Research Activities

No. 250, June 2001

Highlights

Departments

Regular Features

Medication errors are common in hospitalized children

A 1999 Institute of Medicine report estimated that 44,000 to 98,000 people die each year due at least in part to medical error. Medication errors are common even among hospitalized children, concludes a study supported by the Agency for Healthcare Research and Quality (National Research Service Award training grant T32 HS00063).

The researchers found that errors occurred in 5.7 percent of medication orders during the care of 1,120 pediatric patients admitted to two urban teaching hospitals in 1999. In addition, the rate of potential adverse drug events (ADEs)—errors caught before medication was administered to a child—was three times the rate of potential ADEs found in a similar study of hospitalized adults. There were 26 actual ADEs, of which 5 (19 percent) were deemed preventable.

Physicians at both hospitals still handwrote orders, and copies of their orders were sent to the pharmacy. Physician reviewers judged that computerized physician order entry and decision support (with automatic checks on patient drug allergies, drug dosage, and drug-drug interaction) could have prevented 93 percent of potential ADEs. Also, ward-based clinical pharmacists participating in ward rounds could have prevented 94 percent of potential ADEs. As the authors point out, 79 percent of potential ADEs occurred at the stage of drug ordering, and 34 percent involved incorrect dosing. They examined clinical staff reports, medication order sheets, medication administration records, and patient charts to identify medication errors, potential ADEs, and ADEs.

The authors emphasize that medication administration is even more problematic in children than adults for several reasons. Weight-based dosing is needed for virtually all pediatric drugs, and pharmacists often must dilute stock solutions. Young children do not have the communication skills to warn clinicians about potential mistakes in administering medications or about adverse effects that they experience. Finally, children, especially neonates, may have more limited

continued on page 2

Medication errors

continued from page 1

internal reserves than adults with which to buffer errors.

See "Medication errors and adverse drug events in pediatric inpatients," by Rainu Kaushal, M.D., M.P.H., David W. Bates, M.D., M.Sc., Christopher Landrigan, M.D., M.P.H., and others, in the April 25, 2001 *Journal of the American Medical Association* 285(16), pp. 2114-2120. ■

Diabetes Research

Patients with both diabetes and other chronic conditions can still achieve good glycemic control

Patients who suffer from adult-onset (type 2) diabetes often suffer from other chronic diseases as well, such as hypertension and heart disease, which can complicate their care. In a recent study, however, patients who received intensive therapy at a specialty diabetes clinic were able to achieve good blood sugar (glycemic) control despite their other chronic conditions. The study was supported in part by the Agency for Healthcare Research and Quality (HS09722) and conducted by researchers at Emory University School of Medicine in Atlanta.

Lead author Imad M. El-Kebbi, M.D., and his colleagues studied 654 consecutive patients with type 2 diabetes who were treated in a diabetes clinic in 1997 and 169 patients who had a followup visit at 6 months. The study patients were 90 percent black, and 66 percent female, with an average age of 53. The researchers assessed the impact of age, body mass index (a measure of obesity), diabetes duration, type of therapy, and Chronic Disease Score (CDS)—(a weighted score that represents the number and severity of chronic diseases)—on the patients' blood sugar (HbA_{1c}) levels.

When patients first came to the clinic, their average HbA_{1c} level was 8.8 percent, and their average CDS was 1,121 (range 232-7,954). To put this in perspective, a 40-year-old man with uncomplicated diabetes would have a CDS of 232, whereas a 40-year-old man with diabetes, hypertension, and cardiac and vascular disease would have a score of 3,018. Twenty percent of these patients were being treated with diet alone, 48 percent with oral medications, and 32 percent with insulin alone or in combination with oral medications. The most common other chronic illness was hypertension, which affected 55 percent of the patients.

Six months after treatment at the clinic, which included adding or changing oral medication or adding insulin to the treatment regimen to further reduce blood sugar levels, a group of 169 patients, who were clinically similar to the overall group, had improved their average HbA_{1c} level from 8.8 percent at the initial visit to 7.5 percent. Only patient age and diabetes duration, not the chronic disease score, significantly contributed to posttreatment HbA_{1c} levels.

More details are in "Comorbidity and glycemic control in patients with type 2 diabetes," by Dr. El-Kebbi, David C. Ziemer, M.D., Curtiss B. Cook, M.D., and others, in the May 2001 Archives of *Internal Medicine* 161, pp. 1295-1300. ■

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

AHRQ
Office of Health Care Information
2101 East Jefferson Street, Suite 501
Rockville, MD 20852
(301) 594-1364

Mary L. Grady, Managing Editor
Gail Makulowich, Contributing Editor
Joel Boches, Design and Production
Karen Migdail, Media Inquiries

Researchers examine ways to improve diabetes care in different health care settings

Diabetes affects 10 million patients and costs over $100 billion annually. Complications of diabetes, which range from poor wound healing and cardiovascular disease to kidney and eye damage, can be delayed by reducing hyperglycemia or high levels of blood sugar that arise from lack of insulin to metabolize it. Structured treatment programs, which typically include patient education, use of nurse case managers, and stepped-care rules to guide drug management, have been shown to improve glycemic control. However, despite recommendations for national standards of care, management of the disease often falls short of these standards. Four new studies supported by the Agency for Healthcare Research and Quality examine ways to improve diabetes management in different health care settings.

The first study shows that failure to intensify therapy for black patients with diabetes, who are at risk for persistent hyperglycemia despite treatment, may contribute to their poor outcomes. The second study finds that physician assistant students need to improve their understanding of when to intensify insulin therapy. The third study identifies barriers to improving care for individuals treated for diabetes at community health centers. The fourth study describes four interactive technologies that may improve self-management of diabetes.

Cook, C.B., Lyles, R.H., El-Kebbi, I., and others. (2001, February). "The potentially poor response to outpatient diabetes care in urban African-Americans." (AHRQ grant HS09722). *Diabetes Care* 24(2), pp. 209-215.

The usual basis for defining diabetes program success is lowering a patient's blood sugar (HbA_{1c}) level to 7 percent or less. However, some individuals are more responsive to treatment than others. Less responsive patients with diabetes, who show little reduction in blood sugar levels, are at greater risk for complications of diabetes such as eye and kidney disease. These researchers studied urban black patients with type 2 (adult-onset) diabetes who were managed in an outpatient diabetes clinic. Patients who had diabetes longer, had a higher initial blood sugar level, and had greater body mass index were at significantly increased risk of poor treatment response (persistent hyperglycemia) compared with similar patients who did not have these characteristics.

All black patients treated at the clinic were managed with diet, sulfonylureas (oral medication to lower blood glucose levels), and insulin. Patients were characterized as responders, intermediate responders, or poor responders according to their HbA_{1c} level after 1 year of care. Most patients had diabetes for a mean of 5 years, were in their 50s, and were overweight. Overall, the mean HbA_{1c} level fell from 9.6 to 8.1 percent after 1 year. Mean HbA_{1c} levels fell from 8.8 to 6.2 percent in responders and from 9.5 to 7.9 percent in intermediate responders. However, in poor responders, the average HbA_{1c} level was 10.8 initially and 10.9 percent 1 year later.

Although doses of oral medication and insulin were significantly higher among poor responders at most visits, the acceleration of insulin therapy did not occur until late in the followup period. This suggests that in addition to the patient characteristics identified, insufficient intensification of therapy may have been a factor underlying the failure to achieve glycemic goals in this group of

continued on page 4

Also in this issue:

Diabetes care

continued from page 3

patients. The authors note that clinical diabetes programs need to devise methods to identify patients who are at risk for persistent hyperglycemia and thus might benefit from intensified therapy.

Fisk, D.M., Hayes, R.P., Barnes, C.S., and Cook, C.B. (2001, January). "Physician assistant students and diabetes: Evaluation of attitudes and beliefs." (AHRQ grant HS09722). *Diabetes Educator* 27(1), pp. 111-118.

Growing numbers of physician assistants are taking principal responsibility for patient care, including diabetes management. However, physician assistant students need a better understanding of when to intensify therapy for their patients with diabetes, concludes this study. The researchers used the Diabetes Attitude Scale to survey three currently enrolled classes of physician assistant students as to their attitudes about type 2 (adult-onset) diabetes and at what level of hyperglycemia students would intensify diabetes therapy.

Most students agreed that diabetes is a serious disease, providers should receive instruction in diabetes management, tight glucose control is important, diabetes does have an impact on patients' lives, and patients should be the primary decisionmakers regarding the daily self-care of their diabetes. However, many students did not understand at what point they should start or increase medications to reach recommended blood sugar levels. The American Diabetes Association target for fasting plasma glucose (FPG) is less than 120 mg/dL and an HbA_{1c} of less than 7 percent, with intensification of therapy suggested for an FPG of more than 140 mg/dL or an HbA_{1c} of more than 8 percent.

Yet, nearly 64 percent of the first-year students did not know at what level of FPG they would start or increase medications. Also, 84 percent of the first-year students could not state an HbA_{1c} level that would prompt drug intervention. Fewer second- and third-year students responded "don't know," but the wide distribution of values they reported to start or increase medications suggests that even they may be unfamiliar with current clinical targets. Future instruction of physician assistant students should focus on how to achieve glucose goals.

Chin, M.H., Cook, S., Jin, L., and others. (2001, February). "Barriers to providing diabetes care in community health centers." (AHRQ grant HS10479). *Diabetes Care* 24(2), pp. 268-274.

Financially disadvantaged people with diabetes often rely on a safety net system of care, which in many cases is the community health center (CHC). Researchers in this study identified the barriers to improving diabetes care in CHCs that typically serve vulnerable patients and have limited resources. The researchers surveyed 389 health providers and administrators at 42 Midwestern CHCs about the barriers they faced in delivering diabetes care. More than 25 percent of providers and administrators agreed that significant barriers to care included patients' inability to afford home blood glucose monitoring, HbA_{1c} testing, dilated eye examination (to detect changes in the eye associated with diabetes), and special diets; lack of accessibility to an ophthalmologist; forgetting to order eye examinations and to examine patients' feet; time required to teach home blood glucose monitoring; and language or cultural barriers.

Overall, providers and administrators rated access to care, affordability of care, and sufficient appointment time as mild to moderate barriers to quality diabetes treatment at CHCs. Providers were more confident in their ability to instruct patients on diet and exercise than on their ability to help them make changes in these areas. On the other hand, providers perceived that patients were significantly less likely than providers to believe that key processes of care were important.

The researchers conclude that improvement in diabetes care at CHCs probably requires a multifaceted approach emphasizing patient education, improved training of providers in how to effect behavioral change, and enhanced delivery systems that improve the affordability, accessibility, and efficiency of care.

Glasgow, R.E., and Bull, S.S. (2001, May). "Making a difference with interactive technology: Considerations in

continued on page 5

Note: Only items marked with a single (*) or double (**) asterisk are available from AHRQ. Items marked with a single asterisk (*) are available from AHRQ's clearinghouse. Items with a double asterisk (**) are also available through AHRQ InstantFAX. Three asterisks (***) indicate NTIS availability. 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.

Diabetes care

continued from page 4

using and evaluating computerized aids for diabetes self-management education." (AHRQ grant HS10123). *Diabetes Spectrum* 14(2), pp. 99-106.

Self-management activities—including taking medication, eating properly, exercising regularly, and self-monitoring of blood glucose levels (SMBG)—are considered central to good diabetes control. These researchers describe the potential or actual impact of four interactive technologies (IT) on the self-management of diabetes: hand-held SMBG devices, automated telephone disease management (ATDM), CD-ROM technology, and Internet interaction. Hand-held SMBG devices automatically record time, date, glucose level, and other data related to self-management (for example, calorie intake and exercise level) and allow for transfer of data directly to health care providers. In addition, SMBG devices can present feedback in a variety of ways, including average blood glucose for specified intervals or frequency distributions of levels within preset ranges.

In ATDM, patients are called at specified intervals (for example, the weekly) by the automated system. A familiar voice (for example, the clinic nurse) offers the patient opportunities to touch the telephone keypad in response to prompts to discuss self-care activities or hear self-care tips.

CD-ROM technology allows for the display of video and other large multimedia files and for very complex programming algorithms. For example, one study developed an easy-to-use CD-ROM program with touch screen capability allowing patients to obtain immediate, personalized feedback on their barriers to healthy eating and to engage in diabetes self-management goal-setting and problem-solving to improve dietary behavior and serum cholesterol.

Use of the Internet for diabetes self-management is perhaps the IT with the greatest potential. It adds a new dimension for health promotion via online support groups, interactions with health experts, access to decisionmaking aids, and participation in health care. The researchers emphasize the importance of having a set of standards to apply to these evolving technologies to help distinguish actual IT advances from ineffective or misguided applications.

Current IT offers advantages of speed, availability, consistency, and tailoring in performing routine tasks and activities that have been programmed. However, these technologies are more limited in their ability to deal with novel situations that have not been anticipated. Thus, the intent of IT should not be to replace health care professionals but to inform both patients and providers to make their interactions more productive. ■

Health Care Quality

New AHRQ-funded studies focus on quality improvement in diabetes, atrial fibrillation, and end-of-life care

Thousands of Medicare patients with diabetes mellitus or atrial fibrillation—a rapid, erratic heart beat—could benefit from two new quality improvement tools developed with the support of the Agency for Healthcare Research and Quality. The test results for these tools were published recently in the *Journal of the American Medical Association*. Findings from a third AHRQ-funded study, also published in *JAMA*, could improve care at the end of life by encouraging more end-of-life discussions between HIV patients and their doctors. The three studies are described here.

Kiefe, C.I., Allison, J.J., Williams, O.D., and others. (2000, June 13). "Improving quality improvement using achievable benchmarks for physician feedback. A randomized controlled trial." (AHRQ grants HS09446, HS11124, HS/GM10389). *Journal of the American Medical Association* 285(22), pp. 2871-2879.

University of Alabama at Birmingham researchers found that physicians who received periodic feedback reports based on chart reviews of their care of Medicare fee-for-service patients with diabetes mellitus, plus performance goals called "achievable benchmarks of care," significantly outperformed similar doctors who received only the chart reviews and standard performance feedback. Patients of doctors who were provided the benchmarks had 33 percent to 57 percent higher odds

continued on page 6

Quality improvement

continued from page 5

of receiving long-term glucose control measurement, serum cholesterol testing, foot exams, and influenza vaccinations than patients of the other physicians. Achievable benchmarks of care are standards of excellence attained by top performers among peer physicians, which provide a reference for doctors to assess their own performance.

The prevalence of type 2 diabetes is estimated to be 15.6 million in the United States, and approximately 18 percent of all patients dying with influenza and pneumonia—between 20,000 and 40,000 deaths per year between 1994 and 1997—are estimated to have diabetes. If achievable benchmarks of care were used widely for improving the quality of medical care for people with diabetes, the estimated increase in influenza vaccinations would prevent as many as 584 deaths per year and substantially more episodes of influenza and pneumonia among Medicare patients, concludes study leader Catarina I. Kiefe, Ph.D., M.D.

Gage, B.F., Waterman, A.D., Shannon, W., and others. (2001, June 13). "Validation of clinical classification schemes for predicting stroke. Results from the National Registry of Atrial Fibrillation." (AHRQ grant HS10133). ***Journal of the American Medical Association*** **285(22), pp. 2864-2870.**

Researchers led by Brian F. Gage, M.D., of Washington University School of Medicine, found that their new CHADS2 method for predicting risk of stroke in patients with this condition is more accurate than existing methods. CHADS2 is an acronym for the risk factors for stroke—congestive heart failure, hypertension, advanced age, diabetes, and prior stroke—in patients with atrial fibrillation (AF).

Although physicians agree that warfarin therapy is favored when the risk of stroke is high and aspirin when risk is low, there has been little agreement on how to predict the risk of stroke. By more accurately estimating the risk of stroke in a patient with AF, doctors and their patients can make better decisions about which antithrombotic therapy to use. CHADS2 may be especially helpful for identifying low-risk patients who by taking aspirin can avoid the office visits, expense, and risks of taking warfarin, which has to be closely monitored because it may cause bleeding.

Wenger, N.S., Kanouse, D.E., Collins, Rebecca L., and others. (2001, June). "End-of-life discussions and preferences among persons with HIV." (AHRQ grant HS08578). ***Journal of the American Medical Association*** **285(22), pp. 2880-2887.**

These researchers found that half of all HIV-infected people in the United States—especially blacks, Hispanics, IV drug users, and people with less education—never talk about end-of-life care with their doctors. Such discussions could give physicians a better understanding about the types of care patients want when they are very ill and close to death. In addition, such discussions may lead to a patient designating a surrogate to make decisions if he or she is unable to do so.

End of life discussions occurred more often in a continuous, trusting patient-physician relationship. Advance directives—documents that can specify a surrogate decisionmaker and/or describe a person's wishes for care at the end of life—were completed much more often when doctors and patients discussed these issues.

Lead author Neil S. Wenger, M.D., of the University of California at Los Angeles, suggests that given the low rate of end-of-life discussions, clinicians and other providers should take the lead in initiating this kind of dialogue with patients.

Data for this study were from the HIV Cost and Services Utilization Study (HCSUS), which is conducted by a consortium led Martin F. Shapiro, M.D., of RAND. HCSUS, which is jointly funded by AHRQ and RAND through a cooperative agreement, provides data on a nationally representative probability sample of HIV-infected adults receiving care in the contiguous United States. ■

Do you want instant information from AHRQ?

If you want the latest information from AHRQ on new RFAs, research findings, conferences, and more, just subscribe to AHRQ's electronic newsletter. All you need is a computer and an e-mail address. Here's how:

1. Send an e-mail message to: listserv@list.ahrq.gov
2. In the subject line type: Subscribe
3. In the body of the message type: sub public_list-L your full name
4. That's it. You will receive an e-mail confirmation.

Questions? Please send an e-mail to Howard Holland in AHRQ's public affairs office at hholland@ahrq.gov

Researchers develop new system for identifying successful hospital quality improvements

Preliminary findings from an ongoing 3-year study funded by the Agency for Healthcare Research and Quality (HS10407) show that a new classification system could help hospitals identify areas where they need to improve care and provide them with key information to achieve their quality improvements (QI) goals. Researchers at Yale University's School of Medicine used the administration of beta-blockers (medications that slow the heart rate during and after a heart attack) as an interview topic in developing a QI classification system.

Between October 1996 and September 1999, they interviewed hospital personnel at eight hospitals around the country to learn about efforts undertaken by the hospitals to improve the use of beta-blockers in heart attack patients. The researchers organized the data around six broad factors that characterize hospital-based QI efforts: goals for improvement, administrative support, clinician support, design and implementation style, use of data, and contextual information such as hospital size.

The researchers then ranked the hospitals into "high performing" and "low performing" groups based on their use of beta-blockers. They found that those hospitals more likely to prescribe beta-blockers (high performing) had similar characteristics: solid support from their hospital administration, strong physician leadership, shared goals of improving medical practice, and an effective way of monitoring progress. Generally, these characteristics were not present in the low performing hospitals.

Study findings indicate that information from this system may provide hospitals with concrete guidance to help them plan effective interventions to elevate clinical performance and improve the overall care and outcomes of their patients.

For more information, see "A qualitative study of increasing beta-blocker use after myocardial infarction," by Elizabeth H. Bradley, Ph.D., Eric S. Holmboe, M.D., Jennifer A. Mattera, M.P.H., and others, in the May 23/30, 2001 *Journal of the American Medical Association* 285(20), pp. 2604-2611. ■

Nurses have an important role in improving health care quality

Nurses have a key role in the research agenda of the Agency for Healthcare Research and Quality, especially in the areas of primary care, outcomes research, translation of research into practice, and quality of care. AHRQ recently issued solicitations for grant proposals for projects, including nursing research, to examine the impact of health care working conditions on patient safety and quality of care. The Agency's Center for Primary Care Research (CPCR) is studying patient safety and how to reduce high-risk medical errors in the outpatient setting, as well as how information technology can improve care and patient safety.

AHRQ recently awarded grants to 19 primary care practice-based research networks, in which nurses play a key role, according to CPCR Director Helen Burstin, M.D., M.P.H., and her coauthors David I. Lewin, M.Phil., and Heddy Hubbard, R.N., M.P.H. These networks will work together to conduct research with over 5,000 primary care practices and almost 7 million patients across the United States to examine primary care practice, as well as patient safety, working conditions, mental health, and health care disparities. One of the networks based at Yale will focus on nurse practitioner practices.

Also, AHRQ and the American Academy of Nursing have joined forces to select a yearly candidate to serve a 12-month term as a Senior Nurse Scholar at the Agency. In addition to their own research interests, these scholars help AHRQ develop areas of investigation that integrate clinical nursing care questions with critical issues of quality, effectiveness, cost, and access to health care.

To help improve communication between AHRQ and the nursing community, AHRQ is developing a nursing page for the Agency's Web site (www.ahrq.gov), and a nursing LISTSERV® has been established to notify subscribers electronically about funding opportunities, conferences, and other activities. The Agency is actively encouraging more grant applications from nurses as principal investigators, and growing numbers of AHRQ's priority areas are especially relevant to nurses: disease

continued on page 8

Nurses' role in quality improvement

continued from page 7

prevention, health promotion, primary care, quality of care delivery, and service delivery. Input from nursing is essential to improving health care quality, and nurses are encouraged to apply for research funding, concludes Dr. Burstin.

See "Future directions in primary care research: Special issues for nurses," by Dr. Burstin, Mr. Lewin, and Ms. Hubbard, in the May 2001 *Policy, Politics, and Nursing Practice* 103, pp. 103-107. Reprints (AHRQ Publication No. 01-R071) are available from AHRQ.** ■

Consumer input is a critical component of efforts to improve the quality of behavioral health care services

In recent years, health insurance plans have increasingly relied on managed behavioral health care organizations (MBHOs)—organizations that specialize in the management of behavioral health care services—to oversee the care provided to their enrollees. Behavioral health care services include counseling, medications, and other inpatient and outpatient services for mental illness, personal or family problems, and alcohol and drug dependency.

In order for MBHOs and health insurance plans to be accredited by the National Committee for Quality Assurance (NCQA), they must collect, analyze, and use consumer evaluations of their services as part of their quality improvement efforts. Consumer surveys such as the Consumer Assessment of Behavioral Healthcare Services (CABHS) can identify which aspects of the plan and treatment are priorities for improvement, according to a recent study supported by the Agency for Healthcare Research and Quality (HS09205). The results from this study were also used to develop a new standardized instrument, the Experience of Care and Health Outcomes (ECHO™) survey.

Ten groups of adult patients (five in commercial health plans and five in public assistance plans) who received behavioral health services during the previous year from one of four organizations (three MBHOs and a health system) were surveyed.

Both commercial and public assistance respondents were least satisfied with the promptness of treatment from clinicians and aspects of care most influenced by health plan policies and operations, such as access to treatment and plan administrative services. These factors varied significantly among plans. Only 42 to 46 percent of respondents (median plan scores) were always able to get needed help over the telephone, and only 55 percent were always able to get an appointment as soon as they wanted one. Based on this feedback, three organizations in the study focused quality improvement efforts on access to treatment. Another MBHO, whose survey revealed low ratings in one of two geographic areas served by the plan, confirmed its concern about the adequacy of the provider network there.

About 60 percent of both commercial and public assistance respondents were satisfied with communication with clinicians. Most said that their doctors listened carefully, explained things well, spent enough time with them, and involved them in decisions. About 40 percent of respondents said that they were helped "a great deal" by their treatment. Overall treatment and main clinician ratings did not vary significantly among the plans.

See "Use of consumer ratings for quality improvement in behavioral health insurance plans," by James A. Shaul, M.H.A., Susan V. Eisen, Ph.D., Vickie L. Stringfellow, and others, in the April 2001 *Joint Commission Journal on Quality Improvement* 27(4), pp. 216-229. ■

Hip fracture study calls for assessing patients' risks of both functional impairment and death

A recent study supported in part by the Agency for Healthcare Research and Quality (HS09459) could help acute and postacute care medical staff improve patient outcomes for the approximately 350,000 hip fractures that occur annually in the United States by focusing efforts on reducing the risk of complications that often leave patients unable to walk or lead to death.

Currently, four of every ten patients are unable to walk without total assistance by 6 months after the fracture, and one-fourth of patients die within a year. In addition to pain and suffering, hip fracture and its consequences have a large economic impact, with hospital charges alone totaling roughly $6 billion a year. The challenge has been to identify characteristics that put patients at higher risk for these adverse outcomes.

The researchers' analysis of data on hip fracture patients in four New York City hospitals between August 1997 and August 1998 found that when patients required moderate to total assistance for walking or stair climbing prior to admission, there was a higher likelihood of poor postfracture functional ability. Limited locomotion prior to the fracture combined with the presence of chronic medical conditions increased the risk of death. Of the 571 elderly patients studied, nearly 2 percent died while in the hospital, and roughly equal percentages—about 13 percent—either died within 6 months or needed total assistance to walk or use a wheel chair.

The researchers identified risk factors that accurately predicted the loss of locomotion and/or death. Although previous studies have identified patient factors related to either the recovery of hip fracture patients or to death, most looked at function or mortality independently. None of the earlier studies reported on how risk-adjusted outcomes could be obtained to assess the effectiveness or quality of care in a hospital or postacute care setting.

Hip fracture patients, most of whom are elderly, are first admitted to acute care hospitals where rehabilitative services generally exist to improve functional mobility and where there are nursing services for preventing or treating common postoperative complications, such as thrombophlebitis (inflammation of a vein and formation of a clot), surgical site infection, and delirium. After hospital discharge, the typical hip fracture patient receives postacute rehabilitative services in a skilled nursing facility, acute rehabilitative unit, home health program, or a combination of these.

Details are in "Mortality and locomotion 6 months after hospitalization for hip fracture. Risk factors and risk-adjusted hospital outcomes," by Edward L. Hannan, Ph.D., Jay Magaziner, Ph.D., Jason J. Wang, M.A., M.S., and others, in the June 6, 2001 *Journal of the American Medical Association* 285(21),pp. 2736-2742. ■

Waiting longer for a liver transplant increases the risk of graft failure following transplantation

Individuals with the most urgent need for a liver transplant are currently placed at the top of regional lists by the United Network for Organ Sharing. Patients expected to live less than 7 days without a transplant are considered status 1, those hospitalized for at least 5 days are status 2, and those at home or hospitalized less than 5 days are status 3. Current proposals would eliminate regional preferences in favor of a national organ allocation waiting list. The result would be an increased number of organs allocated to status 1 and 2 patients and an increase of about 1 year in waiting time for status 3 patients.

This longer waiting time before a liver transplant would increase graft failure rates among these healthier patients, according to a study supported by the Agency for Healthcare Research and Quality (National Research Service Award training grant T32 HS00055). However, this concern must be

continued on page 10

Liver transplants

continued from page 9

weighed against the lower pretransplant mortality rate of status 1 patients under a national organ allocation system, explains David Howard, Ph.D., of Emory University.

Dr. Howard used blood type as a marker for transplant waiting time, with people who have type O blood (compatible only with type O donors) having the longest waiting times for organs and those with type AB blood (who can receive livers from any donor) having the shortest. He calculated the impact of waiting time on the probability of graft failure in 9,250 patients with liver failure who underwent a first liver transplant between 1995 and 1997.

A 50-day increase in waiting time increased graft failure rates at 1 year by 1.6 percentage points in the entire sample. The mean waiting time for a transplant was 192 days, with a standard deviation of 222 days. Type O patients, who waited an average of 52 days longer than type A patients, had a 25 percent greater probability of graft failure within 3 months than type A patients (15 vs. 12 percent).

More details are in "The impact of waiting time on liver transplant outcomes," by Dr. Howard, in the December 2000 *Health Services Research* 35(5), pp. 1117-1134. ■

Nearly one-third of stroke patients receive blood coagulation testing when the result is unlikely to influence treatment

Blood coagulation (clotting) abnormalities (coagulopathies) are a rare cause of ischemic stroke. Doctors typically suspect that hypercoagulation (blood thickening) may be the cause of ischemic stroke only when no other cause is obvious. In fact, nearly one-third of specialized tests for coagulation disorders that doctors order for stroke patients are unlikely to affect their treatment decisions, concludes a study supported by the Agency for Healthcare Research and Quality (National Research Service Award training grant T32 HS00079). In this study, for example, these tests were ordered for patients who already had other indications for anticoagulation (blood-thinning) therapy with warfarin or for patients with contraindications to receiving warfarin.

Because of the high cost (about $1,000 for a battery of tests for hereditary coagulation defects alone) and low diagnostic yield of coagulation tests, as well as the low prevalence of coagulopathies in ischemic stroke, patients should be carefully selected for testing, conclude the Duke University researchers who conducted the study. They examined the medical records of 674 adult ischemic stroke patients admitted to an academic medical center over 3 years to identify factors associated with coagulation testing.

Of the 31 percent of patients tested for coagulopathies, 29 percent were tested when the result was unlikely to influence treatment decisions; in other words, 29 percent of these tests were inappropriate. For example, the most common manifestation of a coagulopathy is venous thrombosis (blockage of a vein) or a history of miscarriage. However, neither of these risk factors was consistently documented in the patients' medical records, and neither significantly influenced testing status. Overall, age was the only clinical factor increasing the likelihood of a coagulopathy that appeared to influence ordering of specialized coagulation tests. Young patients with ischemic stroke are more likely to have a coagulopathy, even though this still accounts for only 10 to 15 percent of stroke cases in this group.

Details are in "Use of specialized coagulation testing in the evaluation of patients with acute ischemic stroke," by Cheryl Bushnell, M.D., Zaeem Siddiqi, M.D., Ph.D., Joel C. Morgenlander, M.D., and Larry B. Goldstein, M.D., in the March 2001 *Neurology* 56, pp. 624-627. ■

Primary care doctors are more likely to refer patients with uncommon problems to specialists

Primary care physicians (PCPs) see patients with a variety of common problems every day. They seem to recognize the boundaries of their practices and expertise, however. They are more likely to refer patients with uncommon problems to a specialist, according to a recent study supported by the Agency for Healthcare Research and Quality (HS09377). This finding highlights the responsible judgment that PCPs use in recognizing their scope of practice, note Christopher B. Forrest, M.D., Ph.D., of the Johns Hopkins School of Hygiene and Public Health, and Robert J. Reid, M.D., Ph.D., of the University of British Columbia.

Drs. Forrest and Reid correlated the frequency of a health problem seen by PCPs (practice prevalence) with the chances of specialty referral during a primary care visit based on data on 78,000 primary care visits detailed in the 1989-1994 National Ambulatory Medical Care Surveys. The odds of specialty referral for visits with common problems with intermediate and high practice prevalence were 51 percent and 78 percent less, respectively, than specialty referrals for uncommon problems. Surgical conditions were 39 percent more likely to be referred than medical ones (probably since PCPs usually perform only minor, office-based surgical procedures). Also, the more coexisting medical conditions a patient had, the higher their odds of referral.

Although complexity of coexisting conditions influenced referral to specialists, patients with uncommon conditions often were referred regardless of the complexity of other conditions. Thus "rare" presentations for which specialist assistance is sought may be a result of either the practice prevalence of the presenting problem or the overall complexity of the patient. The researchers conclude that managed care plans that penalize providers for high referral behavior, without adjusting for practice prevalence and coexisting conditions, work contrary to the goal of providing quality patient care in the most appropriate settings.

More details are in "Prevalence of health problems and primary care physicians' specialty referral decisions," by Drs. Forrest and Reid, in the May 2001 *Journal of Family Practice* 50(5), pp. 427-432. ■

Primary care doctors in California have a positive view of voluntary disease management programs

Chronic conditions such as asthma, diabetes, and congestive heart failure may be better managed when medical care goes hand-in-hand with case management and patient education services provided by nurses or others. Some managed care plans now separate payment for specified chronic illnesses from their primary care contracts, delegating care of these patients to specialist-run disease management programs.

This approach has been criticized as leading to fragmented care if patients with multiple chronic diseases are treated in separate disease-specific programs rather than obtaining comprehensive care from a primary care physician (PCP). However, PCPs in California have a different view; they believe voluntary disease management programs improve the care of patients and reduce physicians' workload, according to a study supported in part by the Agency for Healthcare Research and Quality (HS09557).

The researchers surveyed PCPs practicing in the 13 largest urban counties in California and found that 75 percent of the PCPs believed that disease management programs improved the quality of overall and disease-specific care. Also, 87 percent of PCPs continued to provide primary care for patients enrolled in these programs, and 70 percent reported participating in major patient care decisions. Most of the PCPs (91 percent) reported that the programs had no effect on their income, decreased (38 percent) or had no effect (48 percent) on their workload, and

continued on page 12

Disease management in primary care

continued from page 11

increased (48 percent) their practice satisfaction.

Over half (53 percent) of PCPs said they had disease management programs available to them, most commonly programs for diabetes, asthma, congestive heart failure, and AIDS. Only 12 percent of physicians with available disease management programs were required to use them for eligible patients. Yet 57 percent of PCPs not required to enroll patients in disease management programs had them enrolled, demonstrating substantial voluntary participation.

See "Primary care physicians' experience with disease management programs," by Alicia Fernandez, M.D., Kevin Grumbach, M.D., Karen Vranizan, M.A., Dennis H. Osmond, Ph.D., and Andrew B. Bindman, M.D., in the March 2001 *Journal of General Internal Medicine* 16, pp. 163-167. ■

Long-Term Care

New assessment scale confirms that pain is prevalent and often untreated in nursing home residents

A recent study found that over half of the residents in Michigan nursing homes suffer from moderate to severe pain, and that the most cognitively impaired residents are least likely to report their pain. This suggests that pain is prevalent and often goes untreated in nursing homes, concludes John N. Morris, Ph.D., of the Hebrew Rehabilitation Center for the Aged in Boston.

Dr. Morris and his colleagues validated a summary scale of pain types, intensity, and frequency—a Minimum Data Set (MDS) pain assessment instrument—to examine pain prevalence among 34,675 Michigan nursing home residents. The study was supported in part by the Agency for Healthcare Research and Quality (HS09455).

On the MDS pain assessment items, 32 percent of patients indicated no pain, 16 percent had mild pain, 27 percent had moderate pain, and 25 percent reported "horrible" pain. Also, 16 percent of current residents and 28 percent of postacute care patients had symptoms of daily pain. The most frequent site of pain was the back. More cognitively impaired residents, who were usually sicker as well, were less likely to report pain. For example, 31 percent of cognitively intact versus 69 percent of the most cognitively impaired residents admitted for postacute care reported no pain; and 40 percent of cognitively intact versus 79 percent of severely impaired residents in the longer staying post-acute admission group reported no pain.

The MDS Pain Scale was highly predictive of Visual Analogue Scale (VAS) pain scores (a simple 1 to 10 rating scale), considered the gold standard for assessing pain. The researchers conclude that the MDS Pain Scale is easier to administer than the VAS and is a simple way to summarize the reported presence and intensity of pain using routinely collected nursing home MDS data. Federal regulations require that nursing homes periodically collect MDS data on physical and cognitive function, medications, and so forth for every resident to improve care planning. Clearly, the MDS Pain Scale can indicate which residents need pain relief to improve their quality of life.

See "Pain in U.S. nursing homes: Validating a pain scale for the minimum data set," by Brant E. Fries, Ph.D., Samuel E. Simon, M.A., Dr. Morris, and others, in *The Gerontologist* 41(2), pp. 173-179. ■

Community pharmacists can increase flu vaccination rates among nonelderly adults

About 20,000 Americans die from influenza each year. Influenza vaccine is recommended for people younger than 65 with chronic heart or lung disease or diabetes, who unfortunately have the lowest rates of vaccination. One reason for low influenza immunization rates is missed opportunities—that is, people who saw a doctor in the last year but were not vaccinated. Community pharmacists can help to fill this gap, concludes a study supported in part by the Agency for Healthcare Research and Quality (HS10021).

The researchers found that pharmacists authorized to administer influenza vaccines were able to identify adults at risk for influenza by their medication prescriptions for chronic diseases such as asthma and motivate them to be vaccinated. In fact, this practice among pharmacists in Washington State was associated with a net increase of 11 percent in influenza vaccinations among nonelderly adults.

In 1999, John D. Grabenstein, Ph.D., of the University of North Carolina, Chapel Hill, and colleagues mailed a survey to adults in urban Washington State, where pharmacists administered vaccines, and to adults in urban Oregon, where this was not the practice. Thirty-two States have regulations that authorize pharmacists to administer medications.

Among nonelderly adults who were not vaccinated against influenza in 1997, the 1998 influenza vaccination rate was 35 percent in Washington compared with 24 percent in Oregon. The pharmacist-based program in Washington administered 2.3 to 8.4 times as many influenza vaccine doses as Oregon pharmacies that hosted nurses for 1 day in autumn 1998 to offer influenza vaccination. This study of typical vaccination practices is one of the few studies to report vaccine acceptance rates among nonelderly adults with chronic health conditions. Previous studies found influenza vaccine coverage levels of 14 to 39 percent among nonelderly adults in high-risk populations compared with the 58 to 66 percent vaccine coverage in this study.

See "Effect of vaccination by community pharmacists among adult prescription recipients," by Dr. Grabenstein, Harry A. Guess, M.D., Ph.D., Abraham G. Hartzema, Pharm.D., Ph.D., and others, in the April 2001 *Medical Care* 39(4), pp. 340-348. ■

Women prefer to see female doctors when they visit the ER, but men have no preference

Women who seek care at a hospital emergency department (ED) are more satisfied with their care when they see a female rather than a male doctor. However, men's satisfaction with care does not seem to be affected by the sex of their ED physician, according to a recent study supported by the Agency for Healthcare Research and Quality (National Research Service Award training grant T32 HS00046). Lead author, Kathryn Pitkin Derose, M.P.H., of the University of California, Los Angeles, and her colleagues interviewed patients seeking care for nonurgent problems during a visit to one ED and again 1 week later to assess the association between their ratings of care and the sex of the ED physician who cared for them.

Women reported being significantly more satisfied with female than male doctors on four of seven satisfaction indicators. For example, 52 percent of women with female doctors said they trusted the doctor completely versus 39 percent of women with male doctors. More female patients with female than male doctors rated them as excellent in the amount of time spent with them (30 vs. 21 percent), concern shown (35 vs. 28 percent), and overall care (32 vs. 24 percent). Female patients did not rate male and female ER doctors differently in friendliness, respect shown, or the extent to which the physician made them feel comfortable. Male patients rated male and female physicians similarly on all dimensions of care.

continued on page 14

Women prefer female doctors

continued from page 13

These results are surprising, since one would expect that all ED doctors, regardless of their sex, would be under similar time constraints. Also, the findings are similar to studies showing that same-sex physician-patient dyads tend to have longer visits than opposite-sex dyads, and that women are more likely to disclose more detailed information in female-female dyads.

The researchers note that with attention to this during training, male physicians may be able to learn how to better communicate with female patients. They urge other researchers and analysts to consider the interaction between physician and patient sex when measuring patient satisfaction.

More details are in "Does physician gender affect satisfaction of men and women visiting the emergency department?" by Dr. Derose, Ron D. Hays, Ph.D., Daniel F. McCaffrey, Ph.D., and David W. Baker, M.D., M.P.H., in the April 2001 *Journal of General Internal Medicine* 16, pp. 218-226. ■

Evidence-Based Medicine

Researchers examine available evidence on managing acute episodes of chronic obstructive pulmonary disease

More than 16 million adults in the United States suffer from chronic obstructive pulmonary disease (COPD)—that is, their airflow is obstructed due to chronic bronchitis, emphysema, or asthma. COPD is responsible for enormous disability and $18 billion each year in direct health care costs. It results from smoking (85 to 90 percent of all cases), genetic factors, passive smoke, occupational exposure, air pollution, and possibly over-responsive airways.

A recently published study summarizes the available evidence on managing acute exacerbations of COPD, which are typically caused by tracheobronchial infections, air pollution, and serious clinical conditions, such as heart failure and nonpulmonary infection. The study was conducted by researchers at Memorial Sloan Kettering Cancer Center and the Evidence-based Practice Center at Duke University, which is supported in part by the Agency for Healthcare Research and Quality (contract 290-97-0014).

The researchers reviewed the scientific literature from 1966 to 2000 on managing acute exacerbations of COPD and found limited data on the usefulness of most diagnostic tests. However, based on these limited data, they note that chest x-rays and arterial blood gas sampling seem useful for diagnosing acute exacerbations of COPD, while acute spirometry (measuring breathing capacity of the lungs) does not.

Evidence was found for the efficacy of bronchodilators, corticosteroids, and noninvasive positive-pressure ventilation, as well as the use of antibiotics in patients with more severe exacerbations. On the other hand, based on limited data, mucolytics and chest physiotherapy do not seem to be beneficial. Oxygen supplementation seems to increase the risk of respiratory failure only in an identifiable subgroup of patients. Despite the suggestions for appropriate management of COPD drawn from these studies, the supporting evidence is scarce, and further high-quality research is needed before treatment recommendations can be made, conclude the researchers.

See "Management of acute exacerbations of chronic obstructive pulmonary disease: A summary and appraisal of published evidence," by Peter B. Bach, M.D., M.A.P.P., Cynthia Brown, M.D., Sarah E. Gelfand, B.A., and Douglas C. McCrory, M.D., M.H.Sc., in the April 3, 2001 *Annals of Internal Medicine* 134(7), pp. 600-620.

Editor's note: Copies of the evidence report from which this article was drawn are available from the AHRQ Clearinghouse. Request *Management of Acute Exacerbations of Chronic Obstructive Pulmonary Disease*, Evidence Report/Technology Assessment No. 19 (AHRQ Publication No. 01-E002).* ■

Antifungal drug fluconazole found to be effective in preventing thrush in people who are HIV positive

Use of the antifungal medication fluconazole may help prevent the development of oral candidiasis, a common infection of the mucous membranes of the mouth also known as "thrush," in patients with HIV or AIDS, according to a report summary published recently by the Agency for Healthcare Research and Quality. The publication summarizes a report developed by AHRQ's Evidence-based Practice Center (EPC) at the Research Triangle Institute-University of North Carolina at Chapel Hill. The report focuses on several aspects of the dental management of people in the United States who have HIV infection or are living with AIDS.

The researchers found that fluconazole was effective in reducing or preventing recurrences or new infections of oral candidiasis over a range of 3 to 17 months. While the evidence appears to support the use of fluconazole, itraconazole, ketoconazole, nystatin, and clotrimazole for treating oral candidiasis once it is established, only fluconazole has been shown to be successful in preventing oral candidiasis.

The researchers also looked at two other aspects of dental management of people with HIV/AIDS: complications of invasive oral procedures and the use of oral conditions as markers or indicators of changes in health status. They found very limited evidence on the risks of invasive oral procedures. They concluded from four small studies that tooth extractions appear to result in few postoperative complications among people who are living with HIV/AIDS. The complications that did occur were minor and treatable on an outpatient basis.

There was inadequate evidence to assess whether any of several oral conditions are useful as markers to indicate when a person who has been exposed to HIV converts from HIV negative to HIV positive. However, there is evidence that two oral conditions—oral candidiasis and Kaposi's sarcoma of the mouth—may be reasonable indicators that an HIV-positive person has progressed to a state of severe immunosuppression. The evidence suggests that two other oral conditions—oral ulcers and hairy leukoplakia—are not reliable indicators of severe immune decline in people who are HIV positive.

The systematic review of the evidence for these critical oral health care issues was supported through a collaborative effort between AHRQ and the National Institute of Dental and Craniofacial Research of the National Institutes of Health.

A summary (AHRQ Publication No. 01-E041) of the report, *Management of Dental Patients Who Are HIV Positive*, Evidence Report/Technology Assessment 37, is available from AHRQ.** Copies of the full report (AHRQ Publication No. 01-E042) will be available from AHRQ in late summer 2001.* ■

Free copies of journal and reprints: Limited free copies of the April 2001 issue of the *Journal of Health Politics, Policy and Law* are available from AHRQ (AHRQ Publication No. OM 01-0010).* This special issue of the journal grew out of an April 2000 workshop jointly sponsored by AHRQ and the Institute of Medicine. It presents papers and commentaries from the meeting. The papers focus on the use of evidence in health care decisionmaking and the meaning of evidence in medicine, policymaking, and law. An article by AHRQ Director John M. Eisenberg, M.D., "What does evidence mean? Can the law and medicine be reconciled?" appears in the journal. Reprints of Dr. Eisenberg's article (AHRQ Publication No. 01-R046) are also available from AHRQ.** ■

Increased HMO market penetration and local access to primary care doctors can reduce hospital admissions among children

Hospitalization of children for conditions such as asthma, hypoglycemia, epilepsy, and dehydration—so-called ambulatory-care-sensitive (ACS) conditions—often can be prevented by good primary care. High rates of locally available primary care doctors and high market penetration by health maintenance organizations (HMOs) were associated with reduced children's hospitalizations for ACS conditions in New York in 1994, according to a study by Agency for Healthcare Research and Quality researchers, Bernard Friedman, Ph.D., and Jayasree Basu, Ph.D.

Drs. Friedman and Basu analyzed 1994 discharges of New York residents from hospitals in New York and three neighboring States using data from AHRQ's Healthcare Cost and Utilization Project (HCUP). In counties with a higher proportion of Medicaid and self-pay children, ACS hospitalization rates were significantly higher. In counties with a higher proportion of children with private HMO coverage, ACS hospitalization rates were significantly lower. This finding offers encouragement to States in contracting for Medicaid enrollment in managed care plans, note the researchers.

They point out that privately insured patients with HMO plans generally have only a small out-of-pocket cost for primary and preventive services, while other private insurance plans generally have better coverage for hospital-based than office-based health services. Other factors also influenced ACS admission rates. For example, counties with more minority residents had higher ACS admission rates, independent of insurance, severity of illness, and distance. This may reflect, in part, income and environmental quality. Distance from hospitals was a significant deterrent to ACS admissions. The authors conclude that Medicaid contracting with HMOs, suitably monitored for undertreatment, and increasing the availability of primary and preventive services might substantially reduce ACS admissions.

For more details, see "Health insurance, primary care and preventable hospitalization of children in a large State," by Drs. Friedman and Basu, in the May 2001 *Journal of Managed Care* 7(5), pp. 473-481. Reprints (AHRQ Publication No. 01-R074) are available from AHRQ.** ■

Research Methodology

AHRQ researchers explore ways to improve the accuracy and design of health care surveys

The accuracy and quality of a health care survey are invariably linked to the quality of the survey design, its ability to achieve targeted response rates and precision, and control over sources of survey error. The Medical Expenditure Panel Survey (MEPS), sponsored by the Agency for Healthcare Research and Quality, was designed to produce national and regional estimates of health care use, expenditures, sources of payment, and insurance coverage of the U.S. civilian noninstitutionalized population.

The scope and depth of data collected in this survey reflect the needs of government agencies, legislative bodies, and health professionals for comprehensive national estimates that can be used in the formulation and analysis of national health care policies. Researchers in AHRQ's Center for Cost and Financing Studies recently published four articles in a special issue of the *Journal of Economic and Social Measurement.* The articles examine ways to improve the design of health care surveys, as well as

continued on page 17

Health care surveys

continued from page 16

enhancements and innovations that characterize the current MEPS design. The studies are summarized here.

Cohen, S.B., and Machlin, S.R. (2000). "Survey attrition considerations in the Medical Expenditure Panel Survey." ***Journal of Economic and Social Measurement*** **26, pp. 83-98.**

In this study, the authors identify the characteristics that distinguish MEPS participants across waves of the survey from those that only participated in initial rounds before discontinuing survey participation (nonrespondents). They also examine the impact of survey attrition (nonrespondents) on resultant survey estimates of health insurance coverage. The findings described in this article provide insights into the efficacy of the MEPS nonresponse adjustment strategies by comparing the survey estimates from the second year of the longitudinal panel with those from a new panel for the same time period. The researchers conclude that the data collection and estimation strategies that were implemented to mitigate the impact of nonresponse bias associated with survey attrition in the MEPS should serve as an effective model for other national surveys. Reprints (AHRQ Publication No. 01-R057) are available from AHRQ.**

Cohen, S.B., and Yu, W.W. (2000). "The impact of alternative sample allocation schemes on the precision of survey estimates derived from the National Medical Expenditure Panel Survey." ***Journal of Economic and Social Measurement*** **26, pp. 111-128.**

The 1996 MEPS sample consisted of 195 primary sampling units (PSUs), which contained 10,597 responding households. These researchers compared the precision and cost of survey estimates derived from a 195 PSU design with precision results for alternative sample allocation schemes that preserved the number of sample respondents and the over-sampling of minorities, while varying the number of PSUs and segments. The results provide insights on the impact of alternative sample allocation schemes on the precision of national health care estimates. The authors conclude with a discussion of trade-offs between cost and precision in a national survey with a geographically dispersed multistage sample design. Reprints (AHRQ Publication No. 01-R056) are available from AHRQ.**

Winglee, M., Valliant, R., Brick, J.M., and Machlin, S. (2000). "Probability matching of medical events." ***Journal of Economic and Social Measurement*** **26, pp. 129-140.**

This paper addresses sources of measurement error in household reports of medical care use and expenses and identifies methods to reduce error in match rates between household and medical provider event level data covering the same set of individuals. The medical events reported by household members and providers are subject to reporting differences. Thus, probability linkage methods are used to determine if pairs of medical events represent the same entities. The researchers used three approaches to provide estimates of linkage errors: manual reviews, cumulative weight curves, and simulation approaches. The linked events have been used to help handle missing data and to adjust for household response errors when estimating U.S. medical expenditures. Reprints (AHRQ Publication No. 01-R063) are available from AHRQ.**

Machlin, S.R., Cohen, J.W., and Thorpe, J.M. (2000). "Measuring inpatient care use in the United States: A comparison across five Federal data sources." ***Journal of Economic and Social Measurement*** **26, pp. 141-151.**

The U.S. Department of Health and Human Services currently sponsors five data collection efforts that can be used to estimate the use of inpatient hospital care in the United States. These authors used these five Federal data sources to compare estimates of the use of inpatient care in 1996. They found that surveys with similar target populations and methodologies produced similar estimates. Hospital discharge surveys produced substantially higher estimates of total discharges than household surveys. This could be attributed in part to differences in target populations or underestimates from household surveys. The authors stress the need to ensure standardization in target populations and underlying units of measurement when comparing data sources. Reprints (AHRQ Publication No. 01-R059) are available from AHRQ.** ■

AHRQ expands its primary care research agenda

The Agency for Healthcare Research and Quality recently received more than $50 million in funding targeted toward research on patient safety, clinical informatics, and health care working conditions. These new funds have paved the way for AHRQ's Center for Primary Care Research (CPCR) to add several initiatives to its research agenda—patient safety in office-based primary care settings and the effect of information technology (IT) on primary care practice.

CPCR has the lead within AHRQ for clinical informatics, and an upcoming grant solicitation will support research on the use of IT to improve patient care, notes CPCR Director Helen Burstin, M.D., M.P.H. Future projects are expected to include evaluation of innovative IT applications—such as decision support systems and hand-held electronic prescription systems—that can be used to improve safety and quality of care.

According to Dr. Burstin and her coauthor AHRQ researcher David Lanier, M.D., the Center also will support research to examine the barriers to acceptance and adoption of IT by providers and patients, as well as effective strategies to maintain data confidentiality. The Center is particularly interested in informatics applications that emphasize outpatient settings and priority populations. The goal is to find out how IT can be used to improve access, quality, and outcomes for primary care patients.

AHRQ's CPCR also will fund projects to assess the relationship between health care working conditions and the safety and quality of health care. Recently, AHRQ awarded planning grants to 19 primary care practice-based research networks (PBRNs), a program administered by CPCR. These networks are groups of practices devoted to patient care that have affiliated with each other to investigate questions related to community-based practice. As a group, the PBRNs involve more than 5,000 primary care practice settings and almost 7 million patients across the United States, including racially diverse rural and urban residents and underserved populations. In recognition of the need for greater emphasis on patient safety in outpatient settings, funds will be set aside for the PBRNs to conduct research on medical errors and patient safety reporting, as well as the impact of working conditions on the quality of care delivered by primary care providers.

For more information, see "Update from funders: Center for Primary Care Research and Agency for Healthcare Research and Quality," by Drs. Burstin and Lanier, in *Medical Care* 39(4), pp. 309-311, 2001. Reprints (AHRQ Publication No. 01-R052) are available from AHRQ.** ■

AHRQ funds new projects

The Agency for Healthcare Research and Quality recently funded the following research projects, small project grants, dissertation grants, conference grants, and training grants. Readers are reminded that findings usually are not available until a project has ended or is nearing completion.

Research Projects

Assessing medical need among children in managed care

Project director:	Paul A. Fishman, Ph.D.
Organization:	Group Health of Puget Sound Seattle, WA
Project number:	AHRQ grant HS11314
Project period:	5/1/01 to 10/31/03
First year funding:	$379,079

Collaborative management of diabetes in blacks

Project director:	Leonard Egede, M.D.
Organization:	Medical University of South Carolina Charleston, SC
Project number:	AHRQ grant HS11418
Project period:	7/1/01 to 6/30/06
First year funding:	$126,028

continued on page 19

New projects

continued from page 18

Health communication over the Internet
Project director: Evelyn C. Chan, M.D.
Organization: University of Texas Health Science Center
Houston, TX
Project number: AHRQ grant HS11421
Project period: 9/1/01 to 8/31/06
First year funding: $100,866

Impact of managed care on demand for preventive and curative medicine
Project director: Pravin Trivedi, Ph.D.
Organization: Indiana University
Bloomington, IN
Project number: AHRQ grant HS10904
Project period: 6/8/01 to 5/31/02
First year funding: $143,531

Is non-adherence a revealed preference?
Project director: Leslie Lenert, M.D.
Organization: Veterans Medical Research Foundation
San Diego, CA
Project number: AHRQ grant HS10220
Project period: 6/1/01 to 5/31/04
First year funding: $343,641

Local versus referral care
Project director: Harry Selker, M.D.
Organization: New England Medical Center
Boston, MA
Project number: AHRQ grant HS10280
Project period: 5/7/01 to 3/31/03
First year funding: $472,158

Medicaid managed care for children with special health care needs
Project director: Jean Mitchell, Ph.D.
Organization: Georgetown University
Washington, DC
Project number: AHRQ grant HS10912
Project period: 6/1/01 to 5/31/04
First year funding: $367,656

United States valuation of the Euroqol EQ-5D health states
Project director: Stephen J. Coons, Ph.D.
Organization: University of Arizona
Tucson, AZ
Project number: AHRQ grant HS10243
Project period: 6/1/01 to 5/31/03
First year funding: $1,805,183

Small Project Grants

Collaborative intervention for PTSD trauma survivors
Project director: Douglas Zatzick, M.D.
Organization: University of Washington
Seattle, WA
Project number: AHRQ grant HS11372
Project period: 5/1/01 to 10/31/02
Funding: $75,082

Comorbidity, costs, and outcomes in dialysis patients
Project director: Srinivasan Beddhu, M.D.
Organization: University of Utah
Salt Lake City, UT
Project number: AHRQ grant HS11370
Project period: 5/1/01 to 4/30/02
Funding: $49,875

Factors affecting choice of types of hemodialysis access
Project director: Kirsten Johansen, M.D.
Organization: Northern California Institute for Research and Education
San Francisco, CA
Project number: AHRQ grant HS11471
Project period: 6/11/01 to 5/31/02
First year funding: $100,000

Hispanic/white differences in self-reported health status
Project director: Joseph Sudano, Ph.D.
Organization: Metrohealth Medical Center
Cleveland, OH
Project number: AHRQ grant HS11462
Project period: 7/1/01 to 6/30/02
Funding: $76,364

Impact of structure on living organ donation
Project director: Rebecca Winsett, Ph.D.
Organization: University of Tennessee
Memphis, TN
Project number: AHRQ grant HS11472
Project period: 6/1/01 to 5/31/03
First year funding: $49,958

Patterns of individual health plan coverage among rural residents
Project director: Andrew Coburn, Ph.D.
Organization: Muskie School of Public Services
Portland, ME

continued on page 20

New projects

continued from page 19

Project number: AHRQ grant HS11349
Project period: 9/1/01 to 8/31/02
Funding: $73,478

Patterns of rehabilitation use following stroke
Project director: Nancy Harada, Ph.D.
Organization: Regents University of California
Los Angeles, CA
Project number: AHRQ grant HS11482
Project period: 8/1/01 to 1/31/03
First year funding: $99,677

Projecting consequences of better health for older adults
Project director: Louise Russell, Ph.D.
Organization: Rutgers State University
New Brunswick, NJ
Project number: AHRQ grant HS11477
Project period: 6/1/01 to 1/31/03
First year funding: $74,108

Racial/ethnic differences in CAHPS ratings and reports
Project director: Robert Weech-Maldonado, Ph.D.
Organization: Pennsylvania State University
University Park, PA
Project number: AHRQ grant HS11386
Project period: 5/1/01 to 4/30/02
Funding: $100,000

TB education in jail: Transferring research to practice
Project director: Mary C. White, Ph.D.
Organization: University of California
San Francisco, CA
Project number: AHRQ grant HS11337
Project period: 5/1/01 to 4/30/02
Funding: $73,750

Dissertation Grants

Assessing Medicare risk adjustment using HMO data
Project director: Hongjun Kan, M.P.P.
Organization: RAND Corporation
Santa Monica, CA
Project number: AHRQ grant HS11403
Project period: 5/1/01 to 2/28/02
Funding: $30,000

Comparison of approaches to quality of life measurement
Project director: Anna Adachi-Mejia, M.S.
Organization: Dartmouth College
Hanover, NH
Project number: AHRQ grant HS11405
Project period: 4/1/01 to 3/31/02
Funding: $32,214

Human genome policy and health care services
Project director: Lauren McCain, M.A.
Organization: University of Colorado
Boulder, CO
Project number: AHRQ grant HS11401
Project period: 4/5/01 to 3/31/02
Funding: $32,124

Latinas: Impact of citizenship on access to Pap smears
Project director: Judith R. Katzburg, M.P.H.
Organization: University of California
Los Angeles, CA
Project number: AHRQ grant HS11273
Project period: 7/1/01 to 6/30/02
Funding: $32,048

Nurse staffing and adverse patient outcomes
Project director: Sung-Hyun Cho, M.P.H.
Organization: University of Michigan
Ann Arbor, MI
Project number: AHRQ grant HS11397
Project period: 4/1/01 to 3/31/02
Funding: $31,116

Patient satisfaction for depressed patients in primary care
Project director: Karen A. Swanson, S.C.M.
Organization: University of California
Los Angeles, CA
Project number: AHRQ grant HS11407
Project period: 4/1/01 to 3/31/02
Funding: $31,920

Relationship between social capital and health
Project director: Andrew R. Sommers, M.S.
Organization: University of Minnesota
Minneapolis, MN
Project number: AHRQ grant HS11396
Project period: 4/1/01 to 3/31/02
Funding: $32,400

continued on page 21

New projects

continued from page 20

Conference Grants

Conference on communication and patient safety
Project director: Jay Callahan, Ph.D.
Organization: National Patient Safety Foundation
Chicago, IL
Project number: AHRQ grant HS10955
Project period: 4/15/01 to 4/14/02
Funding: $21,200

Conference on medical care and domestic violence
Project director: Ellen Taliaferro, M.D.
Organization: Parkland Foundation
Dallas, TX
Project number: AHRQ grant HS11837
Project period: 6/1/01 to 5/31/02
Funding: $25,000

Diabetes and the arts and humanities: Planning conference
Project director: Naj M. Wikoff, M.A.
Organization: Society for the Arts in Healthcare
Washington, DC
Project number: AHRQ grant HS10953
Project period: 5/1/01 to 4/30/02
Funding: $49,900

ISTAHC 2001 annual meeting
Project director: Joel J. Nobel, M.D.
Organization: ECRI
Plymouth Meeting, PA
Project number: AHRQ grant HS10957
Project period: 5/1/01 to 4/30/02
Funding: $50,000

Measurement issues in U.S. health disparities research
Project director: Anita Stewart, Ph.D.
Organization: University of California
San Francisco, CA
Project number: AHRQ grant HS11293
Project period: 4/15/01 to 4/14/02
Funding: $60,000

Medical necessity decisionmaking in managed care
Project director: Alan Garber, M.D., Ph.D.
Organization: Stanford University
Stanford, CA
Project number: AHRQ grant HS10956
Project period: 5/1/01 to 4/30/02
Funding: $50,000

Rural mental health research conference, 2001
Project director: Sheryl A. Pacelli, M.E.D.
Organization: Coastal Area Health Education Center
Wilmington, NC
Project number: AHRQ grant HS10960
Project period: 6/1/01 to 5/31/02
Funding: $18,617

Using research to inform patients of breast cancer surge
Project director: Diana Zuckerman, Ph.D.
Organization: National Center for Policy Research on Women and Families
Washington, DC
Project number: AHRQ grant HS10954
Project period: 5/1/01 to 4/30/02
Funding: $42,500

Utilizing research to enhance clinical practice
Project director: Norman Paradise, Ph.D.
Organization: Iowa Health System
Des Moines, IA
Project number: AHRQ grant HS10958
Project period: 7/1/01 to 6/30/02
Funding: $23,925

National Research Service Award Fellowships

Enhancing compliance with HIV testing from the emergency department
Fellow: Jason Haukoos, M.D.
Organization: Harbor-UCLA Medical Center
Torrance, CA
Project number: F32 HS11509
Project period: 2-year fellowship
First year funding: $46,630

Health literacy and medication adherence in an HMO
Fellow: Anne Pereria, M.D.
Organization: Harvard Pilgrim Health Care
Boston, MA
Project number: F32 HS11504
Project period: 1-year fellowship
Funding: $47,348

continued on page 22

New projects

continued from page 21

Income inequality and health: Does race matter?

Fellow:	Amani Nuru-Jeter, M.P.H.
Organization:	Johns Hopkins School of Public Health Baltimore, MD
Project number:	F31 HS11485
Project period:	2-year fellowship
First year funding:	$36,484

Managed care impact on minority physicians and patients

Fellow:	Keith Elder, M.P.H.
Organization:	University of Maryland Baltimore, MD
Project number:	F31 HS11486
Project period:	2-year fellowship
First year funding:	$23,425

Usage patterns of over-the-counter pyridium

Fellow:	Chih-Wen Shi, M.D.
Organization:	University of California Los Angeles, CA
Project number:	F32 HS11507
Project period:	1-year fellowship
Funding:	$45,560 ■

Report on data privacy now available from AHRQ

Maintaining the confidentiality of personal health information is a priority for the Nation and for health services researchers who often have access to and use personal data in their studies. Accordingly, the Agency for Healthcare Research and Quality and the Office of the Assistant Secretary for Planning and Evaluation of the Department of Health and Human Services commissioned the Institute of Medicine to undertake a study on data privacy. The IOM was charged by the sponsors with identifying current and best practices of boards that review health services research, both research that is subject to Federal regulation and research that falls outside it.

The purpose of the study was to improve understanding and provide guidance and recommendations to institutional review boards (IRBs), privacy boards, and researchers about the protection of personal health information used in health services research. Adopting best practices will assist the IRBs, privacy boards, and researchers alike in assuring the public that their personal information when used for research is properly safeguarded.

Limited free copies of the IOM's 192-page report, *Protecting Data Privacy in Health Services Research* (AHRQ Publication No. OM-01-0008) are available from AHRQ.* See the back cover of *Research Activities* for ordering information. ■

Reprints of recent Eisenberg articles now available: Reprints of four recent articles by AHRQ Director John M. Eisenberg, M.D., and colleagues are now available from the AHRQ Clearinghouse. See the back cover of *Research Activities* for ordering information for the following reprints: "To err is preventable: Medical errors and academic medicine" (AHRQ Publication No. 01-R072), by Gregg Meyer, M.D., David I. Lewin, and Dr. Eisenberg in the May 2001 *American Journal of Medicine* 110, pp. 597-603. "Can you keep a secret? Measuring the performance of those entrusted with personal health information" (AHRQ Publication No. 01-R044), an editorial by Dr. Eisenberg in the February 2001 *Journal of General Internal Medicine* 16, pp. 132-134. "Setting a research agenda for medical errors and patient safety" (AHRQ Publication No. 01-R054), by Dr. Meyer, Nancy Foster, Shana Christrup, and Dr. Eisenberg in the April 2001 *Health Services Research* 36(1), pp. x-iix. "Putting research to work: Reporting and enhancing the impact of health services research" (AHRQ Publication No. 01-R077), by Dr. Eisenberg in the June 2001 *Health Services Research* 36(2), pp. x-xvii. ■

Gardiner, J.C., Bradley, C.J., and Huebner, M. (2000). "The cost-effectiveness ratio in the analysis of health care programs." (AHRQ grant HS09514). In P.K. Sen, and C.R. Rao, Eds., *Handbook of Statistics* 18, pp. 841-869.

This book chapter presents an overview of the statistical estimation of cost-effectiveness ratios (CERs) in the economic evaluation of health care interventions. The CER is the ratio of the net difference in the costs of two interventions to the net difference in their effectiveness. The CER is a useful aid to decisionmaking for policymakers faced with the allocation of health care dollars across several competing interventions. Because the CER is assessed from inputs on costs and effects that are subject to variation, sensitivity analyses are used to assess the extent of the uncertainty in the CER. These authors describe four methods for constructing confidence intervals for CERs and comparing their properties.

Gardiner, J.C., Huebner, M., Jetton, J., and Bradley, C.J. (2000). "Power and sample size assessments for tests of hypotheses on cost-effectiveness ratios." (AHRQ grant HS09514). *Health Economics* 9, pp. 227-234.

The cost-effectiveness ratio (CER) is an important summary statistic for comparing the costs and effectiveness of competing interventions. These authors constructed tests of hypotheses on the CER from the net cost and incremental effectiveness measures. They also constructed a test of the joint hypothesis of cost-effectiveness and effectiveness and derived an expression connecting power and sample size. Their methods accounted for the correlation between cost and effectiveness and led to smaller sample size requirements than comparative methods that ignored the correlation. Compared with trials designed to demonstrate effectiveness alone, their results indicate that a trial appropriately powered to demonstrate cost-effectiveness might require sample sizes many times greater.

Samsa, G.P., and Matchar, D.B. (2001, March). "Have randomized controlled trials of neuroprotective drugs been underpowered?" (AHRQ PORT contract 290-91-0028). *Stroke* 32, pp. 669-674.

The use of neuroprotective drugs to treat acute ischemic stroke has been supported by animal studies and phase I and phase II trials. However, the results of phase III studies have been consistently disappointing. This may be because these phase III trials were too small to have the statistical power to detect clinically meaningful effects of these drugs, according to this study. The researchers used computer simulations to calculate the relationship among true outcome rates, assumed outcome rates, and statistical power. They used as examples the results of trials of neuroprotective agents that were published in the journal *Stroke* from 1996 to 2000. They calculated that even a 2 percent overestimate of the efficacy of an intervention could lead to a serious reduction in statistical power, and that the use of data from phase II studies tends to lead to such overestimation. The researchers recommend placing more emphasis on minimum clinically important differences when planning stroke trials. Even small benefits, when averaged over a sufficiently large number of cases, will accrue to a large positive impact on public health.

Wong, H.S., and Hellinger, F.J. (2001, April). "Conducting research on the Medicare market: The need for better data and methods." *Health Services Research* 36(1), pp. 291-308.

The Medicare insurance program is experimenting with different payment policies—including implementation of the Health Care Financing Administration's new risk-adjusted principal inpatient diagnostic cost group payment system—to pay insurance plans that enter into a risk-based contract. If Medicare does not appropriately adjust for the health status of extremely ill beneficiaries, insurance plans that enroll a large share of these patients will be underpaid. On the other hand, if Medicare payment policy overpays insurance plans because their Medicare enrollees are healthier, total Medicare costs would be higher than they would be without the new payment system. Nearly all existing studies on these issues have been hampered by a lack of complete data and difficult methodological issues. These researchers highlight existing data limitations, the need for improved and complete data and better analytical methods, and the need to use alternative data sources to conduct Medicare-related research to better evaluate Medicare policies. They introduce a new approach that combines hospital discharge data, State inpatient data, and managed care market penetration data to create an analytic database to assess competition, risk selection, and costs in Medicare HMOs. Reprints (AHRQ Publication No. 01-R060) are available from AHRQ.** ■

Ordering Information

AHRQ makes documents available free of charge through its publications clearinghouse and AHRQ InstantFAX. Other AHRQ documents are available from the National Technical Information Service (NTIS) or the Government Printing Office (GPO). To order AHRQ documents:

(*) Available from the AHRQ Clearinghouse:
Call or write:

AHRQ Publications Clearinghouse
Attn: (publication number)
P.O. Box 8547
Silver Spring, MD 20907
800-358-9295
410-381-3150 (callers outside the United States only)
888-586-6340 (toll-free TDD service; hearing impaired only)

(**) Available from the AHRQ Clearinghouse and from AHRQ InstantFAX:
For instructions on using InstantFAX, call 301-594-2800. Use the key pad on your telephone or fax machine when responding to prompts. AHRQ InstantFAX operates 24 hours a day, 7 days a week.

(***) Available from NTIS:
To purchase documents from NTIS, call or write:

National Technical Information Service (NTIS)
Springfield, VA 22161
703-605-6000, local calls
800-553-6847

Available from GPO:
Call the GPO order desk for prices and ordering information 202-512-1800.

Note: Please use publication numbers when ordering

U.S. Department of Health and Human Services

Public Health Service
Agency for Healthcare Research and Quality
P.O. Box 8547
Silver Spring, MD 20907-8547

AHRQ Pub. No. 01-0033
June 2001