaried status, according to Brad Wright, M.S., Ph.D. (Cand.), of the University of North Carolina at Chapel Hill. Physicians on average provided 10.7 hours of charity care in a month, with an average hourly wage of \$82.68.

Wright combined 4 rounds of the Center for Studying Health System Change's Community Tracking Study, which yielded a sample of 43,866 physicians over a 9-year period. He found that, for both salaried and

nonsalaried physicians, practice ownership and practice setting were stronger determinants than wage for providing charity care. Among salaried physicians, full owners were 14.9 percent more likely and part owners were 8.9 percent more likely than nonowners to provide charity care. Among salaried physicians, those working in group HMOs were 22.6 percent less likely to provide charity care. Among nonsalaried physicians working in group HMOs, there was a 17.7 percent decline in the likelihood of providing charity care. Also, emergency physicians were likely to provide less charity care and surgeons more such care than others. The study was supported by the Agency for Healthcare Research and Quality (T32 HS00032).

See "Time is money: Opportunity cost and physicians' provision of charity care 1996-2005," by Mr. Wright, in the December 2010 *HSR: Health Services Research* 45 (6), Part I, pp. 1670-1692. ■ MWS

Patient Safety and Quality

Systems to detect adverse drug events need buy-in from leaders and staff to become part of hospital routine

Automated tools to detect adverse drug events (ADEs) are common research initiatives at hospitals, but these efforts seldom endure, because sustaining them is rarely a project goal. However, a team at Duke University Health System successfully transitioned a research project for computerized detection of ADEs into hospital practice by involving hospital staff throughout the project.

Researchers based at the Duke University Health System implemented the ADE surveillance (ADE-S) system at three hospitals in three phases. The first phase, development of the ADE-S based on the hospitals' clinical data systems, was funded by a grant from the Agency for Healthcare Research and Quality (AHRQ) and began in December 2004. The hospitals funded the two subsequent phases that aimed to refine and sustain the ADE-S. The sustainment effort is ongoing.

The authors offer several recommendations for other organizations attempting to implement and sustain

similar surveillance programs in hospitals. They stress the need for research teams to appreciate fully the hospital's resources and workflow to ensure clinical staff can review the flagged ADEs easily. Aligning the hospital's priorities for which ADEs should be detected as well as including clinical staff in developing the systems will also help with staff buy-in for the project. Finally, ensuring the ADE-S system data are accessibly formatted and are not duplicative will help staff streamline their work and ensure the data are useful for the hospital's quality improvement efforts. This study was funded in part by AHRQ (HS14882).

See "Culture counts—Sustainable inpatient computerized surveillance across Duke University Health System," by Heidi Cozart, R.Ph., Monica M. Horvath, Ph.D., Andrea Long, Pharm.D., and others in the October-December 2010 *Quality Management in Health Care* 19(4), pp. 282-291. ■ KFM

Laboratory monitoring of high-risk medications varies greatly

Even for drugs for which there is general agreement on the need for laboratory monitoring, the prevalence of such monitoring varies greatly depending on the drug and whether it is a new or continuing prescription, according to a new study. Drugs that are prescribed infrequently are most likely to be poorly monitored, the researchers found. Overall, for a group of 30 ambulatory care clinics in New England, the rates of drug monitoring test completion ranged from 0 to 88 percent for new drug prescriptions and from 22 to 97 percent for ongoing prescriptions. For the majority of patients (>75 percent) given new prescriptions, less than 20 percent of the recommended monitoring tests were done. In contrast, for a

comparable majority of patients with ongoing prescriptions for chronic conditions, close to 40 percent of the recommended monitoring tests were done.

The researchers conducted their study in a large multispecialty practice in which 250 clinicians at 30 ambulatory clinic sites provided outpatient care to about 180,000 individuals. The lists of high-risk drugs and laboratory monitoring guidelines were developed by a panel of experts and local health plan leaders.

After identification of 35 high-risk drugs and 61 recommended monitoring tests (some drugs required more than one monitoring test), two research pharmacists determined the appropriate

frequency for laboratory monitoring by review of the existing scientific literature and available guidelines. Overall, 15 drugs required more than 1 laboratory test for monitoring and the remaining 20 required only 1 test. The study was funded in part by the Agency for Healthcare Research and Quality (HS17203, HS17817, and HS17906).

More details are in “Development and pilot testing of guidelines to monitor high-risk medications in the ambulatory setting,” by Jennifer Tjia, M.D., M.S.C.E., Terry S. Field, D.Sc., Lawrence D. Garber, M.D., and others in the *American Journal of Managed Care* 16(7); pp. 489-496, 2010. ■
DIL

Performing cardiac catheterization and heart surgery on different hospital admissions may reduce risk of kidney damage

Acute injury to the kidneys occurs frequently when cardiac catheterization and heart surgery are done during the same hospitalization. However, the risk of acute kidney injury (AKI) may be reduced by up to 45 percent if the surgery is done on a later hospital admission, according to a new study. AKI is thought to be caused in this case by the contrast dye used during diagnostic imaging via cardiac catheterization superimposed upon other preoperative events such as factors intrinsic to the patient and medications. Heart surgery patients with AKI have increased risk of complications and death.

Robert S. Kramer, M.D., Jeremiah R. Brown, Ph.D., M.S., and Dartmouth-Hitchcock Medical Center colleagues followed 668 patients admitted for nonemergency heart surgery at 1 hospital in 2008. They measured serum creatinine levels (mg/dL), an indicator of kidney function, before surgery (baseline), daily for 2 days after surgery, and according to the surgeon's

judgment until hospital discharge. The incidence of AKI was 50.2 percent in patients who had catheterization and surgery in the same hospital admission, but was significantly less (33.7 percent) among surgical patients who had the imaging procedure during a previous admission.

After adjusting for patient age, presence of coronary artery disease, baseline serum creatinine concentration, pump time, and hematocrit levels before surgery, the researchers found that patients with same-admission catheterization and surgery were 54 percent more likely to develop AKI than those who had catheterization during a prior admission. Kidney injury was defined prior to hospital discharge as a 50 percent (0.3 mg/dL) or greater increase in serum creatinine from the baseline level. Although the researchers recognize that their study does not show the optimal time between

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Kidney damage

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cardiac catheterization and surgery, they feel confident that having the two procedures occur during separate hospital admissions will reduce AKI and potentially other heart surgery complications. The study was funded in part by the Agency for Healthcare Research and Quality (HS18443).

More details are in “Same admission cardiac catheterization and cardiac surgery: Is there an increased incidence of acute kidney injury?” by Dr. Kramer, Reed D. Quinn, M.D., Robert C. Groom, M.S., Dr. Brown, and others in the November 2010 *The Annals of Thoracic Surgery* 90(5) pp. 1418-1424. ■
DIL

Primary Care

Specific primary care strategies may improve medication safety

Primary care practices that used the same electronic health record (EHR) system independently developed a number of similar strategies for enhancing medication safety for their patients, according to a new study. Medication error, the most common form of medical error, occurs frequently in primary care settings. The most common strategies developed by practices within the Practice Partner Research Network (PPRNet) included ensuring that data on the medications each patient took were accurate and included nonprescription medicines—a process called medication reconciliation.

Practice strategies also included using comparable criteria to

identify patients who experienced a preventable medication error, and customizing and applying decision-support tools to the EHR that would deal with medication dosing errors, drug-disease interactions, and ordering needed laboratory tests. The researchers noted a total of 32 distinct strategies, of which 11 were identified as key strategies to improve medication safety.

The study drew on site visits, from September 2008 through March 2009, to 20 PPRNet primary care practices representing 87 clinicians in 14 States. The practice model was designed to deal with five categories of medication problems: potentially inappropriate therapy, potentially inappropriate doses, potential drug–drug interactions,

potential drug–disease interactions, and potential adverse drug events. The model included a series of change strategies, such as prioritizing performance, activating the patient, involving all staff, redesigning the system, and using EHR tools. The study was funded by the Agency for Healthcare Research and Quality (HS17037).

More details are in “Improving medication safety in primary care using electronic health records,” by Lynne S. Nemeth Ph.D., R.N., and Andrea M. Wessell, Pharm.D., in the December 2010 *Journal of Patient Safety* 6(4); pp. 238-243. ■
DIL

Primary care physicians spend a fifth of their time in patient care activities outside of office visits

Internists who serve as primary care physicians spend an average of 1.6 hours (20 percent) of their work day on patient care activities outside of office visits (AOVs), according to a new study. These AOVs may save a median of five office visits per physician day, suggest the researchers. Their findings, based on direct observation of 33 physicians during a work day, are

close to those previously found in studies of family physicians (23 percent) and geriatricians at academic institutions (22 percent). This time is generally not reimbursed by payers, but may be useful in coordinating patient care or may substitute for office visits that might otherwise occur.

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Primary care physicians

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The internists' work day averaged 7.7 hours, including an average 4.9 hours for patient visits (a median of 18 patient visits with median duration of 15 minutes each). Most of the AOV time (62 percent) was not related to a patient appointment occurring the same day. The internists perceived that a median of 37 percent of non-visit-specific AOV time substituted for office visits (a median potential savings of five visits per physician day). Excluding the time to enter information into patients' charts, the internists identified activities that could be performed by support staff as representing a median of 15 percent of total AOV time.

Fourteen (42 percent) of the surveyed internists were able to identify at least one visit on the study day that could have been replaced by AOV activity—an average of 1.2 visits per physician overall. The study was funded in part by the Agency for Healthcare Research and Quality (T32 HS00066).

More details are in "Patient care outside of office visits: A primary care physician time study," by Melinda A. Chen, M.D., M.S., James P. Hollenberg, M.D., Walid Michelen, M.D., and others in the January 2011 *Journal of General Internal Medicine* 26(1), pp. 58-63. ■ *DIL*

Child/Adolescent Health

Surgery and imaging rates for children's kidney stones are stable, but vary greatly from hospital to hospital

About 22 percent of 7,921 children with kidney stones underwent surgery and 80 percent underwent stone-related diagnostic imagery between 1999 and 2008—rates that remained stable throughout the period. However, computerized tomography (CT) use increased 26 percent to 45 percent and plain x-ray of kidneys, ureters, and bladders plus excretory urogram use decreased 59 percent to 38 percent during the same period, according to a study of trends in imaging and surgical management for this condition by Boston-based researchers.

Greater CT use was associated with older patient age, public insurance status, white race, and treating hospital. However, the treating hospital was the most important factor affecting CT use. The probability of CT use at the hospitals included in the study for a 16-year-old female varied from 47 percent to 84 percent.

Surgical procedure use was associated with older patient age, female gender, white race, and private insurance status. As with CT use, the treating hospital was the most important factor. The probability of a surgical procedure

at each of the 40 pediatric hospitals included in the study for a 16-year-old female varied from 24 percent to 95 percent. This study was supported by the Agency for Healthcare Research and Quality (T32 HS00063).

See "Trends in imaging and surgical management of pediatric urolithiasis at American pediatric hospitals," by Jonathan C. Routh, M.D., Dionne A. Graham, Ph.D., and Caleb P. Nelson, M.D., M.P.H., in the October 2010 *Journal of Urology* 184, pp. 1816-1822. ■ *MWS*

Studies examine black mothers' choices for infant sleep position and location

Despite the 50 percent decline in the incidence of sudden infant death syndrome (SIDS) in the United States since the American Academy of Pediatrics first recommended that infants sleep on their backs in 1992, black infants remain twice as likely to die from SIDS as white infants. They are also about twice as likely to sleep on their stomachs (prone position) as other racial or ethnic groups. Two studies by researchers at Children's National Medical Center used focus groups or individual interviews with 83 mothers in the Washington, D.C., area to examine the factors affecting black mothers' choices about sleep position and location for their infants.

In the first article, the researchers investigate the factors contributing to the high incidence of the prone infant sleeping position in low- and higher-income African American families. The mothers in the focus groups were universally aware of the "Back to Sleep" recommendation. However, there was a common perception that the prone position was safer than the supine, especially because of the concern about aspiration when babies slept on their backs. Mothers who were not concerned about aspiration generally tended to initially place their infants on their backs, but many would later place them on their stomachs because they perceived that the infant did not sleep well or comfortably on their backs. Most mothers in the study did not understand why it is recommended that babies sleep on their backs and did not consider the link between sleep position and SIDS plausible.

In the second article, the researchers were concerned with the factors affecting sleep location, i.e., room

sharing or bed sharing. Many mothers cited lack of adequate space for both room sharing and bed sharing. Unavailability of a crib was a factor contributing to bed sharing. Bed sharing was more common among families of low socioeconomic status. Breastfeeding did not seem to affect the decision to bed share.

Both room sharing and bed sharing were often chosen to make feeding and checking on the infant more convenient. Mothers who chose to bed share often cited the ability to maintain vigilance while asleep. Low-income mothers also used bed sharing as a defense against environmental dangers. Vermin and stray gunfire are not uncommon occurrences in low-income housing areas. The researchers conclude that efforts to encourage room sharing without bed sharing must address parental concerns about space for/availability of a crib, convenience, infant and parent comfort, and infant safety. Both studies were supported in part by the Agency for Healthcare Research and Quality (HS16892).

See "Factors influencing African American mothers' decisions about sleep position: A qualitative study," by Rosalind P. Oden, Brandi L. Joyner, B.S., Taiwo I. Ajao, M.P.H., and Rachel Y. Moon, M.D., in the October 2010 *Journal of the National Medical Association* 102(10), pp. 870-880. Also, "Where should my baby sleep: A qualitative study of African American infant sleep location decisions," by Brandi L. Joyner, B.S., Rosalind P. Oden, Taiwo I. Ajao, M.P.H., and Rachel Y. Moon, M.D. in the same issue, pp. 881-889.

■ MWS

Health Care Costs and Financing

Inhaler costs contribute to medication nonadherence for Medicare patients with chronic pulmonary disease

Medication nonadherence in the United States is common, resulting in unnecessary health care costs that have been estimated at \$100 billion annually. Although Medicare Part D has decreased cost-related medication nonadherence (CRN), little is known about disease-specific nonadherence patterns after

its implementation. Earlier research has shown that chronic pulmonary diseases (CPDs), such as asthma and chronic obstructive pulmonary disease (COPD), are associated with relatively high rates of cost-related nonadherence.

In a similar fashion, a new study found that patients paying more

than \$20 per month for inhalers were at significantly higher risk for CRN than those who did not have out-of-pocket inhaler costs. Inhaled medications (bronchodilators and corticosteroids) are a mainstay of outpatient management for asthma and COPD. Bronchodilators

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Inhaler costs

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provide immediate, symptomatic relief, and inhaled corticosteroids contribute to better long-term outcomes in asthma and COPD.

Nearly 14,000 Medicare recipients responded to a questionnaire administered between October and December 2006. The prevalence of CRN in Medicare recipients with CPD using inhalers was 31 percent. In multivariate models, respondents with CPD using inhalers had 1.43

times greater odds of CRN compared with respondents without CPD who were not using inhalers. The median monthly out-of-pocket expenditure for prescription drugs was \$80 for those with CPD who did use inhalers compared with \$63 for those without CPD who did not use inhalers.

In this group of Medicare recipients, patients with CPD using inhalers spent on average \$35 more for out-of-pocket monthly medications than their counterparts

without CPD who did not use inhalers. This study was supported by the Agency for Healthcare Research and Quality (HS09622 and T32 HS00060).

See “Inhaler costs and medication nonadherence among seniors with chronic pulmonary disease,” by Peter J. Castaldi, M.D., William H. Rogers, Ph.D., Dana Gelb Safran, Sc.D., and Ira B. Wilson, M.D., in *Chest* 138(3), pp. 614-620, 2010. ■ *MWS*

Care for patients with HIV remains expensive

Annual health care costs for patients with HIV tend to be high, with estimates in the late 1990s hovering around the \$20,000 mark. Agency for Healthcare Research and Quality (AHRQ) researchers John A. Fleishman, Ph.D., and Fred J. Hellinger, Ph.D., along with other investigators in the HIV Research Network, report a new study with updated cost estimates, showing that costs vary with illness severity. Thus, there is no one magic number to represent the annual cost of treating HIV.

Using data from 14,691 patients from 10 sites in the HIV Research Network, the authors found that total health care costs for patients with HIV averaged \$19,912 in 2006. Costs for patients with advanced HIV (median CD4 cell count of 50 cells/liter) averaged \$40,678, while patients whose HIV was much less advanced (median CD4 cell count of higher than 500 cells/liter) averaged \$16,614. Inpatient and emergency department costs were highest for patients with advanced HIV.

A large portion of the care costs was due to the expense of highly active antiretroviral therapy (HAART), a multidrug regimen that delays the onset of AIDS symptoms. Although the overall cost of HAART drugs averaged \$13,024 per patient, the cost for these drugs was lowest for patients with advanced HIV, coming in at an average of \$10,775. In contrast, patients with the highest CD4 counts had drug costs averaging \$14,430. The authors suggest that the lower drug costs for patients with more advanced HIV may be a result of drug resistance or an inability to tolerate the drugs. Additionally, the higher drug costs for patients with less advanced HIV may signal HAART's effectiveness in increasing CD4 counts.

See “Contemporary costs of HIV healthcare in the HAART era,” by Kelly A. Gebo, M.D., Dr. Fleishman, Richard Conviser, Ph.D., and others in the November 2010 *AIDS* 24(17), pp. 2705-2715. Reprints (AHRQ Publication No. 11-R020) are available from AHRQ.* ■ *KFM*

Treatments show promise in reducing autism-related behaviors, but some have significant side effects

Some medical and behavioral treatments show promise for reducing certain behaviors in children with autism spectrum disorders (ASDs), but more research is needed to assess the potential benefits and harms, according to a new report funded by the Agency for Healthcare Research and Quality. The research results were published online in the journal *Pediatrics*.

The comparative effectiveness report found that two commonly used medications—risperidone and aripiprazole—show benefit in reducing some behaviors, including emotional distress, aggression, hyperactivity, and self-injury. However, these medicines are associated with significant side effects, such as rapid weight gain and drowsiness. The review found that no medications used for ASDs improved social behaviors or communication skills. The report also found that several medications show promise and should be studied further, but that secretin, which has been studied extensively, has shown no effectiveness.

Children with ASDs have difficulty in social interaction, behavior, and communication. Some children with ASDs may also have impaired cognitive skills and sensory perception. Based on

limited evidence, behavioral interventions also showed promise for improving some symptoms and behaviors, but their effects varied. For example, early intensive behavioral and developmental interventions seemed to improve cognitive performance, language skills, and adaptive behavior in some groups of children, the report found.

Other interventions, which focused on parent training and cognitive behavioral therapy, may be useful for children with ASDs to improve social communication, language use, and, potentially, symptom severity, researchers said.

“Autism spectrum disorders are frustrating and challenging for patients, their families, and caregivers,” said AHRQ Director Carolyn M. Clancy, M.D. “This report will help parents and clinicians understand their options and design a course of treatment that is consistent with their goals and values.”

Researchers at the Vanderbilt Evidence-based Practice Center in Nashville, who prepared the report for AHRQ, noted that further research is needed to identify which children are likely to benefit from particular interventions. The authors also were critical of the fact that current studies contain

few comparisons of medical interventions with behavioral interventions as well as combinations of the two, even though most children undergo multiple treatments at the same time.

Because of these limitations in the available evidence, researchers were not able to compare treatments and interventions with each other. In addition, they noted that every case of ASD is different and did not conclude that one type of treatment is superior.

ASDs—which include autistic disorder, Asperger syndrome, and pervasive developmental disorder-not otherwise specified—affect an estimated 1 in every 110 children in the United States. Treatment goals for ASDs often focus on improving social communication and addressing certain behaviors. Other treatments also target anxiety, attention difficulties, and sensory difficulties. Goals for treatment often vary by child.

The report, *Comparative Effectiveness of Therapies for Children with Autism Spectrum Disorders*, is the latest comparative effectiveness review from AHRQ’s Effective Health Care program. The report is available at www.effectivehealthcare.ahrq.gov.



Hospital charges surpass the trillion dollar mark

U.S. community hospitals billed insurance companies and Federal and State programs \$1.2 trillion in 2008 for inpatient care, according to the latest *News and Numbers* from the Agency for Healthcare Research and Quality. This represents a 28 percent increase over the \$900 billion, adjusted for inflation, billed in 2004.

In particular, in 2008:

- Total charges billed to Medicare (\$534 billion) and Medicaid (\$159 billion) accounted for about 60 percent of all charges in 2008. Private insurers were charged \$373 billion, or 32 percent of the total. The uninsured accounted for \$48 billion, or 5 percent of the national bill.
- One-fifth of Medicare's total bill (\$107.5 billion) was for treatment of heart disease, heart failure, heart attack, heart rhythm disorders, stroke, or heart valve disorders.
- Medicaid and private insurers saw the largest bills for pregnancy and childbirth (\$22 billion and \$30 billion, respectively) and care of newborn infants (\$19 billion and \$21 billion, respectively).

- Among the uninsured, heart attack was the most expensive reason for hospitalization (\$2.4 billion). Three of the top 20 most expensive reasons for hospitalizations for the uninsured involved head injuries, leg fracture, and internal injuries (\$2.9 billion).

This AHRQ *News and Numbers* is based on data in *The National Bill: The Most Expensive Conditions by Payer, 2008* (www.hcup-us.ahrq.gov/reports/statbriefs/sb107.pdf). The report uses data from the 2008 Nationwide Inpatient Sample, a database of hospital inpatient stays in all short-term, non-Federal hospitals. The data are drawn from hospitals that comprise 95 percent of all discharges in the United States and include patients, regardless of insurance type, as well as the uninsured.

For other information, or to speak with an AHRQ data expert, please contact Bob Isquith at Bob.Isquith@ahrq.hhs.gov or call (301) 427-1539. ■

Uninsured hospital stays surged from 2003 to 2008

Hospital stays for uninsured patients jumped 21 percent between 2003 and 2008, after holding fairly steady during the previous 5 years, according to the latest *News and Numbers* from the Agency for Healthcare Research and Quality (AHRQ). By comparison, all hospital stays grew only 4 percent between 2003 and 2008, and 10 percent during the previous 5 years.

The Federal agency found that there were 2.1 million uninsured admissions in 2008 compared with 1.8 million in both 2003 and 1998. The average cost of a 2008 uninsured hospital stay was \$7,300.

AHRQ also found that:

- Public hospitals saw the greatest share of uninsured stays (8.3 percent) in 2008, compared with private, for-profit hospital stays with 5.5 percent, and private stays in not-for-profit hospitals with 4.7 percent.
- Hospitals in the South had more than twice as many uninsured stays (7.6 percent) than those in the Northeast (3.2 percent) in 2008. Uninsured patients made up 4.9 percent and 3.6 percent of stays in the Midwest and West, respectively.
- Between 2003-2008, the number of uninsured hospital stays increased by 55 percent for skin infections, 43 percent for gall bladder disease, 40 percent for diabetes complications, 35 percent for alcohol-related disorders, and 20 percent for heart attacks.

This AHRQ *News and Numbers* is based on data in *Uninsured Hospital Stays, 2008* (www.hcup-us.ahrq.gov/reports/statbriefs/sb108.pdf). The report uses data from the 2008 Nationwide Inpatient Sample, a database of hospital inpatient stays in all short-term, non-Federal hospitals. The data are drawn from hospitals that comprise 95 percent of all discharges in the United States and include patients, regardless of insurance type, as well as the uninsured.

For other information, or to speak with an AHRQ data expert, please contact Bob Isquith at Bob.Isquith@ahrq.hhs.gov or call (301) 427-1539. ■

Diabetes testing plummets among poor, minority, and inner-city adults

The proportion of poor adults aged 40 and older with diabetes who had their blood sugar, eyes, and feet examined at least once a year dropped from 39 percent to 23 percent between 2002 and 2007, according to the latest *News and Numbers* from the Agency for Healthcare Research and Quality.

For middle-income adults, the drop in these three tests to prevent complications from diabetes was 41 percent to 33 percent. In contrast, the proportion of high-income adults who had all three exams remained the same at 52 percent. Diabetes-related complications can include blindness, kidney failure, and amputation.

Overall, certain groups did not have these three important tests between 2002 and 2007:

- Blacks experienced an 11 percent plunge, from 43 to 32 percent, while the proportion of Hispanics who had all three exams tumbled from 34 to 27 percent. Among whites, the decline was the smallest, at 4 percent (from 43 to 39 percent).

- Regardless of race or ethnicity, complications monitoring among adult residents of large inner cities dropped from 45 to just under 33 percent.
- Also regardless of race, the percentage of adults with a high school education who had the three tests fell 11 points (from 43 to 32 percent) and for those who did not finish high school, the drop was 34 to 29 percent. The reduction was only 4 percent (51 to 47 percent) for adults with at least some college education.

This AHRQ *News and Numbers* is based on information in the *2010 National Healthcare Disparities Report* (www.ahrq.gov/qual/qrd10.htm), which examines the disparities in Americans' access to and quality of health care, with breakdowns by race, ethnicity, income, and education.

For more information, or to speak with an AHRQ data expert, please contact Bob Isquith at Bob.Isquith@ahrq.hhs.gov or call (301) 427-1539. ■

Low health literacy linked to higher risk of death and more emergency room visits and hospitalizations

Low health literacy in older Americans is linked to poorer health status and a higher risk of death, according to a new evidence report by the Agency for Healthcare Research and Quality. More than 75 million English-speaking adults in the United States have limited health literacy, making it difficult for them to understand and use basic health information.

The report, an update of a 2004 literature review featuring findings from more than 100 new studies, also found an association between low health literacy in all adults, regardless of age, and more frequent use of hospital emergency rooms and inpatient care, compared with other adults.

The report's authors also found a link between low health literacy and a lower likelihood of getting flu

shots and of understanding medical labels and instructions and a greater likelihood of taking medicines incorrectly compared with adults with higher health literacy. They also found evidence linking poor health literacy among adult women and underuse of mammograms.

Furthermore, evidence from a small but growing body of studies suggests that differences in health literacy levels are related to racial and ethnic disparities. For example, flu shot rates among seniors, enrollment of children in health insurance programs, and taking medications as instructed by a health care professional are lower among minorities.

"Ensuring that people understand health care information is critical to a high-quality, safe health care system," said AHRQ Director

Carolyn M. Clancy, M.D.

"Improving health literacy will be a major step in the nation's efforts to enhance health care quality and safety."

In addition, the authors, who were led by Nancy D. Berkman, Ph.D., and Stacey Sheridan, M.D., M.P.H., of the AHRQ-supported RTI International-University of North Carolina Evidence-based Practice Center, concluded that intensive self- and/or disease-management programs appear to reduce disease severity, emergency room visits, and hospital admissions among patients with limited health literacy.

In May 2010, the U.S. Department of Health and Human Services launched the National Action Plan to Improve Health Literacy to

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Low health literacy

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engage organizations, professionals, policymakers, communities, individuals, and families in a linked, multisector effort to improve health literacy.

The plan calls for improving the jargon-filled language, dense writing, and complex explanations that often fill patient handouts, medical forms, health Web sites,

and recommendations to the public. Among the other objectives of the plan are promoting changes in the health care system that improve health care information, as well as improving patient-provider communication, low-health-literacy individuals' ability to make health care decisions based on evidence, and access to health care. Information on the plan is available at www.health.gov/communication/hlactionplan.

The report, *Health Literacy Interventions and Outcomes: An Updated Systematic Review*, is available on the AHRQ website at www.ahrq.gov/clinic/tp/lituptp.htm. For more information on AHRQ funding, studies, tools, and other resources related to health literacy and cultural competency, go to www.ahrq.gov/browse/hlitix.htm. ■

Announcements

National Quality Strategy released

Department of Health and Human Services Secretary Kathleen Sebelius recently released the *National Strategy for Quality Improvement in Health Care*. The Strategy was called for under the Affordable Care Act and is the first effort to create national aims and priorities to guide local, State, and national efforts to improve the quality of health care in the United States.

The National Quality Strategy will promote quality health care focused on the needs of patients, families, and communities. At the same time, the Strategy is designed to move the system to work better for doctors and other health care providers—reducing their administrative burdens and helping them collaborate to improve care.

The Strategy presents three aims:

- **Better care:** Improve the overall quality, by making health care more patient-centered, reliable, accessible, and safe.
- **Healthy people and communities:** Improve the health of the U.S. population by supporting proven interventions to address behavioral, social, and environmental determinants of health in addition to delivering higher-quality care.
- **Affordable care:** Reduce the cost of quality health care for individuals, families, employers, and government

To help achieve these aims, the Strategy also establishes six priorities to help focus efforts by public and private partners. Those priorities are:

- Making care safer by reducing harm caused in the delivery of care.
- Ensuring that each person and family is engaged as partners in their care.
- Promoting effective communication and coordination of care.
- Promoting the most effective prevention and treatment practices for the leading causes of mortality, starting with cardiovascular disease.
- Working with communities to promote wide use of best practices to enable healthy living.
- Making quality care more affordable for individuals, families, employers, and governments by developing and spreading new health care delivery models.

Notes Carolyn Clancy, director of the Agency for Healthcare Research and Quality, “The National Quality Strategy is designed to be an evolving guide for the Nation as it continues to move forward with efforts to measure and improve health and health care quality. It will serve as a guide for our efforts to improve the quality and safety of health care services.”

To read the *National Quality Strategy*, please go to www.healthcare.gov/center/reports/quality03212011a.html. Supporting documents are available at www.ahrq.gov/workingforquality/. ■

AHRQ's MONAHRQ® is one of six winners in the HHSinnovates program

Department of Health and Human Services (HHS) Secretary Kathleen Sebelius has announced that MONAHRQ® was one of six winners in the HHSinnovates program, which received 90 nominations for the competition. HHS launched HHSinnovates last year to recognize exceptional innovation efforts throughout all of HHS. MONAHRQ®, “My Own Network, powered by AHRQ,” is a stellar example of innovation at its best.

The MONAHRQ® team, led by Anne Elixhauser, Ph.D., and Carol Sniegowski, Ph.D., and which included Thomson Reuters Health Care, developed free software that lets organizations create health care reporting Web sites. These sites assist communities in assessing their health care needs and help consumers search for health care resources that fit their needs.

What the MONAHRQ® team recognized is that although the data for these sites already existed, creating software to make the information available was an obstacle that needed to be overcome. The team effectively brought down that barrier, and now MONAHRQ® is making useful health care data widely available. ■

AHRQ updates report on oral diabetes medications' effectiveness and safety

The authors of this updated comparative effectiveness report affirmed that therapy using only one oral drug for diabetes lowers hemoglobin A1c by one point. Additional evidence suggests that combinations of oral medications lower A1c by 2 points. Hemoglobin A1c is a general measure of blood-sugar control over a period of 3 months. Based on the 2007 and 2010 reports, all drugs except

metformin and the new injectable glucagon-like peptide agonists (GLP-1 agonists) are associated with weight gain of between 2 to 9 pounds. The report also shows that some diabetes oral medications have other benefits, such as lowering “bad” cholesterol or helping to lower triglycerides. In addition, metformin causes some abdominal discomfort, but that side effect can be managed with other

drug combinations. One class of drugs is associated with increased risk of heart failure and bone or hip fractures. For more information, see *Comparative Effectiveness and Safety of Oral Diabetes Medications for Adults with Type 2 Diabetes: An Update Including New Drug Classes and Two-Drug Combinations* at effectivehealthcare.ahrq.gov. ■

AHRQ releases plain-language guides on cystic fibrosis

The Agency for Healthcare Research and Quality (AHRQ) has released a pair of plain-language guides to help families of children living with cystic fibrosis (CF) and their clinicians work together to make important decisions about how to treat and manage the condition. These free guides examine whether human growth hormone (HGH) can be used to successfully manage some symptoms of CF and what factors should be considered when making decisions about its use.

The consumer guide, *Human Growth Hormone for Children with Cystic Fibrosis*, reviews the recent research on the use of HGH in children with CF and provides questions that a parent can ask their child's clinician about the benefits and risks. It points out that

children with CF who use HGH did show modest changes in weight and body mass index. However, no significant changes in the measure of lung function associated with length or quality of life were observed. A modest decrease in hospitalization rate was associated with use; however, the long-term risks of HGH and its impact on the disease remains unknown.

The clinician guide, *Use of Recombinant Human Growth Hormone for Pediatric Patients with Cystic Fibrosis*, is intended to supplement existing resources available to clinicians to help them discuss treatment options with their patients. The guides summarize the

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Plain-language guides

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recent comparative effectiveness research review from AHRQ entitled, *Effectiveness of Recombinant Human Growth Hormone (rhGH) in the Treatment of Patients with Cystic Fibrosis*.

The publications are the latest in a series of AHRQ's growing library of free guides that summarize the

scientific evidence on various health conditions so that consumers and clinicians can learn more about the effectiveness and risk of different treatment options.

Visit AHRQ's Effective Health Care Web site: www.effectivehealthcare.ahrq.gov to learn more about AHRQ's Patient-centered Outcomes Research or download these and other products. ■

New technical brief covers surgeries for seven fetal conditions

The Agency for Healthcare Research and Quality (AHRQ) has released a new technical brief covering surgeries for seven fetal conditions, from heart defects to spina bifida.

This Federal report, authored by researchers at the Vanderbilt Evidence-based Practice Center, is entitled *Maternal-Fetal Surgical Procedures: Technical Brief*. It indicates that although fetal surgery research is advancing quickly, it presently falls short of the level of rigor required to optimally inform care. Key findings include:

- Work is needed in determining diagnostic approaches; delineating which fetuses would

benefit from treatment in utero; and projecting long-term functioning for the target organ as well as overall functioning as prenatally treated infants develop.

- As in many new surgical interventions, preliminary work for fetal surgery is based in a few highly specialized centers laying the groundwork for better understanding and directions for research.
- Despite gaps in the maternal-fetal surgery literature, there is momentum toward more robust research and rigorous, more consistent documentation of outcomes over longer periods of

time.

The EHC Program, authorized by the Medicare Prescription Drug, Improvement and Modernization Act of 1999, represents an important Federal effort to compare alternative treatments for health conditions and make the findings public. The program is intended to help patients, doctors, nurses, pharmacists, and others choose the most effective treatments. Additional pregnancy-related resources on the EHC Web site include *Gestational Diabetes: Caring for Women During and After Pregnancy* and *Elective Induction of Labor Safety and Harms*. ■

Clinicians from pediatrics, family medicine, and geriatrics appointed to lead the U.S. Preventive Services Task Force

The United States Preventive Services Task Force (USPSTF) has announced the appointments of Virginia A. Moyer, M.D., M.P.H., as chair, and Albert L. Siu, M.D., M.S.P.H., and Michael L. LeFevre, M.D., M.S.P.H., as co-vice chairs of the Task Force.

The USPSTF is an independent, volunteer panel of 16 private-sector experts in prevention and primary care that makes recommendations to primary care clinicians about preventive services such as screenings, counseling, or preventive medications that may benefit patients before they experience signs or symptoms of a condition. More information about the Task Force and its recommendations, including how to comment on drafts, is available at www.uspreventiveservicestaskforce.org.

“The new leadership of the USPSTF brings extensive experience in pediatric, geriatric, and family medicine that will greatly enhance the breadth of knowledge of the Task Force,” says outgoing Task Force Chair Ned Calonge, M.D. “Combined with the skills, knowledge, and experience of the rest of the membership, as well as the explicit methods and the review and input from other medical experts, the USPSTF has the full spectrum of expertise and tools needed to make recommendations to primary care clinicians on effective preventive services.”

Dr. Moyer is professor of pediatrics and head of Academic General Pediatrics at Baylor College of Medicine and chief of the Academic Medicine Service

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U.S. Preventive Services Task Force

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at Texas Children's Hospital. She is a member of the Board of the American Board of Pediatrics, deputy editor for the journal *Pediatrics* and the *Journal of the American Academy of Pediatrics* (AAP), and a past member of the AAP's Steering Committee on Quality Improvement and Management.

Dr. Siu is an internist, geriatrician, health services and policy researcher, and the Ellen and Howard Katz chairman and professor at the Brookdale Department of Geriatrics and Palliative Medicine at the Mount Sinai School of Medicine. He is also director of the Geriatric Research, Education, and Clinical Center at the Bronx Veterans Administration Medical Center, and has served as deputy commissioner of the New York State

Department of Health. Dr. Siu serves as a senior associate editor of *Health Services Research*.

Dr. LeFevre is the Future of Family Medicine professor and associate chair in the Department of Family and Community Medicine at the University of Missouri School of Medicine. Dr. LeFevre also serves as the chief medical information officer for University of Missouri Health Care, and is a member of the American Academy of Family Physicians, the Missouri Academy of Physicians, and the Society of Teachers of Family Medicine. He has served on the Commission on Clinical Policies and Research of the American Academy of Family Physicians.

The Agency for Healthcare Research and Quality provides ongoing administrative and technical support to the Task Force. ■

New resource helps hospitals get up to speed on safety culture

Hospitals working to improve the safety culture of their organization have a new Web-based resource that provides practical information on the patient safety dimensions used in the Agency for Healthcare Research and Quality's Hospital Survey on Patient Safety Culture (HSOPS), available at

www.ahrq.gov/qual/patientsafetyculture/hospindex.htm. The resource is organized by the dimensions assessed in the HSOPS, such as teamwork within units, overall perceptions of safety, and feedback and communication about errors. It contains links to useful tools and examples that

organizations can use to help improve their safety culture. A list of general resources from leading public and private groups involved in patient safety is also included. Access the resource at www.ahrq.gov/qual/patientsafetyculture/hospcult1.htm#Dimensions. ■

New resource identifies care coordination measures

The Agency for Healthcare Research and Quality has released a new resource for researchers interested in measuring care coordination, an emerging field of quality measurement. The Care Coordination Measures Atlas identifies more than 60 measures for assessing care coordination that include the perspectives of patients and caregivers, health care professionals, and health system managers.

To help users easily identify measures that are relevant to their work, the measures are mapped to a conceptual

framework for understanding care coordination measurement. Researchers, measure developers, accountable care organizations, and others responsible for measuring care coordination will find the atlas useful in identifying currently available measures to assess care coordination activities, as well as gaps in existing measures that can be addressed in future work. You can access the atlas at www.ahrq.gov/qual/careatlas. ■

HCUP offers new online tutorial series' modules

The Agency for Healthcare Research and Quality has released a new module and updated a popular module in the Healthcare Cost and Utilization Project (HCUP) Online Tutorial Series. The online training is designed to provide data users with information about HCUP data and tools, as well as training on technical methods for conducting research using HCUP datasets.

The all-new Calculating Standard Errors tutorial is designed to help

users determine the precision of the estimates they produce from the HCUP nationwide databases. Users will learn two methods for calculating standard errors for estimates produced from the HCUP nationwide databases.

The newly-revised HCUP Overview Course (www.hcup-us.ahrq.gov/overviewcourse.jsp) is a helpful introduction to HCUP for new users. The original course has been updated to include the latest

additions to the HCUP family of databases and tools, including the Nationwide Emergency Department Sample.

The HCUP Online Tutorial Series is available on the HCUP-US Web site: hcup-us.ahrq.gov/tech_assist/tutorials.jsp.

For more information, contact HCUP User Support at hcup@ahrq.gov. ■

AHRQ releases Common Formats for patient safety reporting in skilled nursing facilities

The Agency for Healthcare Research and Quality (AHRQ) recently released new Common Formats for patient safety reporting in skilled nursing facilities. These new formats complement an existing set of Common Formats, Version 1.1, which are designed to help health care providers collect both generic and event-specific

information about incidents, near misses or close calls, and unsafe conditions in hospital settings.

The term “Common Formats” refers to the common definitions and reporting formats, specified by AHRQ, that allow health care providers to collect and submit standardized information regarding patient safety events. Future

versions of the Common Formats are being developed for ambulatory settings, such as surgery centers and medical offices. All of the Skilled Nursing Facilities Formats are currently available in beta versions for public review and comment via the AHRQ Patient Safety Organization Web site at www.pso.ahrq.gov. ■

New AHRQ public reports on provider performance are available for consumer Web page

The Agency for Healthcare Research and Quality (AHRQ) recently announced a new Public Reporting Web Page featuring resources on public reporting of provider performance information for consumers. The resources include MONAHRQ®, innovative software for creating a public report developed by AHRQ; a sampler of model public

report elements; a comprehensive guide for public report card sponsors; and a decision guide for report card developers about selecting quality of care and resource use measures, as well as other tools and reports on public reporting. Access AHRQ's new Public Reporting Web page at: www.ahrq.gov/path/publicreporting.htm. ■

New AHRQ podcasts focus on prevention of falls, motorcycle-related head injuries, and pressure sores

The Agency for Healthcare Research and Quality has produced three new podcasts. The first one addresses how to reduce your risk of injuries from falls. The second

one discusses traumatic head injuries and the protective role of universal motorcycle helmet laws. The third podcast examines how a new computerized tool is helping

nursing home staff identify residents at high risk of getting pressure sores so they can prevent them. These podcasts can be viewed at <http://healthcare411.ahrq.gov>. ■

Andrews, R. M. (2011). “Race and ethnicity reporting in statewide hospital data: Progress and future challenges in a key resource for local and State monitoring of health disparities.” *Journal of Public Health Management Practice* 17(2), pp. 167-173. Reprints (AHRQ Publication No. 11-R033) are available from AHRQ.*

Identifying where racial and ethnic health care disparities occur is important for targeting interventions to eliminate disparities. To do this, State and local public health officials and community health planners need data on population health and health care services for each racial and ethnic group. The author examined the extent of race-ethnicity coding in statewide hospital discharge data systems, compared it with national standards, and assessed the completeness and accuracy of race-ethnicity data collected in these systems. Information from the Agency for Healthcare Research and Quality’s Healthcare Cost and Utilization Project State Inpatient Databases was the primary source of data for the study. Results showed that race data collections increased from 14 to 43 States between 1991 and 2008. In 2008, 20 States conformed to the 1997 Office of Management and Budget (OMB) standard, 4 did not collect Hispanic ethnicity, 19 used the 1997 OMB standard, 10 collected multiracial data, and 3 collected detailed racial-ethnic data.

Brown, J. S., Holmes, J. H., Shah, K., and others. (2010, June). “Distributed health data networks. A practical and preferred approach to multi-institutional evaluations of comparative effectiveness, safety, and quality of care.” (AHRQ Contract No. 290-05-0033). *Medical Care* 48(6 Suppl. 1), pp. S45-S51.

To address the need to evaluate the processes and outcomes of care of large populations, some propose creation of large, centralized, multipayer claims databases. An alternative is one or more distributed research networks that permit comparative effectiveness and other evaluations across multiple databases without creation of a central data warehouse. The researchers describe the design and pilot implementation of a distributed research network infrastructure intended to meet the broad needs of all parties for comparative effectiveness evaluation and other uses. The pilot successfully evaluated temporal trends in medication use and diagnoses at five separate sites, demonstrating some of the possibilities of using a distributed research network.

Chien, A. T., Kirchhoff, A. C., Schaefer, C. T., and others. (2010, December). “Positive and negative spillovers of the health disparities collaboratives in federally qualified health centers.” (AHRQ grants HS13625, HS10479, HS17146).

***Medical Care* 48(12), pp. 1050-1056.**

Since 1998, federally qualified health centers (FQHC) have participated in the Health Disparities Collaboratives (HDC), a large-scale quality improvement intervention sponsored by the Health Resources and Services Administration. Although HDCs have been evaluated for their intended effects on conditions such as asthma and diabetes, little is known about whether they engender positive or negative spillover effects in non-HDC clinical care or organizational function. The researchers surveyed team leaders at 135 FQHCs. Nearly half (45 percent) of respondents indicated that the HDC increased quality of care delivered to patients with chronic conditions not emphasized by the HDC. Only 5 percent responded that the HDC had diminished the quality of care. Large majorities of respondents signified that the HDC increased the ability of FQHCs to manage patients with multiple chronic conditions during a routine office visit (76 percent) and acute care visit (67 percent).

Chung, M., Balk, E. M., Ip, S., and others. (2010). “Systematic review to support the development of nutrient reference intake values: Challenges and solutions.” (AHRQ Contract No. 290-2007-10055). *American Journal of Clinical Nutrition* 92, pp. 273-276.

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Dietary Reference Intake values are the nutrient reference values issued by the Institute of Medicine (IOM) of the National Academy of Sciences. The IOM and others have proposed that systematic reviews of the evidence should be used when revising the DRIs. The authors describe the basic process used in the first example of including a systematic review in the process of updating nutrient reference values, the major issues and challenges encountered summarizing large bodies of evidence for two nutrients with multiple health outcomes, and the solutions used to best support the IOM panel. They resolved the challenges by working with a technical expert panel to prioritize and select outcomes of interest, developing methods to use existing systematic reviews, translating results from studies not designed to address issues of interest by using a transparent process, and establishing tailored quality assessment tools to assist in decisionmaking.

Clancy, C. M. (2010, October). “Patient safety and medical liability reform: Putting the patient first.” *Patient Safety and Quality Healthcare*, pp. 6-7. Reprints (AHRQ Publication No. 11-R035) are available from AHRQ.*

The goal of the Patient Safety and Medical Liability Reform Initiative is improving the overall quality of care by making patient safety the primary goal. Among the 20 grants under this program, some support the development of State-endorsed, evidence-based care guidelines, the promotion of transparency and enhanced communication between providers and patients, and early

disclosure and offers of prompt compensation. In addition, the Agency for Healthcare Research and Quality (AHRQ) has produced and disseminated tools and resources to support safe practices. Working with the Department of Defense, AHRQ has developed an evidence-based curriculum and training support for teamwork improvement called TeamSTEPPS. AHRQ Director Carolyn M. Clancy, M.D., is optimistic that these and other AHRQ-funded projects will produce measurable improvements in safety for patients and help bring rationality and fairness to our medical liability system.

Crystal, S., Gaboda, D., Lucas, J., and others. (2010, June). “Assessing medication exposures and outcomes in the frail elderly. Assessing research challenges in nursing home pharmacotherapy.” (AHRQ grants HS16097, HS11825). *Medical Care* 48(6 Suppl. 1), pp. S23-S31.

Within the nursing home population, a standardized electronic health record, the Minimum Data Set (MDS), provides unique opportunities for comparative effectiveness research. The MDS includes measures of patients’ physical, psychological, and psychosocial functioning and active clinical diagnoses. When these data are merged with diagnosis, treatment, and outcome information from Medicare/Medicaid claims, they create great potential for examining patterns of medication use and select outcomes. The authors describe these datasets, present the strengths and challenges of using merged data about the nursing home population to study prescription drug exposures and

outcomes in the frail elderly, and suggest strategies to address methodological difficulties. They conclude that merged data from nursing home sources can support unique study designs in comparative effectiveness research and provide great power. However, such studies pose many challenging design and analytic issues.

Glickman, S. W., Delgado, M. K., Hirshon, J. M., and others. (2010). “Defining and measuring successful emergency care networks: A research agenda.” *Academic Emergency Medicine* 17(12), pp. 1297-1305. Reprints (AHRQ Publication No. 11-R034) are available from AHRQ.*

In June 2010, the journal *Academic Emergency Medicine* convened a consensus conference on emergency care titled “Beyond Regionalization: Integrated Networks of Emergency Care.” Its goal was to create a research agenda to support the development of the Institute of Medicine’s vision of regionalized, coordinated, and accountable emergency care systems. This article explores the concept of integrated emergency care delivery and prioritizes a research agenda for how to best define and measure successful networks of emergency care. It focuses on the following five key areas: (1) the fundamental metrics that measure networks across time-sensitive and non-time-sensitive conditions, (2) how a network can be scalable and nimble and creative in terms of best practices, (3) the potential unintended consequences of networks of emergency care, (4) the development of large-scale, yet feasible, network data systems, and (5) the promotion of linkage of data systems across the disease course.

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Howell, E. A., Holzman, I., Kleinman, L. C., and others. (2010, September). “Surfactant use for premature infants with respiratory distress syndrome in three New York City hospitals: Discordance of practice from a community clinician consensus standard.” (AHRQ grant HS10859). *Journal of Perinatology* 30(9), pp. 590-595.

Surfactant therapy prevents the development of respiratory distress syndrome (RDS) in many premature infants and shortens the course of RDS in others. A research team from Mt. Sinai Hospital in New York City sought to assess concordance with a locally developed standard of care for premature infants with RDS. The standard recommends treatment within 2 hours of birth. The subjects of the retrospective study were 773 infants weighing <1750 grams born in 3 New York City hospitals between 1999 and 2002. Of the 227 infants with signs of RDS at 2 hours of age, 37 percent received surfactant. At the 4-hour time point, 70 percent of the low-birth-weight babies who had shown signs of RDS had received surfactant. Eighty-five percent of white infants with RDS had received surfactant compared with 67 percent of Latino and 61 percent of black infants. If these findings are generalizable, the researchers believe there is a large opportunity to reduce infant morbidity from RDS and also to reduce racial/ethnic disparities in birth outcomes.

Lohr, K. N. (2010, June). “Comparative effectiveness research methods. Symposium overview and summary.” (AHRQ

Contract No. 290-05-0036). *Medical Care* 48(6 Suppl.1), pp. S3-S6.

The author offers an overview and summary of a symposium on research methods for comparative effectiveness studies sponsored by AHRQ in June 2009. The conference emphasized three thematic areas: study design and data collection, statistics and analytic methods, and policy issues and applications. The conference papers discussed these major areas of comparative effectiveness research (CER). Both primary data collection and analyses of databases (including electronic health records and distributed networks) are crucial for the comparative effectiveness agenda. Advances in research methods enable investigators to pay greater attention to important population subgroups, including persons of low literacy, non-English speaking patients, or the frail elderly. Both established and newer statistical techniques—e.g., propensity scoring and various types of modeling, including Bayesian approaches—offer analysts improved ways to address issues such as confounding and measurement bias. Finally, some papers provided guidance for and examples of extending CER into newer realms, such as evaluations of medical devices or surgical procedures.

Lorch, S. A., Myers, S., and Carr, B. (2010, December). “The regionalization of pediatric health care.” (AHRQ grants HS15696, HS17960). *Pediatrics* 126(6), pp. 1182-1190.

Regionalization improves patient outcomes through two primary mechanisms: improved outcomes at high-volume, high-specialty centers

and improved coordination of care within a given geographic area, assert the authors of this paper. They present a conceptual framework for the development of regionalized health care systems, describe types of evidence for regionalized systems, describe the overall deficiencies in the current literature, and outline a plan for future research. The authors use neonatal intensive care and pediatric trauma care as examples for other pediatric conditions that, in the future, may be amenable to a more regionalized approach to care.

Mukherjee, B., Ou, H-T., Wang, F., and Erickson, S. R. (2011). “A new comorbidity index: The health-related quality of life comorbidity index.” (AHRQ grant HS17461). *Journal of Clinical Epidemiology* 64, pp. 309-319.

Comorbidity is the existence or occurrence of any distinct additional disease or diseases during the clinical course of a patient who has an index disease under study. A comorbidity index (CI) is a weighted measure that, when conducting statistical analyses, will control for the potential influence of those illnesses on an outcome of interest. The purpose of this study was to derive and validate a CI using diseases that have the greatest association with health-related quality of life (HRQL). A secondary goal was to use the Medical Expenditure Panel Survey database to compare the results of explanatory models that use the new index derived with a CI originally derived to predict mortality and health care resources use, the Charlson-CI. The study used a rigorous statistical approach

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to construct and validate a new HRQL-CI that outperformed the Charlson-CI.

Freedman, A. N., Sansbury, L. B., Figg, W. D., and others. (2011). “Cancer pharmacogenomics and pharmacoepidemiology: Setting a research agenda to accelerate translation.” *Journal of the National Cancer Institute* 102(22), pp. 1698-1705. Reprints (AHRQ Publication No. 11-R036) are available from AHRQ.*

Recent advances in genetic technology, combined with new discoveries in pharmacogenomics, have shed light on the substantial role of genomic factors to predict drug response and the clinical potential of genomic testing. To identify research priorities as well as the resources and infrastructure needed to advance these fields, the National Cancer Institute sponsored a workshop titled “Cancer Pharmacogenomics: Setting a Research Agenda to Accelerate Translation,” in 2009. This article discusses five science-based recommendations and four infrastructure-based recommendations emanating from the workshop. These included ways to rapidly translate the results of bench research into medical practice and ways to test hypotheses generated from epidemiological and clinical investigations in the laboratory. Together, these complementary and interacting approaches will help to realize the benefits of a personalized approach to cancer treatment and prevention.

Halpern, S. D., Barnes, B., Hasz, R. D., and Abt, P. L. (2010, December). “Estimated supply of organ donors after circulatory

determination of death: A population-based cohort study.” (AHRQ grant HS18406). *Journal of the American Medical Association* 304(23), pp. 2592-2594.

Increased use of donors after circulatory determination of death (DCDD) has been advocated as the most viable method for increasing the supply of transplantable organs. The researchers conducted a prospective, population-based cohort study to estimate the potential increase in the supply of deceased donors that might accrue from optimal use of controlled DCDD, donors in whom life-sustaining therapies are withdrawn and organs are recovered following the loss of spontaneous circulation. After analyzing 21,082 deaths occurring at the 50 study hospitals and categorizing organs as optimal, suboptimal, and ineligible for transplantation, the researchers identified and referred 108 (49 optimal and 59 suboptimal) DCDD to the organ procurement organization before withdrawal of life-sustaining therapy. Their findings suggest that optimal identification and management of potential controlled DCDD could increase the supply of deceased organ donors, but by no more than 25 percent.

Platt, R., Takvorian, S. U., Septimus, E., and others. (2010, June). “Cluster randomized trials in comparative effectiveness research. Randomizing hospitals to test methods for prevention of healthcare-associated infections.” (AHRQ Contract No. 290-05-0033). *Medical Care* 48(6 Suppl. 1), pp. S52-S57.

Cluster randomized trials are randomized controlled trials (RCTs) that randomize groups (clusters) rather than individuals. They are the

only feasible method for randomization when an intervention must be applied to an entire group, such as a community-based, health-promotion initiative. The researchers illustrate some of the potential of cluster randomization in comparative effectiveness research through a current trial that compares strategies to prevent methicillin-resistant *Staphylococcus aureus* (MRSA) infections in hospital intensive care units. This example demonstrates several of the design strengths of cluster randomized trials that make them likely to generate comparative effectiveness evidence in an efficient and timely manner, thus enabling swift policy action. The trial used patients admitted to 45 hospital ICUs to test three MRSA infection prevention strategies: active screening and isolation, active screening and decolonization of MRSA carriers, and universal decolonization without regard to MRSA status.

Rassen, J. A., Solomon, D. H., Curtis, J. R., and others. (2010, June). “Privacy-maintaining propensity score-based pooling of multiple databases applied to a study of biologics.” (AHRQ grant HS17919). *Medical Care* 48(6 Suppl. 1), pp. S83-S89.

A multicenter study of the safety of biologic medicines for the treatment of autoimmune diseases necessitates pooling data from multiple administrative data sources to attain sufficient statistical power to study certain rare safety outcomes. The researchers address the multiple methods considered in the design and planning of the project, and detail their chosen methods. The methods assessed were: full covariate sharing, cell-

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aggregated sharing, meta-analysis, and the propensity score (PS) based method. The PS-based pooling method offered strong protection of patient privacy and a reasonable balance between analytic integrity and flexibility of study execution. The researchers recommend its use in other studies that require both pooling of databases and multivariate adjustment, each in a manner that protects the privacy of the patients involved.

Smith, S. R. (2010, June). “Advancing methods for comparative effectiveness research.” *Medical Care* 48(6 Suppl. 1), pp. S1-S2. Reprints (AHRQ Publication No. 10-R075) are available from AHRQ.*

Since the Effective Health Care program was established in 2005 through the Medicare Modernization Act, the Agency for Healthcare Research and Quality (AHRQ) has regularly convened researchers from different disciplines to propose, discuss, and deliberate new scientific approaches for conducting studies on comparative effectiveness and safety. In June 2009, AHRQ sponsored a symposium on research methods for comparative effectiveness studies and this supplement to *Medical Care* represents the proceedings as revised by the authors and independently reviewed by peers and the journal. The symposium

had two main emphases: (1) examination of ways to enhance the inclusion of clinically heterogeneous populations in comparative and clinical effectiveness studies, and (2) ways to implement longitudinal investigations that capture longer-term health outcomes, including patient-reported outcomes.

Varadhan, R., Weiss, C. O., Segal, J. B., and others. (2010, June). “Evaluating health outcomes in the presence of competing risks. A review of statistical methods and clinical applications.” (AHRQ Contract No. 290-05-0034). *Medical Care* 48(6 Suppl. 1), pp. S96-S105.

The competing risks problem is determining the likelihood of benefit from an intervention for a specific outcome, in the presence of competing outcomes. The authors demonstrate the importance of considering this problem in the evaluation of treatment effectiveness, review appropriate statistical methods, and recommend how they might be applied. Their review offers a definition of the competing risks problem with illustrations. They then describe three methods for analyzing competing risks: cause-specific hazards (CSH), cumulative incidence function (CIF), and event-free survival (EFS) modeling. A simulation study is conducted to demonstrate that a treatment can have a varying impact on CSH,

CIF, and EFS. They make recommendations for appropriate methods according to study objective.

Weiss, J. W., Thorp, M. L., and O’Hare, A. M. (2010). “Renin-angiotensin system blockade in older adults with chronic kidney disease: A review of the literature.” (AHRQ grant T32 HS17582). *Current Opinion in Nephrology and Hypertension* 19, pp. 413-419.

Angiotensin-converting enzyme (ACE) inhibitors and angiotensin receptor blockers (ARBs) are renin-angiotensin system (RAS) inhibitors. They have been shown to be effective in hypertension management, in reducing proteinuria, in slowing progression of renal disease, and in reducing cardiovascular risk among patients with chronic kidney disease (CKD). The researchers reviewed early and more recent literature on RAS blockade in general and in CKD populations, specifically looking at older age groups, to help delineate the risk-benefit profile of RAS inhibition in older adults with CKD and identify areas of uncertainty. They concluded that because few trials of ACE inhibitors and ARBs have enrolled a representative sample of older adults with CKD, the benefits and harms of these agents for slowing progression of kidney disease and other important outcomes in older adults are either uncertain or unknown. ■

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May 2011

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