Agency for Healthcare Research and Quality
Advancing Excellence in Health Care

RESEARCH ACTIVITIES

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Health information technology improves care and saves lives

When a man is rushed into an ambulance with a possible heart attack, the paramedics must decide whether or not to administer clot-busting drugs to open a blocked coronary artery and if they should take him to the nearest hospital or to one that performs emergency cardiac procedures. Since lifesaving treatment should be administered within 90 minutes of a heart attack, these decisions are critical. A new software program helps paramedics make the right decisions, and a Web-based reporting system tracks their performance. This approach increased the proportion of heart attack patients receiving timely lifesaving treatment from 27 percent to 67 percent in one of the many pioneering health information technology (IT) projects funded by the Agency for Healthcare Research and Quality (AHRQ).

These projects, which span technologies that range from decision support software and telemedicine to computerized drug and preventive-care alerts, are improving care and saving lives. "That's not surprising, given that modern health care may be humanity's most information-dependent endeavor," says Jon White, M.D., director of AHRQ's health IT portfolio.

The project to improve cardiac care for heart attack victims was led by Harry P. Selker, M.D., M.S.P.H., with Denise Daudelin, R.N., M.P.H., of Tufts Medical Center. It included two emergency medical service (EMS) agencies in two Massachusetts communities, who worked with researchers in conjunction with five community hospitals and three tertiary hospitals. The clinical decision support software system used electrocardiogram (ECG) results and patient information entered into the system by paramedics to determine the probability that the patient was having a heart attack and, if so, whether a cardiac procedure or clot-busting drugs were appropriate. The results were printed as text directly on top of the ECG to help paramedics determine the appropriate hospital, what treatment to start in the ambulance, and how to advise the emergency department (ED) staff on treatment needs while en route to the hospital.

A Web-based quality improvement reporting system, the TIPI-IS (Time-Insensitive Predictive Instrument Information System), integrated the data entered by the EMS agencies and hospitals to measure the quality of care provided to patients from the time they called 911 to receiving hospital treatment. The Web-based reports were used to educate paramedics on when to perform ECGs, how to interpret them, and when to direct a patient to a cardiac procedure-equipped hospital.

The system also provided clinical outcomes on patients transported to the hospitals—information paramedics otherwise rarely get, helping them learn from their

continued on page 3

Highlights

Topics

Regular Features

From the Director

Health information technology (IT) forms the backbone of modern health care by providing clinicians with information when and where they need it, so patients can get the right care at the right time. Drug-alert systems, electronic health records (EHRs), telemedicine, and other health IT applications can also prevent patient harm. For example, when a popular drug was recently pulled off the market, a practice with an EHR system identified all patients on that drug and e-mailed them a notice about the drug's status. Although primary care practices have been slow to adopt EHRs (only about 30 percent have), once physicians use them, they don't want to go back.

Health IT also enables persons with chronic diseases to be monitored electronically at home and transmit data to their physicians, who can use it to adjust their treatment. Communication plays a big role. For example, Denver Health sends text messages to the cell phones of elderly adult patients with diabetes to remind them of medical appointments and asks them to text back their fasting blood-glucose levels three times a week. The goal is to improve disease self-management.

By enhancing access to care for underserved or disadvantaged populations, health IT can also reduce disparities in care. For example, an AHRQ-supported Virtual Patient Advocate project at Boston University is using avatars (onscreen representations of computer users) to improve the health of young black women. Another AHRQ-funded study showed that Iraq War veterans in rural areas who used telepsychiatry (therapy via videoconferencing) for post-traumatic stress disorder found it as effective as in-person therapy.

The critical importance of health IT to the care of Americans is underscored by the $19 billion funded for health IT by the American Recovery and Reinvestment Act and incentives it provides to physicians for meaningful use of EHRs. Since 2004, AHRQ has invested in health IT projects in more than 200 communities, hospitals, providers, and health care systems in 48 States. The goals of AHRQ's health IT research are improved decisionmaking, medication management, and patient-centered care–whether that means bringing technology into the patient's home or connecting the patient to remote specialists.

Among AHRQ's current health IT initiatives is the National Resource Center for Health IT (http://healthit.ahrq.gov), which provides technical help to stakeholders ranging from States and rural hospitals to clinicians. The Center provides the latest evidence on key health IT topics; lessons learned from AHRQ's State and regional demonstrations; and Web-based tools.

Consumers use and want technology to inform their health decisions. They are leading us, not vice versa. Consumers are demanding tools to make their care more about them. Let's satisfy that demand!

Carolyn M. Clancy, M.D.

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continued from page 1

experience. This approach significantly improved paramedics' performance and confidence. It also convinced reluctant ED staff to trust paramedics' abilities to make sound decisions.

"One of the key objectives of this approach is to link together care in the community with care in the ED and hospital by having shared information on patients between the EMS, ED, and hospital," notes Dr. Selker. "The TIPI-IS approach provides the infrastructure and information along this continuum." The TIPI ECG text is available in conventional pre-hospital ECGs and the TIPI-IS reporting software is now commercially available and has been adopted by other EMS agencies to improve the care of heart attack victims. Like a number of AHRQ-supported projects in the health IT portfolio, once a project is over, the capacity/infrastructure to support sustained improvements in care remains.

A school's telehealth assistant transmits a boy's ear images to his doctor.

Telemedicine in schools and child care centers

In another AHRQ-funded health IT project, primary care physicians are using telemedicine to diagnose impoverished inner-city children who become ill while in school or a child care center. Their parents often risk losing income or jeopardizing their job when they take time off for sick-child visits. They are also more likely to bring their children to costly EDs instead of the physician's office for care. The Health-e-Access program has given children at 22 schools and child care sites access to telemedicine equipment and an on-site or roaming telehealth assistant, who can facilitate remote consultation with the child's own primary care physician in most cases. "It's both convenience and continuity–health care when and where you need it by people you know and trust. Who couldn't use more of that from health care?" comments project lead, Kenneth M. McConnochie, M.D., of the University of Rochester Medical Center.

The program recruited 10 physician practices in Rochester, New York, that already provided primary care to roughly 70 percent of children in the participating child sites. The remote consultations reduced absences from school and child care by more than half (since doctors can identify children who aren't a risk to other children and can still participate) and reduced ED visits (which cost seven times more than a telemedicine visit) by nearly 25 percent. Health-e-Access also improved access to care, with the children receiving 23 percent more care than a similar group of unenrolled children.

For the remote consultations, a trained telehealth assistant uses digital camera attachments to a computer to visualize a child's eyes, ears, nose, throat, and/or skin and an electronic stethoscope to record heart and lung sounds. This information is transmitted to the child's primary care doctor (or an "on call" telehealth doctor if the child's physician is not available). The doctor can also use a video camera to see and talk with the child to assess their condition. In most cases, a diagnosis is made and treatment prescribed, including a prescription that can be faxed to the local pharmacy.

In only 4 percent of cases, the doctor suggested the need for an in-office visit, imaging studies, or laboratory tests. Also, 83 percent of physicians were as confident in the telemedicine diagnoses as those completed in person.

The researchers estimated that payers would save about $5.40 per child per year—close to $1 million for Rochester County's childhood population. "This analysis is sensitive to assumptions about rates

continued on page 4

continued from page 3

of payment for telemedicine visits – rates not yet firmly established here," notes Dr. McConnochie.

In response to a request from the Rochester City School district, telemedicine visits became available in all city schools as of September 2010. Health-e-Access also expanded in 2010 into elder care by introducing telemedicine access to locations such as assisted living environments and senior day care centers, whose clients often need wheelchair vans and medical attendants to accompany them to medical visits.

Electronic standing orders for health maintenance

Often access to care is not enough. Adults who visit the doctor for a sinus infection or other acute problems often walk out of the doctor's office not receiving important preventive or chronic-care screenings. For example, a patient with diabetes may visit the doctor for the flu, but may not be up to date with checks that can guide medical care, such as blood-glucose levels, lipid levels, or urinary microalbumin (that can indicate diabetes-related kidney problems). An elderly person may visit the doctor for back pain and leave the office without a flu or pneumonia vaccine. An AHRQ-funded health IT pilot project is tackling this problem head on.

Electronic standing orders (SOs), highlighted in red on each patient's electronic health record (EHR) in the form of health maintenance alerts, authorize nurses and medical assistants to administer or schedule preventive tests or screenings when patients visit the doctor for any reason. These SOs improved preventive care screenings by 6 to 10 percent, improved adult immunizations 8 to 17 percent, and improved diabetes care tasks up to 18 percent–all recommended care that may be overlooked during office visits for acute health issues. This is a significant problem. "A RAND study in 2003 showed that only 55 percent of adults received recommended preventive, chronic care, and acute care," says Lynn Nemeth, Ph.D., R.N., of the Medical University of South Carolina, project lead.

She and colleagues examined the EHRs of patients at eight primary care practices that shared a common commercial EHR to identify what preventive services patients needed. A customized EHR health maintenance template outlined the schedule of testing, screening, and immunizations that should be provided to each patient based on the patient's disease(s), age, and gender. Overdue items were highlighted in red in the health maintenance table, serving as electronic reminders.

The reminders served as SOs for the nurse or medical assistant. During office visits these staffers updated the record with the patient (for example, they may have gotten a flu shot somewhere else between visits), administered needed vaccines (medical assistants are not allowed to do this in some States) and urinary or blood tests, and arranged orders for lab tests or other tests such as mammograms or bone density scans.

The researchers implemented and evaluated electronic SOs for 15 measures in the areas of preventive screening (e.g., mammography, bone mineral density, cholesterol), adult immunizations (e.g., pneumonia, flu, tetanus, and zoster), and diabetes care (e.g., cholesterol, urinary microalbumin, and hemoglobin A1C–an indicator of blood-glucose control). By updating patients' EHRs, administering vaccines or lab tests, and preparing referrals and paperwork for other tests, the nurses and medical assistants substantially improved patients' receipt of these services with minimal additional time.

"As a result, physicians feel less burdened and clinical and office staff feel more engaged in patient care," comments Dr. Nemeth. Patients also benefit. For example, one participating doctor notes, "The project made us more aware that our patients were missing regular health maintenance…. We did not realize that we missed this. We are now keeping up with their health maintenance issues and patients realize that they are cared about." GSM

Editor's note: To read about more health IT success stories and AHRQ's health IT research, see www.healthit.ahrq.gov/HITFeaturedProjects. You can view the Health IT portfolio's Annual Report for 2009 at www.healthit.ahrq.gov/HIT2009Report. ■

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.

Acceptance of "smart" intravenous infusion pumps is growing among nurses, but challenges remain

Over the years, intravenous (IV) infusion pumps have undergone technological refinement in an attempt to reduce medication administration errors. Today, more and more hospitals are using what are known as "smart" IV pumps. These are designed to double-check the programmed dose of medication and identify other errors before and during medication or fluid infusion. A new study of nurses' experiences with these pumps finds that their acceptance is growing. However, challenges remain with regard to implementing these pumps in the health care setting and dealing with technical performance issues.

The researchers surveyed nurses attending training sessions on smart IV pumps prior to their implementation at a large medical center. Nurses were surveyed again via e-mail at 6 weeks after the pumps were actively in use on the floors and then again at 1 year. Nurses expressed positive perceptions of the smart IV pumps on the preimplementation and 6-week postimplementation surveys. These positive perceptions increased significantly after 1 year of use. This was particularly true when it came to the perceived efficiency of these pumps. Such improvements were not observed, however, regarding nurses' experiences with the pump's implementation process and technical performance.

Nurses cited problems with the usefulness of information received about the pump's implementation as well as clarity of the training materials. Even after 1 year, perceptions regarding the pump's noise and reliability did not improve. Factors that influenced a nurse's acceptance of the pump included reliability, programming speed, efficiency, error recovery, alarm messages, and interface satisfaction. Technology refinement by smart pump vendors will be needed to overcome problems such as air-in-line alarms and delay-related beeps. Better training materials, particularly ones that can serve as ready references, will also help with the acceptance of these pumps, note the researchers. Their study was supported in part by the Agency for Healthcare Research and Quality (HS14253).

See "Nurses' acceptance of Smart IV pump technology," by Pascale Carayon, Ph.D., Ann Schoofs Hundt, Ph.D., and Tosha B. Wetterneck, M.D., in the *International Journal of Medical Informatics* 79, pp. 401-411, 2010. ■ *KB*

E-prescribing for managing medication refills has not reached its full potential

A growing number of physicians' offices are using electronic prescribing (e-prescribing), sending prescriptions to pharmacies via computers. As it continues to grow, e-prescribing will help reduce medication errors, including those due to misinterpreting handwritten prescriptions. However, the popularity of e-prescribing is being met with growing pains, particularly when it comes to refilling prescriptions. A new study looks at this dimension and finds areas where improvements can be made, not only in software design, but also at the user end.

Researchers from Virginia Commonwealth University and Brown University selected six geographically diverse States with the highest e-prescribing activities. At 64 physicians' offices, they conducted focus groups and individual interviews to learn how well e-prescribing systems worked for refilling prescriptions. Participants were asked to offer suggestions on how to improve software functionality and office procedures to optimize their e-prescribing practices.

Having e-prescribing systems reduced by about 50 percent the time spent each day on medication refills. Most physicians gave positive feedback when it came to refill activities. In addition to office time saved, physicians reported patient convenience as a major benefit. Both physicians and their staff appreciated the ability to track how patients were filling and refilling their prescriptions.

However, a number of difficulties were mentioned regarding managing prescription refills. Most of these were related to technical problems that were slow to be

continued on page 6

E-prescribing
continued from page 5

resolved by representatives at the e-prescribing software company. Other difficulties cited included the need to re-enter all patient data for each prescription, not having the ability to delete or edit data for each prescription, and the difficulty of filling prescriptions when the e-prescribing software was not linked to a patient's medical record. Some participants also reported problems with the pharmacies not receiving refill orders, even though orders had been sent.

According to the researchers, software companies need to be more responsive to troubleshooting requests and develop error-reporting systems. At the same time, usability issues need to be examined at the physician office and the pharmacy in order to identify and correct inherent problems to make e-prescribing more readily usable. The study was supported in part by the Agency for Healthcare Research and Quality (HS16394).

See "Beyond the basics: Refills by electronic prescribing," by Roberta E. Goldman, Ph.D., Catherine Dubé, Ed.D, and Kate L. Lapane, Ph.D. in the *International Journal of Medical Informatics* 79, pp. 507-514, 2010. ■ *KB*

A customized computer drug alert requiring active provider response is no more effective than a passive alert

The effectiveness of drug alerts in computerized decision support systems in preventing drug-drug interactions has been modest because of low response by providers to the automated alerts. Studies show, for example, that these alerts are overridden as much as 90 percent of the time. A new study has found that a customized alert that required a physician response was no more effective than a passive alert in preventing the prescribing of drugs that interact in unsafe ways.

A research team led by Brian L. Strom, M.D., M.P.H., of the University of Pennsylvania, examined the effectiveness of the two types of alerts within an inpatient computerized physician order entry (CPOE) system. One alert required an affirmative response from the provider and the other alert was a commercially available passive alert that was already part of the CPOE system. The test case used was coprescribing of a nonsteroidal anti-inflammatory drug (NSAID) with the anticoagulant warfarin, a practice generally advised against.

The researchers found that a customized CPOE alert that required a provider response had no effect in reducing concomitant prescribing of NSAIDs and warfarin beyond that of the passive CPOE alert. The randomized trial included 1,963 clinicians in 2 urban hospitals, who were assigned to receive 1 of the 2 alerts. Over the 17-month study period, there were 1,024 alerts: 464 in the active-alert group and 560 in the passive-alert group. The proportion of desired ordering responses (not reordering the alert-triggering drug within 10 minutes of an alert) was lower in the active-alert group than the passive alert group (25 vs. 28 percent). The researchers concluded that CPOE alerts cannot be assumed to be effective in improving prescribing, and need to be formally evaluated. This study was partly supported by the Agency for Healthcare Research and Quality (HS16946).

See "Randomized clinical trial of a customized electronic alert requiring an affirmative response compared to a control group receiving a commercial passive CPOE alert: NSAID-warfarin co-prescribing as a test case," by Dr. Strom, Rita Schinnar, M.P.A., Warren Bilker, Ph.D., and others in the *Journal of the Medical Informatics Association* 17, pp. 411-415, 2010. ■ *MWS*

Compliance is low for computer alerts recommending conversion from intravenous to oral medications

As a way to cut costs and improve patient safety, hospitals try to substitute an oral therapy for an intravenous (IV) medication whenever possible. With the use of computerized physician order entry, physicians can now be alerted when such a substitution is feasible. A new study found, however, that physicians at a medical center did not always comply with these computer alerts. In addition, the rate of compliance was affected by patient location, type of personnel, and even the medication itself.

The setting for the study was a 450-bed academic urban tertiary hospital where real-time alerts were used to recommend oral formulations for patients on IV medications. Twelve IV medications were selected where oral substitutes were available and clinically appropriate. In some cases, the oral substitute was not the same medication. Researchers retrospectively analyzed electronic medical record data to determine the rate of physicians' compliance with IV-to-oral medication alerts.

During a 15-month period, there were 3,919 computer alerts. The overall compliance rate was 18.7 percent. Nearly half of all alerts (46 percent) were handled by house staff. Their compliance rate was 19 percent, which was significantly higher than that of pharmacists (10 percent). Nurses demonstrated a high compliance rate of 36 percent, even though they only received 8 percent of the alerts. Among the 12 IV medications replaced, compliance rates were highest for rifampin (33.3 percent), famotidine (31.9 percent), and metronidazole (26.0 percent). Methylprednisolone had the lowest compliance rate (8.5 percent) among all 12 medications.

Hospital departments with the highest compliance rates were the pediatric intensive care unit (ICU), step-down unit, emergency department, and medical-surgical unit. Reasons given by physicians for overriding alerts included cancellation of oral diet, nausea and vomiting, and disease worsening that required the IV route of administration. Suspending alerts in ICU patients (where oral status changes frequently) and delaying alerts for a specific period of time may help improve alert compliance, suggest the researchers. Their study was supported in part by the Agency for Healthcare Research and Quality (HS16973).

See "Analysis of computer alerts suggesting oral medication use during computerized order entry of I.V. medications," by William Galanter, M.D., Ph.D., Xiaoqing (Frank) Liu, Ph.D., and Bruce L. Lambert, Ph.D., in the July 1, 2010 *American Journal of Health Systems Pharmacy* 67, pp. 1101-1105. ■ *KB*

Patient Safety and Quality

Most acute-care hospitals follow national guidelines for the prevention and treatment of MRSA infections

A survey of a national sample of 263 acute-care hospitals finds that most of the hospitals have policies and practices consistent with national guidelines to prevent and treat methicillin-resistant *Staphylococcus aureus* (MRSA). MRSA is a serious source of sometimes deadly healthcare-associated infections, accounting for 60 percent of *S. aureus* strains isolated from patients in intensive care units (ICUs). Of 102 hospitals responding to the survey, 44 percent reported that an active surveillance cultures (ASC) protocol was in place to identify MRSA-colonized patients. Contact precaution protocols (hand washing, use of gowns and gloves) were reported by 92 of 100 hospitals (92 percent), while 85 of 99 hospitals (86 percent) reported having an isolation policy for MRSA-carrying patients.

Most of the hospitals had procedures for auditing antibiotic use and restrictions on the use of certain antimicrobial drugs to prevent drug-resistant infections like MRSA. Yet, only 18 percent reported having formal antimicrobial stewardship teams that give feedback to prescribers, train medical staff, and develop antimicrobial guidelines.

continued on page 8

MRSA infections

continued from page 7

Only 25 percent of the hospitals had specific guidelines, protocols, or policies regarding decolonizing patients at risk from MRSA. However, decolonization practices were used by 83 hospitals, primarily for presurgical patients and those known to be infected with, colonized with, or have a prior history of carrying the drug-resistant microbe. The study was funded in part by the Agency for Healthcare Research and Quality (HS16973).

More details are in "Hospital policies and practices on prevention and treatment of infections caused by methicillin-resistant *Staphylococcus aureus*," by Yoojung Yang, Pharm.D., Martin V. McBride, M.S.Pharm., Keith A. Rodvold, Pharm.D., and others in the June 15, 2010 *American Journal of Health-System Pharmacists* 67(12), pp. 1017-1024. ■ *DIL*

Hospitalists modestly improve quality of care

Hospitalists, physicians specializing in inpatient care, represent a change in the organization of inpatient care that may improve hospital performance, suggests a new study. It found that California hospitals using hospitalists showed modest improvements in performance on publicly reported care process measures for heart attack, congestive heart failure (CHF), and pneumonia. For example, hospitals with at least one hospitalist group had fewer missed discharge care process measures for heart attack, such as a discharge prescription for an angiotensin converting enzyme inhibitor. Also, as the estimated percentage of patients admitted by hospitalists rose, the percentage of missed quality opportunities, such as pneumonia and influenza vaccination for patients with pneumonia, decreased across multiple measures.

However, the positive association between hospitalists and care quality processes was most typically found for processes that generally took place later in hospitalization or at discharge. Performance on admission measures would not be expected to relate to use of hospitalists, since they were more likely to be under the direction of emergency physicians.

Of the 208 hospitals participating in this voluntary quality reporting initiative, 171 had hospitalists, of which 71 (42 percent) estimated the percentage of patients admitted by their hospitalist physicians. Included in the study were 16 publicly reported quality process measures across 3 medical conditions: heart attack, CHF, and pneumonia.

Hospitals with hospitalists were larger, less likely to be for-profit, had more registered nursing hours per day, and performed more cardiac catheterizations. The question of whether hospitalists directly improve care quality or simply reflect a hospital's level of investment in quality remains a subject for future study, note the University of California, San Francisco, researchers. Their study was supported in part by the Agency for Healthcare Research and Quality (HS11416).

See "Cross-sectional analysis of hospitalist prevalence and quality of care in California," by Eduard E. Vailovskis, M.D., R. Justin Knebel, B.S., R. Adams Dudley, M.D., M.B.A., and others in the April 2010 *Journal of Hospital Medicine* 5(4), pp. 200-207. ■ *MWS*

Visit the AHRQ Patient Safety Network Web Site

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

Greater use of preventive measures needed for hospitalized patients with suspected venous thromboembolism

Hospital patients who are undergoing diagnostic tests for venous thomboembolism (VTE) often do not get adequate preventive treatment while being evaluated, a new study suggests. VTE conists of two related conditions, deep vein thrombosis (DVT), a blood clot in a deep vein in the leg, and pulmonary embolism (PE), a lung clot that dislodges from the leg to travel to the lungs. PE is the most common preventable cause of hospital death in the United States.

One-fifth (21 percent) of the 600 hospitalized patients at an academic medical center referred for suspected VTE were diagnosed with acute VTE. The incidence of DVT and PE among patients undergoing the specific tests for each disorder was 18 percent for DVT and 25 percent for PE. Although preventive measures are recommended for all patients suspected of being at risk of VTE, only 61 percent of eligible patients received prophylactic anticlotting drugs and 43 percent received mechanical prophylaxis (sequential compression devices or graduated compression stockings for their legs).

The researchers found that the incidence of VTE was higher in patients who did not receive anticlotting drugs (30 percent) than in those who had received this preventive treatment (16 percent). The researchers collected data on preventive strategies used with the patients, VTE treatment strategies, clinical outcomes associated with VTE (propagation of thrombus in the legs within 3 months of DVT diagnosis, major bleeding episodes within 3 months of starting anticoagulant therapy, mortality within 3 months of VTE diagnosis), and information on risk factors for VTE. The study was funded in part by the Agency for Healthcare Research and Quality (HS15898).

More details are in "The use of prophylaxis in patients undergoing diagnostic tests for suspected venous thromboembolism," by Jung-Ah Lee, Ph.D., and Brenda K. Zierler, Ph.D., R.N., in the April 2010 *Phlebology* 25(2), pp. 85-93. ■ *DIL*

Outcomes/Effectiveness Research

Serious complications from bariatric surgery are fewer when done by high-volume hospitals and surgeons

The safety of bariatric surgery and uneven quality from hospital to hospital continue to concern patient advocacy groups and payers, despite trends toward declining surgery-related deaths. A new study found that the more bariatric surgeries that a hospital or surgeon perform, the lower the complication rate. Overall, 7.3 percent of bariatric surgery patients experienced perioperative complications, most of which were minor. Approximately 2.5 percent of patients had more serious complications, according to Nancy J.O. Birkmeyer, Ph.D., of the University of Michigan, and colleagues. Serious complications were highest for patients undergoing gastric bypass (3.6 percent), followed by sleeve gastrectomy (2.2 percent), and laparoscopic adjustable band procedures (0.9 percent).

Adjusted rates of serious complications were 4.1 percent, 2.7 percent, and 1.9 percent in low-, medium-, and high-volume hospitals, respectively. Serious complication rates were about twice as high (4.0 percent) for low-volume surgeons at low-volume hospitals than for high-volume surgeons at high-volume hospitals (1.9 percent). Mortality varied by the type of surgery: 0.04 percent for laparoscopic adjustable gastric band, 0 percent for sleeve gastrectomy, and 0.14 percent for gastric bypass patients.

The study included 25 Michigan hospitals, 62 surgeons, and 15,275 patients who underwent bariatric procedures between 2006 and 2009. Its purposes were to assess the complication rates for three common bariatric procedures and the variability in rates of serious complications across hospitals based on procedure volume and center of excellence (COE)

continued on page 10

Bariatric surgery
continued from page 9

status. COE accreditation typically includes minimum procedure-volume standards, availability of specific protocols and resources for managing morbidly obese patients, and submission of outcomes data to a central registry. The rates of serious complications were unrelated to COE status. This study was partly supported by the Agency for Healthcare Research and Quality (HS18050, HS18728).

See "Hospital complication rates with bariatric surgery in Michigan," by Dr. Birkmeyer, Justin B. Dimick, M.D., M.P.H., David Share, M.D., M.P.H., and others in the July 28, 2010 *Journal of the American Medical Association* 304(4), pp. 435-442. ■ *MWS*

Treatment for blocked carotid arteries varies depending on where you live

Blocked carotid arteries in the neck can lead to stroke. Yet, if you are an elderly Medicare patient, the treatment you receive to relieve this blockage may depend on what U.S. region you live in, reveals a new study. One treatment, carotid endarterectomy (CEA), involves surgery to remove the blockage. Another approach, carotid stenting (CAS), involves insertion of a stainless steel tube to prop the artery open, and is typically used for patients at high surgical risk from CEA.

During the period 2003–2004, there was a ninefold difference between the highest rate of CAS (7.17 per 1,000 person-years in Beaumont, TX) and the lowest rate (0.82 per 1,000 person-years in Honolulu, HI). By 2005–2006, this geographic variation in CAS had diminished to 5.5 per 1,000 person-years in Beaumont and 0.79 per 1,000 person-years in Honolulu. Rates of CAS showed geographic variations, but these were less pronounced than for CEA.

Overall, the New England, Mountain, and Pacific regions had the lowest rates of these procedures, while the four Central regions tended to have the highest revascularization rates. The researchers also found that men and patients previously diagnosed with peripheral vascular disease were more likely to undergo CEA, while CAS was more common among patients with a previous diagnosis of coronary artery disease or who had a prior CEA. The findings were based on data from the Centers for Medicare & Medicaid Services for all elderly Medicare beneficiaries who underwent carotid endarterectomy or carotid stenting from January 1, 2003 through December 31, 2006. State of residence was used to group beneficiaries into nine U.S. Census regions. The study was funded in part by the Agency for Healthcare Research and Quality (Contract No. 290-05-0032).

More details are in "Geographic variation in carotid revascularization among Medicare beneficiaries, 2003–2006," by Mamesh R. Patel, M.D., Melissa A. Greiner, M.S., Lisa D. DiMartino, M.P.H., and others in the July 26, 2010 *Archives of Internal Medicine* 170(14), pp. 1218-1225. ■ *DIL*

Community hospitals care for psychiatric patients in medical-surgical beds when psychiatric units are full

Many patients with psychiatric disorders requiring inpatient care are treated in community hospitals. Such patients may be admitted to psychiatric units or placed in general medical beds called "scatter beds." A new study found that nearly 7 percent of psychiatric discharges were from scatter beds, which community hospitals typically used as a short-term substitute for specialty psychiatric beds when units were full.

Information was obtained on hospital discharges from 12 States for patients with a psychiatric diagnosis. A total of 370,984 patients (93.2 percent) were treated in community hospital psychiatric units. This group was compared with 26,969 patients (6.8 percent) who were treated in scatter beds. Patients who were admitted to a scatter bed were more likely to be older and on Medicare when compared with patients admitted to a psychiatric unit. In addition, they were more likely to be admitted from the hospital's emergency department, have a shorter length of stay, and be later transferred to another facility. Only 35 to 43 percent of these patients had diagnoses of schizophrenia, mood disorders, or depression. Instead, they were more likely to be diagnosed with anxiety, dissociative (formerly multiple personality) disorder, and somatoform (formerly psychosomatic) disorders.

continued on page 11

Psychiatric disorders
continued from page 10

Using scatter beds may be an appropriate response to a lack of psychiatric beds, particularly in rural areas, note the researchers. However, they point to several issues that must be addressed when using scatter beds. These include the need for adequate staff training, the availability of consulting psychiatrists, and the ability to coordinate care with other psychiatric and behavioral providers in the region. Community hospitals also need more defined policies, procedures, and treatment strategies to ensure that patients receive the appropriate psychiatric care they need. The study was supported in part by the Agency for Healthcare Research and Quality (T32 HS00009).

See "Psychiatric discharges in community hospitals with and without psychiatric units: How many and for whom?," by Tami L. Mark, Ph.D., M.B.A., Rita Vandivort-Warren, M.S.W., Pamela L. Owens, Ph.D., and others in the June 2010 *Psychiatric Services* 61(6), pp. 562-568. ■ *KB*

Chronic Disease

Patients taking only salmeterol seen in the emergency department for asthma more likely to be hospitalized

Asthma episodes account for 1.8 million emergency department (ED) visits and nearly 500,000 hospitalizations each year. Patients with chronic asthma are typically treated with inhaled corticosteroids (ICS), so-called "controllers," to control lung inflammation. They use inhaled beta-agonists, adrenalin-like drugs, as "rescue" medications to open up the airways of the lungs during acute asthma episodes. Long-acting beta agonists (LABAs), such as salmeterol, are also used. However, they are not recommended as monotherapy in long-term management of asthma, because of a reported association with near-fatal or fatal events. In fact, a new study found that patients using only salmeterol who visited the ED for an acute asthma episode were much more likely to be hospitalized than other ED patients with asthma.

It also found that concurrent long-term therapy with ICS appears to protect these patients against this risk. A team of researchers led by Michael M. Liao, M.D., of the Denver Health Medical Center, studied 2,236 patients aged 12 to 54 with acute asthma in 115 EDs. They were divided into four groups based on the medications they were taking for asthma during the 4 weeks before their ED visit: no salmeterol or ICS, salmeterol monotherapy, ICS monotherapy, and combination ICS and salmeterol.

After controlling for 20 factors affecting asthma outcomes, the group taking only salmeterol had more than twice the risk of hospitalization, whereas groups treated with ICS only or a combination of ICS and salmeterol had no greater risk of hospitalization than the reference group not taking salmeterol or ICS. The findings from the ED setting reinforce the importance and safety of following guidelines for the long-term management of asthma advocated by the National Asthma Education and Prevention Program (NAEPP). The NAEPP guidelines state that LABAs should not be used as monotherapy and should only be added to concurrent ICS therapy in patients with moderate-to-severe asthma. This study was supported in part by the Agency for Healthcare Research and Quality (HS18123).

See "Salmeterol use and risk of hospitalization among emergency department patients with acute asthma," by Dr. Liao, Adit A. Ginde, M.D., M.P.H., Sunday Clark, M.P.H., Sc.D., and Carlos A. Camargo, Jr., M.D., Dr.P.H. in *Annals of Allergy, Asthma, and Immunology* 104, pp. 478-484, 2010. ■ *MWS*

Most patients with type 2 diabetes suffer an adverse event between office visits

Patients with type 2 diabetes (formerly called adult-onset diabetes) must self-manage their diet, exercise, medication, and blood-glucose testing to keep control of their disease. When patients must manage a chronic disease like diabetes at home, there is a potential for safety problems. In fact, a new study reveals that most patients treated for type 2 diabetes in a physician's office suffer from an adverse event (AE) or potential AE between office visits. Of 111 patients who used an automatic telephone support system for self-managing their diabetes, 86 percent had at least one AE detected over the 9-month observation period (111 AEs and 153 potential AEs).

The majority of real and potential events were found to be related to medication management (63 percent). A single contributing cause was noted for only 20 percent of the events. The remaining 80 percent were due to a combination of system, clinician, and patient factors. Patient actions, such as not connecting symptoms with medication problems, contributed to the cause of 77 percent of AEs. Systems issues, such as test results not sent to the primary care physician, contributed to 69 percent of AEs. Inadequate physician-patient communication contributed to 59 percent of AEs. Primary care physician problems other than communication contributed to only 16 events (6 percent).

The study was part of the 9-month Improving Diabetes Efforts Across Language and Literacy (IDEALL) project, using those patients who were assigned to the automated telephone self-management (ATSM) support program. The researchers measured patient health literacy in the English- and Spanish-speaking patients only. The IDEALL ATSM intervention included weekly interactive automated telephone calls to patients, with review and followup by a nurse care manager if the patient's responses indicated problems in an area of self-care, such as hypoglycemia (excessively low blood-glucose levels), considered a candidate AE or potential AE. A patient could request a call back from a nurse during any ATSM session or report an unrelated event during a live followup call from a nurse. The study was funded in part by the Agency for Healthcare Research and Quality (HS17594, HS14864, and HS17261).

More details are in "What happens between visits? Adverse and potential adverse events among a low-income, urban, ambulatory population with diabetes," by Urmimala Sarkar, M.D., Margaret A. Handley, Ph.D., M.P.H., Reena Gupta, M.D., and others in the June 2010 *Quality and Safety in Health Care* 19(3), pp. 223-228. ■ *DIL*

Some personality factors may affect success of chronic illness self-management programs

A variety of chronic disease self-management programs are offered to patients with such conditions as asthma, diabetes, and chronic obstructive pulmonary disease (COPD). Such programs are designed to improve a patient's ability to manage their own illness (self-efficacy). Although these programs demonstrate short-term success at 4-6 months, little is known about what individual personality factors may enhance or diminish this success. A new study shows that patients with low levels of conscientiousness are more likely to benefit from such a program.

Anthony Jerant, M.D., of the University of California Davis School of Medicine, and colleagues looked at the impact of the Five Factor Model of personality factors on the success of an illness self-management program on 384 patients from 12 primary care offices. All had one or more chronic illnesses, including arthritis, asthma, COPD, congestive heart failure, depression, and diabetes. The patients were randomized to receive the self-management intervention either at home or by telephone. A second control group had an initial home visit, but then received care from their usual providers. They were all given questionnaires to measure their self-rated mental and physical health.

Patients with high neuroticism (moody and easily upset), low conscientiousness, low extraversion, and low agreeableness, had worse initial self-rated mental

continued on page 13

Chronic illness self-management programs

continued from page12

health scores. Participants in the home intervention had better mental health scores at 4 and 6 weeks compared with the control group. However, these benefits were limited to participants with low conscientiousness, with no differences observed at 6 months or 1 year. Physical health scores were unaffected by the intervention or by personality characteristics. According to the researchers, assessing personality traits prior to enrollment in a chronic disease self-management program may help determine who will benefit the most from it. The study was supported in part by the Agency for Healthcare Research and Quality (HS13603).

See "Effects of personality on self-rated health in a 1-year randomized controlled trial of chronic illness self-management," by Dr. Jerant, Benjamin Chapman, Ph.D., Paul Duberstein, Ph.D., and Peter Franks, M.D., in the May 2010 *British Journal of Health Psychology* 15(Pt 2), pp. 321-335. ■ *KB*

Disparities/Minority Health

Black Medicare patients less likely than whites to follow their doctor's instructions on taking medicines

Even after adjusting for factors like age, sex, health literacy, depression, and social support, black elderly Medicare patients are less likely to follow their physician's instructions on how to take medications, concludes a new study. In unadjusted comparisons, blacks were three times as likely as whites to run out of medicine before refilling a prescription (odds ratio [OR] = 3.01), more than twice as likely to not follow their physician's instructions (OR = 2.64), but not more likely to forget to take medications.

After adjusting for demographic and other factors like prescription drug coverage and health status, race was no longer associated with not refilling medication prescriptions. Yet, blacks were still more than twice as likely as whites not to follow their phyisican's instructions for taking medication (OR = 2.49).

The researchers invited elderly Medicare recipients who had at least one outpatient visit to clinics associated with a Chicago health system within the previous 4 years to participate in the study. Of 633 eligible patients, 489 participated in the face-to-face survey (266 blacks and 184 whites) either at home or at the clinic. They were asked to rate their health on a 5-point scale, and given brief tests of health literacy, geriatric depression, and social support. The study was funded in part by the Agency for Healthcare Research and Quality (HS13004).

More details are in "Racial differences in medication adherence: A cross-sectional study of Medicare enrollees," by Ben S. Gerber, M.D., M.P.H., Young Ik Cho, Ph.D., Ahsan M. Arozullah, M.D., M.P.H., and others in the April 2010 *American Journal of Geriatric Pharmacotherapy* 8(2), pp. 136-145. ■ *DIL*

Black mothers skeptical of relationship between infant sleep position and SIDS

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 as other racial or ethnic groups. Since very little is known about how parents' beliefs and attitudes affect their decisions to adhere to safe sleep recommendations, the researchers decided to investigate perceptions about SIDS among black parents.

Rachel Y. Moon, M.D., and colleagues at Children's National Medical Center in Washington, D.C., conducted 13 focus groups with 73 black mothers of infants, as well as 10 individual interviews. They

continued on page 14

SIDS

continued from page 13

concluded that the mothers perceived the link between risk factors such as sleep position and SIDS to be implausible; SIDS to be a random, unpreventable occurrence; and parental vigilance to be the key to SIDS prevention. Many parents did not see the usefulness of changing sleep position to reduce SIDS risk unless they could be assured that this change would provide a 100 percent guarantee that SIDS would not occur.

SIDS is defined as the death of an infant for which no cause is found. Most SIDS deaths occur while the infant is sleeping. However, since the cause(s) of SIDS are unknown, many mothers did not understand how the sleep position of the infant could influence the occurrence of SIDS. If safe sleep recommendations are to be embraced by more black parents, a plausible link between the recommendations and SIDS or other sudden sleep-related deaths needs to be more clearly established for parents. That way, parents believe that their actions can be effective in reducing the risk of these deaths, suggest the researchers. Their study was supported, in part, by the Agency for Healthcare Research and Quality (HS16892).

See "Qualitative analysis of beliefs and perceptions about sudden infant death syndrome in African-American mothers: Implications for safe sleep recommendations," by Dr. Moon, Rosalind P. Oden, Brandi L. Joyner, B.S., and Taiwo I. Ajao, M.P.H., in the July 2010 *Journal of Pediatrics* 157, pp. 92-97. ■ *MWS*

Elderly/Long-Term Care

Public reporting on quality of care has definite, if modest, effects on nursing home care improvement

Public reporting of information about the quality of care delivered by health care providers is thought to improve quality in two ways: (1) consumers will be more likely to choose high quality providers, and (2) providers will have an incentive to invest in and improve the quality of care. A new study found that public reporting drove modest gains in nursing home care quality. A team of researchers headed by Rachel Werner, M.D., Ph.D., of the University of Pennsylvania, studied 8,137 nursing homes and 1,843,377 postacute stays for the 12 months before and after the Nursing Home Compare public reporting requirements went into effect. The nursing homes were measured on three postacute care quality measures: the percentages of short-stay patients who did not have moderate or severe pain, who were without delirium, and whose walking improved.

The percentage of patients who were without moderate or severe pain increased from 73.8 percent to 77.3 percent with public reporting. Nursing home-specific improvements in quality accounted for 2.4 percent of the increase, and an increased number of patients choosing high-quality nursing homes (increased market share) accounted for 1.6 percent. Residual changes in quality reduced the total by 0.5 percentage points. The percentage of patients without delirium increased only slightly from 96.2 to 96.5 percent since a 2.9 percent increase in market share was almost canceled out by residual changes of 2.7 percent. There were no overall changes in the percentage of patients with improved walking, since, once again, gains in quality and market share were canceled out by residual changes. This study was supported by the Agency for Healthcare Research and Quality (HS16478).

See "Public reporting drove quality gains at nursing homes," by Dr. Werner, Elizabeth Stuart, Ph.D., and Daniel Polsky, M.D., in the September 2010 *Health Affairs* 29(9), pp. 1706-1713. ■ *MWS*

Public report cards prompt nursing homes to spend more on clinical services

Since 2002, consumers looking for quality information on nursing homes have had the Internet as a resource. The Nursing Home Compare Web site provides information on each facility as well as a variety of clinical quality indicators for consideration. Recently, Dana B. Mukamel, Ph.D., of the University of California-Irvine, and William D. Spector, Ph.D., a researcher with the Agency for Healthcare Research and Quality (AHRQ), and colleagues studied the effect of this report card data on nursing home expenditures. Specifically, the researchers wanted to see if the public availability of clinical quality measures influenced nursing home spending, leading to a shift in resources from hotel to clinical-related improvements. They found that the ratio of clinical to hotel expenditures (capital-related costs, plant operation, laundry, housekeeping, and dietary items) increased significantly after report cards were released, suggesting that indeed such a shift has occurred. This is the expected "teaching to the test" reaction to publication of quality report cards.

The researchers analyzed data from 10,022 nursing homes across the nation during the period between 2001 and 2006. This timeframe includes 2 prereport card years prior to release of quality information to the public in 2002. Data were obtained on such things as expenditures, occupancy levels, Medicare-covered residents, and quality measures.

During the pre-report-card years, the ratio of clinical to hotel expenditures remained steady at 1.71 in 2001 and 1.72 in 2002. As expected, when public reporting became available, the ratio rose to 1.76 in 2003 and steadily climbed to 1.85 in 2005. Ratio increases were larger for nursing homes that had worse reported quality, lower occupancy rates, those located in competitive markets, and those owned by for-profit systems or chains. The authors note, however, that there is no evidence of a decrease in spending on hotel-related activities, suggesting that the increase in clinical expenditures has been financed with new monies.

More details are in "Changes in clinical and hotel expenditures following publication of the nursing home compare report card," by Dr. Mukamel, Dr. Spector, Jacqueline Zinn, Ph.D., and others in the October 2010 *Medical Care* 48(10), pp. 869-874. Reprints (AHRQ Publication No. 11-R001) are available from AHRQ.* ■ *KB*

Nursing home hospice patients are not receiving adequate treatment for nonpain symptoms

While pain control is often a common problem for end-of-life patients in nursing homes, there are other nonpain symptoms that pose similar challenges. These include constipation from the use of narcotics, cough, nausea/vomiting, and fever. A new study recently evaluated if these nonpain symptoms are being treated properly and if not, the reasons for undertreatment. It found that while the prevalence of these symptoms was low, more than half of patients with nonpain symptoms were not being treated adequately with medication.

Data for the study were obtained from the *2004 National Nursing Home Survey*. The group of 303 older nursing home hospice patients were 65 years or age or older. Information from the survey included detailed staff questions on patient medications and the presence or absence of nonpain symptoms. Most patients were white (91.4 percent) and female (71.9 percent). Nearly half (47.9 percent) were aged 85 or older.

Less than a quarter (22 percent) of the 303 patients experienced one or more nonpain symptoms. The three most common of these were constipation, cough, and nausea/vomiting. When the researchers looked at the rates of medication treatment, more than half (60 percent) of the 82 patients with nonpain symptoms were being undertreated. The highest rate of undertreatment (88 percent) was for nausea/vomiting. Compared with treated patients, those undertreated tended to have significantly more problems with mobility, mood, pressure ulcers, and more secondary diagnoses. Undertreated patients also had shorter length of stays compared with their treated peers. According to the researchers, more quality improvement initiatives are needed that move beyond just the management of pain to helping patients with these important nonpain symptoms.

continued on page 16

Nursing homes

continued from page 15

The study was supported in part by the Agency for Healthcare Research and Quality (HS17695).

See "A cross-sectional analysis of the prevalence of undertreatment of nonpain symptoms and factors associated with undertreatment in older nursing home hospice/palliative care patients," by Keri L. Rodriguez, Ph.D., Joseph T. Hanlon, Pharm.D., M.S., Subashan Perera, Ph.D., and others in the June 2010 *American Journal of Geriatric Pharmacotherapy* 8(3), pp. 225-232. ■ *KB*

Review looks at approaches to improve drug prescribing in nursing homes

Prescribing medications to nursing home residents is challenging. Many are on multiple drugs, increasing the potential for adverse drug events. Suboptimal prescribing may include the overuse of medications (e.g., sedatives), the underuse of medications (e.g., pain relievers), or the use of inappropriate drugs. Over the years, various interventions have been tried to improve prescribing practices in nursing homes. Recently, researchers conducted a review of randomized, controlled trials to see what interventions have been tried and their success rates. They found a variety of interventions with mixed results.

The researchers analyzed the published medical literature from 1975 to 2009 to identify appropriate studies. In the end, 18 studies were selected for the review. Of the 18 studies, 7 focused on various educational approaches to improve suboptimal prescribing practices. Another two studies measured the impact of computerized decision-support systems on adverse drug events and appropriate drug orders. Five studies looked at the role of the pharmacist and medication review activities. Two studies incorporated more than one intervention, and two studies used a multidisciplinary approach.

Fifteen of the 18 studies (83.3 percent) resulted in a significant improvement for at least 1 or more dimensions of suboptimal prescribing. Three of the more recent studies were able to examine medication-related adverse patient events. Three of the four studies that focused on central nervous system medications showed a significant decrease in residents taking these medications after an educational intervention. Three trials on anti-infectives showed significant improvements in appropriate antibiotic prescribing after an educational or multifaceted intervention was implemented. The study was supported in part by the Agency for Healthcare Research and Quality (HS17695).

See "Interventions to improve suboptimal prescribing in nursing homes: A narrative review," by Zachary A. Marcum, Pharm.D., Steven M. Handler, M.D., M.S., Rollin Wright, M.D., M.P.H., and Joseph T. Hanlon, Pharm.D., M.S., in the June 2010 *American Journal of Geriatric Pharmacotherapy* 8(3), pp. 183-200. ■ *KB*

HIV/AIDS Research

Rural counties experience funding and stigma problems in HIV prevention services

As local HIV prevention agencies fight growing rates of HIV infection, they have fewer and fewer resources, making it difficult for them to maintain existing programs and services, as well as launch new programs. Gaps in these services are often more acute in rural communities, according to a new study. Also, when such services exist, care coordination is often hampered by stigma barriers.

As part of a larger interagency coordination study, researchers purposefully selected 10 North Carolina counties with characteristics likely associated with gaps in HIV prevention services. Syphilis rates were used to determine counties with high and low sexually transmitted disease (STD) rates. Counties were also categorized according to racial disparities in syphilis rates. In each of the 10 counties, face-to-face interviews were conducted with individuals deemed influential informants and representatives at prevention agencies. Over 400 informants were asked about

continued on page 17

HIV prevention services

continued from page 16

performance of county health services, HIV prevention activities, community attitudes, and community cooperation and collaboration. Agency representatives at 169 agencies were asked to evaluate how well their agency performed on HIV prevention-related services, such as accessibility and cost of services.

The researchers found that informants in rural counties reported more gaps in prevention education, less commitment from the community, and less public-private cooperation compared with urban counties. Counties with high syphilis rates were found to have less than adequate relationships with the faith community. The majority of informants in rural counties, counties with high syphilis rates, and counties with high racial differences in syphilis rates reported that nonacceptance of people living with HIV was a major barrier to prevention services. Service gaps most often mentioned included mental health, substance abuse, affordable health care, and the planning of a comprehensive system. While prevention agencies felt their networks were successful at offering services for a reasonable cost, they admitted there were areas for improvement in location, hours of operation, and other accessibility issues. Funding and stigma were most often cited as barriers to services. The study was supported in part by the Agency for Healthcare Research and Quality (HS10861).

See "Identifying gaps in HIV prevention services," by Elizabeth A. Torrone, M.S.P.H., Ph.D., Brooke A. Levandowski, M.P.A.c., James C. Thomas, M.P.H., Ph.D., and others in *Social Work in Public Health* 25, pp. 327-340, 2010. ■ *KB*

Agency News and Notes

Medical complications add 30 percent to employers' chronic care costs

Potentially avoidable medical complications in people covered by job-related health insurance add at least 30 cents to every dollar spent by their employers on their care for six chronic conditions, according to a new study. The researchers said that even reducing the current average rate of potentially avoidable complications in workers and their dependents treated for high-blood pressure, heart disease, heart failure, diabetes, asthma, or chronic obstructive pulmonary disease from 29 percent to 26 percent could save employers nationwide as much as $6.5 billion a year. Complications boost employers' costs because they cause additional care, such as emergency room visits, hospitalizations, tests, and more medicines. But studies show that high-quality care ambulatory care reduces potentially avoidable complications.

Francois de Brantes, M.S., M.B.A., of the Health Care Incentives Improvement Institute, and his fellow researchers also found that the rate of complications among the nearly 690,000 persons they studied varied widely. Heart failure had the highest rate (58 percent), followed by chronic obstructive pulmonary disease (40 percent), diabetes (30 percent), asthma (30 percent), high blood pressure (17 percent), and heart disease (15 percent).

In another study in the same journal, researchers led by Jeffrey H. Silber, M.D., Ph.D., of the University of Pennsylvania School of Medicine, found that elderly surgical patients who were operated on in hospitals with an aggressive treatment style were 8 percent less likely to die within 30 days of admission compared with similar patients who had their surgery in hospitals with a less aggressive style. Hospitals that used more intensive care unit days and more overall patient days for these patients were considered to have a more aggressive treatment style than those that spent fewer of these resources on their elderly surgical patients.

The researchers, who analyzed data on more than 4.5 million elderly Medicare patients admitted to 3,065 hospitals between 2000 and 2005 for general, orthopedic, or vascular surgery, found that the patients who underwent surgery in the more aggressive hospitals were no more likely to suffer complications than those operated on in the less aggressive ones. However, when they did have a complication, the patients in the more aggressive

continued on page 18

Medical complications

continued from page 17

hospitals were much more likely to survive than the patients who suffered a complication in a less aggressive hospital.

The studies are part of a December 2010 special theme issue of *Health Services Research* on payment reform, published in collaboration with the Agency for Healthcare Research and Quality (AHRQ). AHRQ Director Carolyn M. Clancy, M.D., said, "The research in this special issue shows collectively that it's not simply deciding which payment system works best to improve quality and value, but when and under what circumstances does it work to achieve certain objectives." ■

Rates of emergency department use greater among women and low-income, older, and rural Americans

Americans aged 18 and older made over 98 million trips to hospital emergency departments in 2008 for problems including broken bones and heart attacks, according to the latest *News and Numbers* from the Agency for Healthcare Research and Quality (AHRQ). This represents 78 percent of the nearly 125 million visits that year. AHRQ also found that injuries and abdominal pain were among the most frequent acute conditions seen in hospital emergency departments, while heart problems and diabetes were among the chronic conditions most commonly seen.

The Agency's analysis also found that rates of emergency department visits were:

- 90 percent higher for Americans living in low-income areas compared with those living in the highest income areas (544 visits vs. 287 visits per 1,000 people).
- 24 percent higher for Americans aged 65 and older compared with those aged 18 to 44 (550 visits vs. 444 visits per 1,000 people).
- 39 percent higher for Americans living in rural areas compared with those living in urban areas (515 visits vs. 372 visits per 1,000 people).
- 26 percent higher for women than for men (477 visits versus 378 visits per 1,000 people).

This AHRQ *News and Numbers* is based on data in *Emergency Department Visits for Adults in Community Hospitals, 2008*. The report uses statistics from the 2008 Nationwide Emergency Department Sample (NEDS), a new AHRQ database that is nationally representative of emergency department visits in short-term, community non-Federal hospitals. The NEDS (www.hcup-us.ahrq.gov/nedsoverview.jsp) contains 26 million records from emergency department visits from approximately 1,000 hospitals nationwide. This represents 20 percent of all U.S. hospital emergency departments. 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. ■

More than half of U.S. employers offered health insurance and about one-third offered dental insurance in 2006

Dental insurance is a major factor in whether or not a person seeks out and uses dental care. Yet only 35 percent of U.S. employers provided dental insurance in 2006. About 56 percent of all employers offered health insurance and 63 percent of those also offered dental insurance that year. These findings are based on analysis of the 2006 Medical Expenditure Panel Survey-Insurance Component, conducted by Philip F. Cooper, Ph.D., a researcher at the Agency for Healthcare Research and Quality (AHRQ), and Richard J. Manski, D.D.S., M.B.A., Ph.D., from the University of Maryland Dental School. The survey, sponsored by AHRQ, included about 30,000 private-sector establishments.

The survey also showed that dental insurance coverage varied by employer characteristics. Employers most likely to offer dental coverage were nonprofit or for-profit, incorporated, had multiple locations, and were older firms. There was also a trend for larger firms to offer dental insurance compared with smaller firms.

continued on page 19

Dental insurance

continued from page 18

Employers in the agricultural or construction sectors were less likely to offer dental coverage compared with those in other job sectors. Dental insurance was also more likely to be offered at firms with more full-time employees and fewer low-wage workers.

The provision of health and dental coverage also varied by State. For example, 90 percent of all establishments in Hawaii offered health insurance and 78 percent offered dental insurance. This compared with only 40 percent of all employers in Alaska offering health insurance and only 23 percent of employers in Nebraska offering dental insurance. There were also low rates of employer-provided dental insurance in Maine and Vermont. Both States have low concentrations of large firms, indicating that company size may be a major determining factor as to whether or not dental insurance is offered by a particular employer.

More details are in "Characteristics of employers offering dental coverage in the United States," by Drs. Cooper and Manski, in the June 2010 *Journal of the American Dental Association* 141(6), pp. 700-711. ■ *KB*

Dental bills high in California

Dental bills in California averaged $813 per patient in 2007, roughly a quarter more than the national average of $643, according to the latest *News and Numbers* from the Agency for Healthcare Research and Quality (AHRQ).

The Agency's analysis of dental care spending and use in the 10 largest States in 2007 also found that:

- Nationally, nearly half (49 percent) of the cost of dental care was paid out-of-pocket vs. 16 percent for other types of health care.
- Compared with the national average for dental expenses paid out-of-pocket, Florida and Ohio had higher and lower rates—69 percent and 40 percent, respectively.
- Insurance was a factor. Private insurance paid for only 27.5 percent of dental bills in Florida but 48.5 percent in Ohio. Portions not paid by private insurers or out-of-pocket were paid by Medicaid or other sources.
- About 42 percent of all Americans incurred at least one dental care expenditure. Nationally, this varied from 31 percent of Texans to 54 percent of Michigan residents.

The data in this AHRQ *News and Numbers* summary are taken from the Medical Expenditure Panel Survey, a detailed source of information on the health services used by Americans, the frequency with which they are used, the cost of those services, and how they are paid. For more information, view *Dental Expenditures in the 10 Largest States, 2007*, at www.meps.ahrq.gov/mepsweb. 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. ■

2008 *HCUP Facts and Figures* report provides statistics on hospital visits

The Agency for Healthcare Research and Quality (AHRQ) has released *HCUP Facts and Figures: Statistics on Hospital-Based Care in the United States, 2008*, available online on the HCUP-US Web site (http://hcup-us.ahrq.gov/reports.jsp). The new report uses the Healthcare Cost and Utilization Project's (HCUP's) Nationwide Inpatient Sample database to present information about hospital care in 2008, as well as trends in care from 1993 to 2008.

HCUP Facts and Figures features an overview of numerous hospital-related topics, including general characteristics of U.S. hospitals and the patients treated; the most common diagnoses, conditions, and procedures associated with inpatient stays; the costs and charges associated with hospitalizations; and the payers for inpatient stays. A special section of this year's report examines trends in inpatient and emergency department care for mental health and substance abuse conditions. HCUP's 2007 Nationwide Emergency Department Sample (NEDS) database provided data on this topic. Funding for this section came from the Substance Abuse and Mental Health Services Administration (www.samhsa.gov).

As an example, one topic in the report shows that the number of hospital admissions among Americans aged 45 and older for medication and drug-related conditions doubled between 1997 and 2008. Medication and drug-related conditions include effects of both prescription and over-the-counter medications as well as illicit drugs.

For more information about the report, please visit the HCUP-US Web site at http://hcup-us.ahrq.gov, or contact HCUP User Support at hcup@ahrq.gov. ■

Free patient education videos, pamphlets available in Spanish

AHRQ is offering health providers its 60-second patient education videos in Spanish for organizations to show on closed-circuit television or on their Web sites. The videos, available at www.healthcare411.org defaultes.aspx, are:

- Taking Medicines—Conozca sus medicamentos
- Having Surgery—Consejos para la cirugia
- ER Visits—Consejos para cuando tenga que acudir a la sala de emergencia
- Gestational Diabetes—Diabetes gestacional
- Blood Clots—Los coágulos
- Osteoporosis—La osteoporosis

AHRQ also has new patient guides in Spanish or English on gestational diabetes, elective induced labor, cholesterol medications, breast biopsy methods, breast cancer risk-reduction drugs, premixed insulins, and other topics. To access the guides in Spanish, go to www.effectivehealthcare.ahrq.gov/index.cfm/informacion-en-espanol. To access the guides in English go to www.effectivehealthcare.ahrq.gov/index.cfm/guides-for-patients-and-consumers. You can also order a new bilingual guide, *Cómo cuidarme: Guía para cuando salga del hospital/Taking Care of Myself: A Guide for When I Leave the Hospital* at www.ahrq.gov/qual/goinghomesp.htm. ■

New AHRQ evidence report published on inhaled nitric oxide therapy for preterm infants

The Agency for Healthcare Research and Quality (AHRQ) released a new evidence report that found insufficient evidence to support giving inhaled nitric oxide therapy to preterm infants requiring mechanical ventilation to improve survival or to decrease pulmonary morbidity or neurodevelopmental impairment. Led by Marilee C. Allen and Pamela K. Donohue at the AHRQ Johns Hopkins University Evidence-based Practice Center, the team found a small reduction in the risk of the composite outcome of bronchopulmonary dysplasia or death for infants at 36 weeks postmenstrual age, who were treated with inhaled nitric oxide. They found insufficient data to determine if the therapy reduces the rate of bronchopulmonary dysplasia in preterm infants.

Researchers found insufficient evidence to determine if inhaled nitric oxide therapy impacts long-term health outcomes such as respiratory symptoms, rehospitalization after intensive care unit discharge, and growth. There was insufficient evidence that use of inhaled nitric oxide therapy influences the incidence of cognitive, motor, or sensory impairment or neurodevelopmental disability in preterm infants who require mechanical ventilation, though there was evidence that suggested that there may be a decrease in the use of respiratory medications at 1 year of age. There was insufficient evidence to determine if there was a differential effect based on birth weight, gender, race/ethnic group, gestational age, or severity of illness. Investigators noted that more research is needed to explore the possibility that inhaled nitric oxide may some day become a component of treatment strategy for some preterm infants receiving respiratory support. The results of this report, *Inhaled Nitric Oxide in Preterm Infants*, were presented at the National Institutes of Health Consensus Development Conference on October 27-29, 2010. To download a copy of the report, go to www.ahrq.gov/clinic/tp/inoinftp.htm. ■

New report on the impact of human factors on home health care quality and safety is available

A new report funded by the Agency for Healthcare Research and Quality (AHRQ) examines the impact of human factors on home health care quality and safety. The report includes seven commissioned papers on topics that include matching care to people in their home care environment; the prevalence, characteristics, and care provision ability of informal caregivers; medical devices and information technology and systems in home care; impact of social, cultural, and community environments on home care; and the effects of policy, reimbursement, and regulation on home health care.

Based on proceedings from an October 2009 workshop, the report, *The Role of Human Factors in Home Healthcare: Workshop Summary and Papers*, also features summaries of the workshop discussion on how home care quality and safety are affected by the capabilities and limitations of patients and providers in the use of technologies. The workshop summary report, which is published by the National Academy of Sciences' National Research Council under contract to AHRQ, is available for free download from their Web site (www.nap.edu/catalog.php?record_id=12927). A final consensus report and designers' guide for home-based consumer health IT developers, which build on the workshop proceedings, are under development and will include recommendations related to the safety and quality of home health care. The report and designers' guide are expected to be released in spring 2011. ■

New report examines impact of health information technology on workflow in outpatient settings

AHRQ recently released a new summary report, *Incorporating Health IT into Workflow Redesign*, prepared by the University of Wisconsin-Madison's Center for Quality and Productivity Improvement. The report summarizes existing research and evidence related to the impact of health information technology (IT) on workflow in outpatient settings. Key information obtained from the research will be incorporated into a toolkit to assist small and medium-sized practices in workflow analysis and redesign before, during, and after health IT implementation. The toolkit, *Workflow Assessment for Health IT*, is expected to be available in January 2011. You can access the summary report at http://healthit.ahrq.gov/portal/server.pt/community/ahrq_national_resource_center_for_health_it/650. ■

New guides on rotator cuff tears in adults are available

The Effective Health Care Program of the Agency for Healthcare Research and Quality (AHRQ) recently released new summary guides on *Treatment Options for Rotator Cuff Tears: A Guide for Adults* and *Comparative Effectiveness of Interventions for Rotator Cuff Tears in Adults: A Guide for Clinicians*. Tears to the shoulder's rotator cuff, which is composed of four muscle-tendon units, are common among older adults. Rotator cuff tears can cause significant pain and limit arm motion. Injuries to the rotator cuff are treatable, but it is unclear which treatment option—surgery or nonsurgical treatments such as physical therapy or medication—is best, according to the comparative effectiveness report prepared by the AHRQ-funded University of Alberta Evidence-based Practice Center.

The research review from which the new guides were derived examined treatment and rehabilitative options for rotator cuff tears. It found that all treatments, either surgical or nonsurgical, result in improvement, but found little difference between interventions. The report did not find evidence indicating ideal timing of surgery. In addition, a continuing medical education (CME) activity and slide talk are also available. Both guides, the CME activity, and slide talk are available on the Comparative Effectiveness Web site at www.effectivehealthcare.ahrq.gov. ■

New AHRQ resource available for developing or improving public reporting Web sites

The Agency for Healthcare Research and Quality has a free new resource designed to help organizations that report provider performance develop Web sites or improve existing ones. *Model Public Report Elements: A Sampler* includes samples from public reporting Web pages and highlights their most effective elements, such as the landing page, presentation of measure ratings, consumer engagement tools, and a place for consumer input on the Web site design. Additional examples illustrate functional possibilities of Web sites and demonstrate how to facilitate use by consumers in their care. The 81-page sampler was developed by researchers led by R. Adams Dudley, M.D., of the University of California, San Francisco. To access the sampler, go to www.ahrq.gov/qual/value/pubrptsampler.htm. ■

Cohen, S.B., Ezzati-Rice, T., and Zodet, M. (2009, December). "The impact of survey design modifications on health insurance coverage estimates in a National Longitudinal Health Care Survey." ***Health Services Outcomes Research Methods*** **9(4), Epub. Aug. 6, 2010.**
The Medical Expenditures Panel Survey (MEPS) is one of the core U.S. health surveys that serves as a primary source for national health insurance coverage estimates. In 2007, the survey's design was modified in two ways: (1) a new sample design attributable to the sample redesign of the National Health Interview Survey, and (2) an upgrade to the CAPI platform for the survey instrument, moving from a DOS to a Windows-based environment. This paper examines several dimensions of the potential impact of these modifications. One part examines the alignment in MEPS coverage estimates across panels. This was supplemented by a model-based analysis of the impact of recent MEPS design modifications on coverage estimates. The final series of analyses attempted to isolate the effects of MEPS sample design modifications and adjustments for survey attrition on health insurance coverage estimates from those attributable to the CAPI design modifications introduced in 2007.

Dikmen, S., Machamer, J., Fann, J. R., and Temskin, N. R. (2010). "Rates of symptom reporting following traumatic brain injury." (AHRQ grants HS04146, HS05304). ***Journal of the International Neuropsychological Society*** **16, pp. 410-411.**
Although often discounted because they cannot be independently verified, self-reported posttraumatic symptoms (PTS) are commonly the problems that people with traumatic brain injury (TBI) present to health care providers. There is no doubt that PTS are common immediately after the injury. The question is how long they persist, the number of persons who will continue to have them, and what predicts who will continue to have symptoms. The researchers examined 732 patients with a broad range of injury severity at 1 month and 1 year after TBI, in comparison with 120 general trauma subjects whose injury spared the head. Symptoms are commonly reported in both groups at 1 month. At 1 year postinjury, 53 percent of people with TBI and 24 percent of people with other trauma reported 3 or more symptoms. Problems with irritability, memory, and temper were the most likely to be reported at 1 year. Symptom reporting in the TBI group was significantly related to age, sex, pre-injury alcohol abuse, pre-injury psychiatric history, and severity of TBI.

Donovan, J. L., Kanaan, A. O., Thomson, M. S., and others. (2010, May). "Effects of clinical decision support on psychotropic medications prescribing in the long-term care setting." (AHRQ grants HS10481, HS15430). ***Journal of the American Geriatric Society*** **58(5), pp. 1005-1007.**
The researchers sought to discover if the implementation of a computerized clinical decision support system, which provided specific recommendations on dosing and choice of psychotropic drugs, would increase the prescription of recommended doses and reduce the prescription of nonrecommended drugs in the long-term care (LTC) setting. The study followed 813 different LTC residents in the intervention and control groups over a 12-month period. It found that the overall rate of inappropriate orders was 1.58 per 100 resident-months on the intervention units and 1.61 per 100 resident-months in the control units. The lack of improvement in prescribing quality was perhaps due to a low overall rate of inappropriate prescribing in the study facility, which is a large, academically affiliated LTC facility.

Engelberg, R.A., Downey, L., Wenrich, M.D., and others. (2010, June). "Measuring the quality of end-of-life care." (AHRQ grant HS11425). ***Journal of Pain and Symptom Management*** **39(6), pp. 951-971.**
The researchers sought to examine the measurement characteristics of the new Quality of End-of-Life Care (QEOLC) questionnaire in which respondents rate physician skills at providing quality end-of-life care. A total of 801 patients with life-limiting conditions, 310 of

continued on page 24

continued from page 23

their families, and 885 nurses filled out a mailed copy of the questionnaire. The study describes the psychometric characteristics, including the domain structure and construct validity of the QEOLC questionnaire. The original 54-item QEOLC questionnaire was reduced to a set of 29 items for patients, 30 items for families, and 31 items for nurses, based on previously defined criteria. Using structural equation modeling techniques corrected for clustering under physicians, the researchers identified a patient-specific factor based on 11 items, a family-specific factor based on 22 items, a nurse-specific factor based on 11 items, and a common single-factor solution based on 10 items.

Fishman, P. A., Bonomi, A. E., Anderson, M. L., and others. (2010). "Changes in health care costs over time following the cessation of intimate partner violence." (AHRQ grant HS10909). *Journal of General Internal Medicine* 25(9), pp. 920-925.

A growing literature has documented increased health care costs for women who have experienced intimate partner violence (IPV) compared with other women. These greater costs are sustained for some time after IPV ends, but research has yet to show whether health care costs for these women return to baseline at some point. The researchers followed total health care costs over an 11-year period for women enrolled in the Group Health Cooperative and compared costs for women who experienced IPV with those who never experienced IPV. IPV resulted in $585 greater annual health care costs during the period of abuse and these costs remained significantly higher for 3 years following the end of the abuse. By the fourth year, differences were not statistically significant, and by the fifth year, costs for IPV and non-IPV groups were similar.

Hetsroni, I., Rosenberg, H., Grimm, P., and Marx, R. G. (2010, May). "*Mycobacterium fortuitum* infection following patellar tendon repair: A case report." (AHRQ grant HS16075). *Journal of Bone & Joint Surgery* 92(5), pp. 1254-1256.

Mycobacterium fortuitum is a ubiquitous, rapidly growing mycobacterial species that has been encountered following trauma, prosthetic arthroplasty, and fracture surgery with internal fixation. The authors report a case of an otherwise healthy man who underwent patellar tendon repair that was complicated by a *Mycobacterium fortuitum* infection. Infections involving this pathogen often present a therapeutic challenge. In this case, 2 months passed from the primary operation until the infection was treated appropriately with aggressive surgery and specific chemotherapy. Had specimens not been submitted for mycobacterial analysis, there might have been an adverse outcome. This case was exceptional in that the infection was found following a soft-tissue procedure in an otherwise healthy patient. The authors believe that the cost and morbidity of an overlooked diagnosis justify aerobic and anaerobic cultures being universally accompanied by mycobacterial cultures at the time of debridement of musculoskeletal infections.

Isaac, T., Zaslavsky, A. M., Cleary, P. D., and Landon, B. E. (2010, August). "The relationship between patients' perception of care and measures of hospital quality and safety." (AHRQ grant 13190). *HSR: Health Services Research* 45(4), pp. 1024-1040.

The researchers sought to determine the extent to which patient experiences with hospital care are related to other measures of hospital quality and safety. Using data from 929 hospitals, they examined the relationship between Hospital Consumer Assessment of Healthcare Providers and Systems scores and technical measures of quality and safety. The study found consistent relationships between patient experiences and technical quality as defined by measures used in the Hospital Quality Alliance program and complication rates, as measured by the Agency for Healthcare Research and Quality's Patient Safety Indicators. Two overall measures of hospital performance, the overall rating of the hospital and willingness to recommend the hospital, were strongly related to better technical performance in processes of care related to pneumonia, congestive heart failure, myocardial infarction, and for surgical care.

Kesselheim, A. S., and Outterson, K. (2010). "Fighting antibiotic resistance: Marrying new financial incentives to meeting public health goals." (AHRQ grant HS18465). *Health Affairs* 29(9), pp. 1689-1696.

Rising rates of antibiotic resistance have become a clear public health crisis. Many proposals have been offered to address this issue. The authors argue for an integrated focus on both producing new drugs and making careful and more

continued on page 25

continued from page 24

limited use of existing ones. They propose to tie reimbursement for antibiotics more directly to objective evidence of appropriate prescription rates and positive public health outcomes. This would involve applying the principles of value-based reimbursement to paying for continued antibiotic effectiveness. They also propose a conservation-based market exclusivity strategy, whereby the Food and Drug Administration would set specific effectiveness targets for each antibiotic. If the observed data met the specific target and equitable access to the drug was observed, the company would continue to enjoy marketing exclusivity. This kind of program would encourage manufacturers to create programs to restrict clinically inappropriate use of their products, such as funding hospital-based infection control efforts.

Lale, A., Moloney, R., and Alexander, G.C. (2010, July). "Academic medical centers and underserved communities: Modern complexities of an enduring relationship." (AHRQ grant HS15699). ***Journal of the National Medical Association*** **102(7), pp. 605-613.**

Academic medical centers have a tripartite mission of education, research, and clinical care. About 75 percent of these centers are located in underserved communities with large minority populations that are often underinsured or uninsured. To explore stakeholders' views regarding the ethical, legal, and financial obligations of private academic medical centers to their surrounding neighborhoods, the researchers conducted 19 interviews with a variety of key stakeholders (medical students, faculty physicians, administrators, and community-based physicians) at a single academic medical center. Every respondent believed that academic medical centers have some obligation to their surrounding communities. However, they differed regarding the extent of the obligation as well as how to best unite the service goals of the medical profession with the fiscal realities of the institution. Half of the respondents directly connected the challenges facing these centers to inefficiencies and inequities in the broader health care system.

Mazumdar, M., Banerjee, S., and Van Epps, H.L. (2010). "Improved reporting of statistical design and analysis: Guidelines, education, and editorial policies." **In: Bang, H., et al. (editors).** ***Statistical Methods in Molecular Biology.*** **New York: Humana Press. pp. 563-598.**

The proportion of original manuscripts published in biomedical journals that contain some form of statistical analysis is estimated at 60-90 percent. The complexity of published statistical analyses has increased steadily in recent decades and statistical flaws have been revealed in many published reports. To help avoid errors and improve statistical reporting, four approaches are suggested: (1) development of guidelines for statistical reporting that could be adopted by all journals, (2) improvement in statistics curricula in biomedical research programs with an emphasis on hands-on teaching by biostatisticians, (3) expansion and enhancement of biomedical science curricula in statistics programs, and (4) increased participation of biostatisticians in the peer-review process along with the adoption of more rigorous journal editorial policies regarding statistics. The authors discuss each of these approaches in detail.

Pylypchuk, Y. (2010). "Adverse selection and the effect of health insurance on utilization of prescribed medicine among patients with chronic conditions." **In: Dor, A. (editor).** ***Pharmaceutical Markets and Insurance Worldwide.*** **[Advances in Health Economics and Health Services Research, Vol. 22]. UK: Emerald Group Publishing, Ltd. pp. 233-272. Reprints (AHRQ Publication No. 11-R011) are available from AHRQ.***

The researcher used 2000-2003 data from the Medical Expenditure Survey to determine the association between health insurance coverage and expenditures for drugs that treat chronic diseases. He compared four types of health insurance: no insurance, health maintenance organization (HMO) insurance with drug coverage, and non-HMO health insurance with and without drug coverage. He found that drug coverage was very important in understanding drug expenses among patients with chronic conditions (specifically, hypertension, diabetes, and asthma). Patients with a silent chronic condition such as hypertension are more likely to buy their prescribed medication if they have drug coverage, while patients with noticeable chronic conditions (diabetes or asthma) are more likely to get their medications whether or not they have drug coverage.

continued on page 26

continued from page 25

Richard, C. J., and Engebretson, J. (2010). "Negotiating living with an arteriovenous fistula for hemodialysis." (AHRQ grant HS10826). *Continuing Nursing Education* 37(4), pp. 363-374.
Establishing and maintaining a vascular access is one of the biggest problems in hemodialysis. The researchers examined how clients with end-stage renal disease on hemodialysis negotiate living with an arteriovenous fistula. A fistula is the preferred access for hemodialysis, and clients must continually monitor and protect their fistula. The researchers interviewed 14 clients for 1.5 to 4 hours. The overarching theme emerging from the clients' experiences was vulnerability. An underlying theme was body awareness. Vulnerability is based partly on being dependent on the health care system, which, in turn, can lead to mistrust of that system extending to the technology and the providers. Other themes are the need to cope with maintenance and the stigma of the vascular access. Providers need to be aware of the feelings clients have about their vascular access, including stigma, and encourage them to express these feelings in a nonjudgmental environment.

Rivera-Rodriguez, A. J., and Karsh, B-T. (2010). "Interruptions and distractions in healthcare: Review and reappraisal." (AHRQ grant HS13610). *Quality and Safety in Health Care* 19, pp. 304-312.
Interruptions in health care settings can be disruptive and be a contributing factor to medical errors. The authors systematically reviewed the peer-reviewed literature on this subject to determine the state of the science and to identify gaps. A total of 33 papers were included in their review. There were several important findings. First, interruptions occur frequently, regardless of the setting. Second, there is a gap in the existing research in that only seven studies examined outcomes related to interruptions. Third, the studies that have been done looked at interruptions only from the perspective of the one being interrupted and not the interrupter. Finally, few studies examined the cognitive implications of interruptions by measuring subsequent performance, such as errors or problem identification. These implications are at the heart of why the study of interruptions is important. The authors conclude by discussing some of these implications and making recommendations for future research.

Routh, J. C., Gong, E. M., Cannon, G. M. (2010). "Variation among internet based calculators in predicting spontaneous resolution of vesicoureteral reflux." (AHRQ grant T32 HS00063). *Journal of Urology* 183, pp. 1568-1573.
Vesicoureteral reflux (VUR) is an abnormal movement of urine from the bladder into the ureters or kidneys. It is a condition more likely to affect younger children. Pediatric urologists have developed prediction models applicable to VUR, specifically to predict the probability of its spontaneous resolution. Several of these models are published as Internet-based calculators, usable by both providers and parents. The researchers sought to discover if the currently available calculators for VUR resolution produced systematically different results. They found systematic differences among the three Internet-based calculators. For one patient, the estimated probability ranged from 24 to 89 percent, while another had a probability of 7 to 48 percent. Also, the three calculators produced widely divergent discriminatory abilities when a variety of threshold cutoff values were used. For certain patients, such differences have the potential to significantly influence clinical decisionmaking.

Sawyer, M., Weeks, K., Goeschel, C. A., and others. (2010). "Using evidence, rigorous measurement, and collaboration to eliminate central catheter-associated bloodstream infections." (AHRQ grant HS14246). *Critical Care Medicine* 38(8 Suppl.), pp. S292-S298.
A safety project developed at Johns Hopkins School of Medicine and implemented in more than 100 intensive care units in Michigan led to a 66 percent reduction in central line (catheter)-associated bloodstream infections (CLABSIs) and a median CLABSI rate of zero. The authors describe the evolution of the Michigan project into a national program called On the CUSP. The Agency for Healthcare Research and Quality (AHRQ) initially supported the Michigan program and has extended funding to an additional 10 States, with private philanthropies supporting the program in another 18 States. After Secretary of Health and Human Services Kathleen Sebelius called for a reduction of 75 percent in CLABSIs within 3 years, AHRQ expanded support to all 50 States,

continued on page 27

continued from page 26

the District of Columbia, and Puerto Rico.

The On the CUSP program has three main components: a model for translating research into practice to prevent CLABSI; a Comprehensive Unit-based Safety Program to improve culture and teamwork; and a rigorous system to measure, report, and improve CLABSIs and other variables.

Viswanathan, M., Kraschnewski, J. L., Nishikawa, B., and others. (2010, September). "Outcomes and costs of community health worker interventions. A systematic review." (AHRQ Contract No. 290-07-0056). *Medical Care* 48(9), pp. 792-808.

Community health workers (CHWs) are increasingly expected to provide cost-effective improvements in health outcomes for the underserved. The researchers conducted a systematic review of the literature on outcomes and costs of CHW interventions. They identified 53 studies on outcomes and 6 on cost or cost-effectiveness. The outcomes included knowledge, behavior, satisfaction, health outcomes, and health care utilization. The study found limited evidence that CHW interventions can improve participant knowledge compared with alternative approaches such as no intervention, media, mail, or usual care plus pamphlets. There was mixed evidence for CHW effectiveness on participant behavior change and health outcomes. There was low- or moderate-strength evidence suggesting that CHWs can increase appropriate health care utilization for some interventions. The evidence on cost effectiveness was insufficient to evaluate CHW interventions relative to other public health interventions.

Zuvekas, S. (2010). "The financing of mental health and substance abuse services: Insurance, managed care, and reimbursement." In: Levin, B.L, Hennessy, K.D., and Petrila, J. (editors). *Mental Health Services: A Public Health Perspective.* Third edition. New York: Oxford University Press. pp. 13-41. Reprints (AHRQ Publication No. 11-R007) are available from AHRQ.*

Changes in the Medicaid and Medicare public insurance programs and private health plans increasingly drive how mental health and substance abuse (MH/SA) services are organized, delivered, and financed. The principal goals of this chapter are to (1) understand how these insurance models operate in theory and in practice, and (2) understand the implications of the increasing strains on employer-based private health insurance and public insurance systems for the future of MH/SA services. The shift to insurance-financed systems has led to a relative shift in resources away from individuals with severe and persistent mental illness (SMI) toward those with other mental disorders such as anxiety, depression, and attention deficit hyperactivity disorder. It is the integration with insurance-based systems that has led to fragmentation in financing for treatment of people with SMI. Overcoming this fragmentation in SMI treatment is a central goal of current mental health reform efforts.

Zuvekas, S. H., and Cohen, J. W. (2010). "Paying physicians by capitation: Is the past now prologue?" *Health Affairs* 29(9), pp. 1661-1666. Reprints (AHRQ Publication No. 11-R003) are available from AHRQ.*

Continued increases in health care costs and concerns about quality of care have brought renewed interest in physician payment reform. Along with it has come a renewed interest in capitation because of its strong cost containment incentives. The researchers explored the prospect for reform by using data from the Medical Expenditures Panel Survey to analyze trends in physician capitation over the period 1996-2007. The focus is on how individual physicians or physician practices are paid. The researchers found that the percentage of physician visits covered under capitation fell from almost 16 percent in 1996 to 7 percent by 2007. Among the Western States, capitation remained highest in California (29 percent) and Oregon (18 percent). The reasons for decline appear to be not only consumer and physician backlash, but also the administrative complexity of calculating and negotiating capitation rates. Also, capitation may not have delivered on its promise of cost containment. ■

Research Activities—2010 Author Index

The following is an alphabetical listing of the first authors of journal articles, book chapters, and reports summarized in *Research Activities* during 2010. Month and page number(s) are given.

continued on page 29

2010 Author index

continued from page 28

continued on page 30

2010 Author index

continued from page 29

Research Activities—2010 Subject Index

The following is an alphabetical listing of research topics featured in *Research Activities* in 2010. Month of publication and page number(s) are given.

continued on page 32

2010 Subject index

continued from page 31

continued on page 33

2010 Subject index

continued from page 32

continued on page 34

2010 Subject index

continued from page 33

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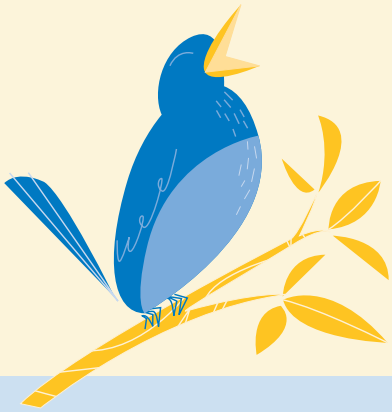

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