



# NEHI Compendium

## *Utilization Variation*



# Evidence Table—Utilization Variation

## Study

## Outcome

*Costs And Survival Of Patients With Colorectal Cancer In A Health Maintenance Organization And A Preferred Provider Organization*  
**Kerrigan, M., Howlader, N., Mandelson, M.T., Harrison, R., Mansley, E.C., Ramsey, S.D.; 2005; Med Care**

This study used tumor registry data in Washington State and claims data from 2 health plans to compare treatment variables and outcomes for colorectal cancer patients with 2 types of health insurance: a preferred provider organization (PPO) and a group model health maintenance organization (HMO).

Initial treatment was different, but costs and survival were not significantly different between the 2 plans. Patients in the PPO were more likely to have local excision of their tumor (16% compared with 11%) and were less likely to receive chemotherapy (48% compared with 60%).

*Physical Therapy Use By Community-Based Older People*  
**Freburger, J.K., Holmes, G.M; 2005; Phys Ther**

This study used Medicare Current Beneficiary Survey data to identify factors associated with physical therapy (PT) use by Medicare beneficiaries.

Results show evidence of both underuse and overuse of PT services based on factors other than need. Individuals are more likely to have PT if they have an inpatient, subacute or home health event; need help with activity of daily living (ADL) or independent activity of daily living (IADL); have difficulty in stooping or reaching overhead; have osteoporosis, arthritis or partial paralysis. Use of PT was positively associated with income, educational level, supplemental insurance, participation in a managed care plan and supply of physical therapists. Use was negatively associated with age. Amount of PT obtained was positively associated with income, supplemental insurance, residence in a metropolitan area, supply of physical therapists and African American race. Amount of PT was negatively associated with participation in a managed care plan.

## Utilization Variation

### Study

### Outcome

*Hospital Admissions Through The Emergency Department: Does Insurance Status Matter?*  
**Sox, C.M., Burstin, H.R., Edwards, R.A., O'Neil, A.C., Brennan, T.A.;** 1998; *Am J Med*

This study retrospectively reviewed the records of patients < age 65 presenting to 5 Harvard teaching hospitals with a diagnosis of abdominal pain, chest pain, or shortness of breath to determine whether insurance status affected admission decisions and whether health status was impacted by that decision.

Uninsured patients were significantly less likely to be admitted than insured patients. (37% v. 17.5%). The subgroup analysis was only statistically significant for patients with abdominal or chest pain. Patients with shortness of breath were less likely to be admitted, but the difference was not statistically significant. There was no difference in follow-up health status between admitted vs. non-admitted patients regardless of admission status.

*The Effect Of Hospital Volume On Cancer Control After Radical Prostatectomy*  
**Ellison, L.M., Trock, B.J., Poe, N.R., Partin, A.W.;** 2005; *J Urol*

This study used Surveillance Epidemiology and End Results (SEER) and Medicare data to identify men with newly diagnosed prostate cancer treated with radical prostatectomy in order to examine the association of hospital volume and long-term cancer control after radical prostatectomy.

Patients treated at very high volume hospitals (greater than 108 cases) did better (i.e., were less likely to need further treatment) than those treated at low and medium volume hospitals (1 to 61).

*Do We Know What Inappropriate Laboratory Utilization Is? A Systematic Review Of Laboratory Clinical Audits*  
**Van, Walraven C., Naylor, C.D.;** 1998; *JAMA*

This study utilized an extensive literature review to evaluate articles purported to demonstrate inappropriate laboratory use.

44 eligible studies were identified. 11 studies employed implicit criteria for inappropriate use, and 33 used explicit criteria that were often weakly supported by evidence. In these articles, estimates of inappropriate use ranged from 4.5%-95%.

## Utilization Variation

### Study

*Effects Of Geriatric Evaluation And Management On Adverse Drug Reactions And Suboptimal Prescribing In The Frail Elderly*  
**Schmader, K.E., Hanlon, J.T., Pieper, C.F., Sloane, R., Ruby, C.M., Twersky, J., Francis, S.D., Branch, L.G., Lindblad, C.I., Artz, M., Weinberger, M., Feussner, J.R., Cohen, H.J.; 2004; Am J Med**

This prospective study in 11 Veterans Affairs Medical Centers (VAMCs) examined whether inpatient or outpatient geriatric evaluation and management, as compared with usual care, reduces adverse drug reactions and suboptimal prescribing in frail elderly patients.

*Improving Prescribing Patterns For The Elderly Through An Online Drug Utilization Review Intervention: A System Linking The Physician, Pharmacist And Computer*  
**Monane, M., Matthias, D.M., Nagle, B.A., Kelly, M.A.; 1998; JAMA**

This study analyzed pharmacy benefit management (PBM) claims records of 23,269 Medicare beneficiaries to determine whether computerized Drug Utilization Review in combination with telepharmacy can reduce inappropriate medication use and improve suboptimal medication use in the elderly.

### Outcome

Geriatric evaluation and management in outpatients helps prevent drug misuse, overuse and underuse. Serious adverse drug reactions were reduced by 35%. Additionally, levels of suboptimal prescribing were reduced with geriatric evaluation and management for both outpatients and inpatients.

The utilization of a Drug Utilization Review (DUR) will help reduce medication errors thereby increasing patient safety and other negative health outcomes associated with medication misuse. A total of 43,007 medication alerts were generated for the study population, 24,266 of which required action. Using a system of integrating computers, pharmacist and physicians, there was an observed improvement of health outcomes for this geriatric population.

## Utilization Variation

### Study

*Geographic Variation In The Treatment Of Acute Myocardial Infarction: The Cooperative Cardiovascular Project*

**O'Connor, G.T., Quinton, H.B., Traven, N.D., Ramunno, L.D., Dodds, T.A., Marciniak, T.A., Wennberg, J.E.; 1999; JAMA**

This study used data from the Cooperative Cardiovascular Project to examine quality indicators such as pharmacological therapy, reperfusion, and smoking cessation advice for the treatment of acute myocardial infarction.

*Variations In Hospitalization Rates Among Nursing Home Residents: The Role Of Facility And Market Attributes.*

**Carter, M.W., Porell, F.W.; 2003; Gerontologist**

This study used Medicaid and Medicare data from 527 nursing homes in Massachusetts in order to examine what factors influence hospitalization rates among nursing home residents.

*Influence Of Patients' Requests For Direct-To-Consumer Advertised Antidepressants: A Randomized Controlled Trial*

**Kravitz, R.L., Epstein, R.M., Feldman, M.D., Franz, C.E., Azari, R., Wilkes, M.S., Hinton, L., Franks, P.; 2005; JAMA**

This study employed standardized patients to seek antidepressants from 152 physicians in New York state and California.

### Outcome

There is substantial geographic variation in the use of treatment strategies. Across all regions, aspirin (ASA) was used in 77.8% of eligible individuals, angiotensin-converting enzyme (ACE) inhibitors were prescribed in 59.3%, reperfusion using thrombolytics or angioplasty in 67.2%, and beta-blockers in 49.5% of appropriate cases.

Hospitalization rates were associated with facility characteristics such as profit status, nurse staffing patterns, nursing home size, chain affiliation, and percentage of Medicaid-and Medicare-reimbursed days.

Standardized patients (SPs) presenting with depression or adjustment disorder who made brand-specific requests, general medication requests, or no requests were prescribed antidepressants at significantly different rates (53, 76, and 31% respectively for SPs presenting with major depression, and 55, 39, and 10% respectively for SPs presenting with adjustment disorder).

## Utilization Variation

### Study

### Outcome

*Prognosis And Decision Making In Severe Stroke*

**Holloway, R.G., Benesch, C.G., Burgin, W.S., Zentner, J.B.; 2005; JAMA**

This study reviewed the literature pertaining to the overuse or underuse of life-sustaining therapies in stroke patients requiring mechanical ventilation.

A review of the prognostic evidence following severe stroke requiring mechanical ventilation is provided, followed by a discussion of the factors that may influence withdrawal of life-sustaining therapies and a theoretical framework for optimizing decision making in this setting.

*Regional Variation In The Treatment And Outcomes Of Myocardial Infarction: Investigating New England's Advantage*

**Krumholz, H.M., Chen, J., Rathore, S.S., Wang, Y., Radford, M.J.; 2003; Am Heart J**

This study analyzed records of 234,769 Medicare beneficiaries hospitalized for myocardial infarction (MI) and included in the cooperative CMC cardiovascular project (CCP) database to assess regional variation in quality of care.

Patients in New England were more likely to receive aspirin and beta-blockers, and less likely to receive reperfusion therapy and had the lowest 30 day risk adjusted mortality rate (15.3% vs. 17.9-21.7%).

*Impact Of Underuse, Overuse, And Discretionary Use On Geographic Variation In The Use Of Coronary Angiography After Acute Myocardial Infarction*

**Guadagnoli, E., Landrum, M.B., Normand, S., L.Ayanian, J.Z., Garg, P., Hauptman, P.J., Ryan, T.J., McNeil, B.J.; 2001; Med Care**

This study used cooperative cardiovascular project (CCP) data for 44294 patients hospitalized for acute myocardial infarction (AMI) in 95 hospital-referral regions to examine whether use of coronary angiography after AMI according to appropriateness criteria, varied across geographic regions and whether underuse, overuse, or discretionary use accounted for variation in overall use.

In this study, significant variation was found between regions, predominantly in rates of angiography categorized as appropriate, but not necessary and unnecessary. Overall, 21.5% of studies were classified as necessary, 29.5% appropriate but not necessary, 27.4% uncertain, and 21.3% unsuitable.

## Utilization Variation

### Study

### Outcome

*Do Competition And Managed Care Improve Quality?*

**Sari, N; 2002; Health Econ**

This paper employs econometric examination of National Inpatient Sample data and American Heart Association (AHA) Annual Survey data to investigate the impact of managed care and hospital competition on quality of care (using in-hospital complications as quality measures).

First, higher managed care penetration increases the quality, when inappropriate utilization, wound infections and adverse/iatrogenic complications are used as quality indicators. Higher hospital market share and market concentration are associated with lower quality of care. Hospital mergers have undesirable quality consequences.

*Anti-Inflammatory Therapy Reduces Total Costs Of Asthma Care Compared With Bronchodilation: The Asthma Outcomes Registry*

**Huse, D.M., Russell, M.W., Weiss, S.T., Hartz, S.C.; 2000; Am J Manag Care**

This study used a sample drawn from the Asthma Outcomes Registry to explore the relation between choice of maintenance therapy with anti-inflammatory agents vs. long-acting bronchodilators and annual costs of asthma care.

A total of 314 patients met criteria for study inclusion (237 treated with antiinflammatories and 77 treated with bronchodilators). Median costs during the baseline year were similar in the anti-inflammatory and bronchodilator groups (\$341 and \$335, respectively). In the follow-up year, the median change in cost in the anti-inflammatory group was a decline of \$93 compared with an increase of \$76 in the bronchodilator group.

*The Implications Of Regional Variations In Medicare Spending. Part 1: The Content, Quality, And Accessibility Of Care*

**Fisher, E.S., Wennberg, D.E., Stukel, T.A., Gottlieb, D.J., Lucas, F.L., Pinder, E.L.; 2003; Ann Intern Med**

This study examined a randomly selected national cohort of Medicare beneficiaries hospitalized for hip fracture, colon cancer, or myocardial infarction (MI), and a representative sample drawn from the Medicare Current Beneficiary Survey, to evaluate intensity of end-of-life care and whether regions with higher Medicare spending provide better care.

Increased spending is not associated with reduced mortality, improvement in functional status, or patient satisfaction. Patients in the highest spending Medicare quintile received 60% more care in the first year after diagnosis (of acute MI, colorectal cancer, or hip fracture) than patients in the lowest quintile. The increased utilization was partially explained by increased inpatient care and subspecialty consultation.

## Utilization Variation

### Study

*Chemotherapy Use, Outcomes, And Costs For Older Persons With Advanced Non-Small-Cell Lung Cancer: Evidence From Surveillance, Epidemiology And End Results-Medicare*  
**Ramsey, S.D., Howlader, N., Etzioni, R.D., Donato, B.; 2004; J Clin Oncol**

This study used linked Surveillance Epidemiology and End Result (SEER) and Medicare claims data to examine U.S. community patterns of care for older patients with advanced non-small-cell lung cancer (NSCLC).

*Impact Of Referral Patterns On The Use Of Chemotherapy For Lung Cancer*  
**Earle, C.C., Neumann, P.J., Gelber, R.D., Weinstein, M.C., Weeks, J.C.; 2002; J Clin Oncol**

This study used linked Surveillance Epidemiology and End Result (SEER) and Medicare claims data to determine the extent to which unexplained variation in the use of chemotherapy for advanced lung cancer is due to access to oncologists' services as opposed to treatment decisions made after seeing an oncologist.

### Outcome

Chemotherapy prolongs survival and is underused, particularly in females, African American patients, and patients in particular regions. The optimal chemotherapy increased cost by more than \$10,000 per patient.

Racial and socioeconomic factors influence whether patients are seen by physicians who can provide chemotherapy. For those who did see such a provider, treatment decisions largely correlated with medical factors.

## Utilization Variation

### Study

*Population Variations In The Initial Treatment Of Non-Small-Cell Lung Cancer*

**Potosky, A.L., Saxman, S., Wallace, R.B., Lynch, C.F.; 2004; J Clin Oncol**

This study retrospectively reviewed the records of a random sample of patients with non-small cell lung cancer (NSCLC) drawn from Surveillance Epidemiology and End Result (SEER) data to examine the patterns of initial therapy focusing on the investigation of differences in receipt of recommended therapies according to multiple clinical and non-clinical patient characteristics.

### Outcome

Overall, 52% of NSCLC patients received recommended therapy. Recommended therapy was more likely in early vs. late-stage disease, white vs. black patients, married vs. single patients, and younger vs. older patients (surgery).

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*Varieties Of Health Services Utilization By Underserved Mexican American Women*

**Iniguez, E., Palinkas, L.A.; 2003; J Health Care Poor Underserved**

Records of 250 women attending a primary care clinic were used to determine utilization of preventive medical services.

48.4% obtained preventive services in accordance with guidelines. 66% reported only visiting the clinic when acutely ill.

## Utilization Variation

### Study

*Diagnosis And Treatment Of Acute Otitis Media: An Assessment*

**Garbutt, J., Jeffe, D.B., Shackelford, P.; 2003; Pediatrics**

This study surveyed 29 pediatricians in St. Louis and used reviews of random medical records to assess compliance with the Centers for Disease Control and Prevention (CDC) evidence-based guidelines for the judicious use of antimicrobials in children with acute otitis media (AOM).

### Outcome

There is poor compliance with diagnostic and treatment recommendations.

Compliance was measured by both chart review and physician self-report.

Compliance with diagnostic criteria for AOM was 38% by chart review and 41% by self-report. 25% of physicians failed to use pneumatic otoscopy to confirm presence of middle ear effusion as required by CDC guidelines. Compliance with recommendation for treatment for new infections was 68% by chart review and 100% by self-report. For treatment failures, compliance was 63% by chart review and 83% by self-report. Compliance for recurrent disease was 50% by chart review. The most common reason for non compliance with treatment recommendations was overuse of broad-spectrum antibiotics. 26% of children received sub-therapeutic doses of amoxicillin. Fewer than 50% of MDs used the shortened course of amoxicillin recommended for uncomplicated new AOM.

## Utilization Variation

### Study

*Racial/Ethnic Variation In Parent Expectations For Antibiotics: Implications For Public Health Campaigns*

**Mangione-Smith, R., Elliott, M.N., Stivers, T., McDonald, L., Heritage, J., McGlynn, E.A.; 2004; Pediatrics**

This study used a survey of parents of children with upper respiratory infections (URIs) in 27 pediatric practices in Los Angeles, and their physicians, assess expectations for antibiotics for URIs and the actual prescriptions written.

### Outcome

Parents were more likely than physicians to feel that an antibiotic was required for their children. (Parent - 81% for bacterial diagnosis, and 66% for viral diagnosis). There were racial ethnic differences as well; non-Hispanic white parents were less likely to expect antibiotics (51% versus 67-80%); physicians also perceived this difference (48% versus 65-82%). Physicians underestimated parents' expectations for antibiotics (55% for bacterial diagnosis and 32% viral diagnosis), but physicians who perceived this expectation were 7% more likely to make a bacterial diagnosis, and 21% more likely to prescribe an antibiotic. Factors increasing the likelihood of expecting an antibiotic were children with ear pain (16% increase), Asian or Latino ethnicity (17% increase) or when guardians were very worried about their child's illness (15% increase).

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*Traumatic Brain Injury: Patterns Of Failure Of Nonoperative Management*

**Patel, N.Y., Hoyt, D.B., Nakaji, P., Marshall, L., Holbrook, T., Coimbra, R., Winchell, R.J., Mikulaschek, A.W.; 2000; J Trauma**

This study reviewed records from 462 cases of traumatic brain injury that were managed nonoperatively in order to try to understand what factors are associated with failure of the nonoperative management.

Of the variables investigated, only anatomic location of injury was found to be predictive of early failure of nonoperative management. Frontal intraparenchymal hematomas are particularly prone to early failure. Clinical examination and intracranial pressure monitoring are equally important in detecting failure.

## Utilization Variation

### Study

*Racial And Ethnic Variations In Office-Based Medical Care For Work-Related Injuries And Illnesses*

**Dembe, A.E., Savageau, J.A., Amick, B.C., III, Banks, S.M.; 2005; J Natl Med Assoc**

This study used National Ambulatory Medical Care Survey (NAMCS) data to estimate the role of race and ethnicity in ambulatory care for work-related illness.

*Preventable Hospitalizations In Primary Care Shortage Areas. An Analysis Of Vulnerable Medicare Beneficiaries*

**Parchman, M.L., Culler, S.D.; 1998; Arch Fam Med**

This study used data from the 1991 Medicare Current Beneficiary Survey to examine whether living in a county designated as a “primary care shortage area” is associated with a greater likelihood of “ambulatory care-sensitive” hospitalization.

*Variation In Routine Electrocardiogram Use In Academic Primary Care Practice*

**Stafford, R.S., Misra, B.; 2001; Arch Intern Med**

This study used claims data from 10 internal medicine practices associated with a large urban teaching hospital to examine the causes of variation in utilization rates for Electrocardiogram (ECK).

### Outcome

Compared to white patients, African American patients were more likely to receive mental health counseling and physical therapy, and less likely to see a nurse. Hispanic patients were more likely to receive X-rays and need insurer authorization for care, and less likely to receive a prescription drug or see a physician.

Residing in a geographic region with a primary care shortage may lead to unnecessary costs and worse outcomes. Medicare patients in these regions may be hospitalized for conditions that may have been preventable by adequate and timely primary care. However, the study likely suffers from residual confounding, and whether the hospitalizations were actually preventable was not verified at the patient level. The study found that Medicare beneficiaries who rated their health fair or poor were 1.7 times more frequently hospitalized for a potentially preventable reason if they lived in a county designated as a primary care shortage area. Results were adjusted for age, sex, race, marital status, income, educational level, and supplemental Medicaid coverage.

EKGs were ordered in 4.4% of visits of patients without cardiac disease of symptoms. There was significant within-group and between-group variation in order rates that was not explained by patient characteristics (0%-24% and .8%-8.6% respectively).

## Utilization Variation

### Study

*Use And Monitoring Of "Statin" Lipid-Lowering Drugs Compared With Guidelines*  
**Abookire, S.A., Karson, A.S., Fiskio, J., Bates, D.W.; 2001; Arch Intern Med**

This study used a record review of patients seen at Brigham and Women's Hospital (BWH) to assess the appropriateness of statin therapy compared with national guidelines and to examine the appropriateness of monitoring for adverse effects.

*Use Of Oral Antithrombotic Agents Among Health Maintenance Organization Members With Atherosclerotic Cardiovascular Disease*  
**Brown, J.B., Delea, T.E., Nichols, G.A., Edelsberg, J., Elmer, P.J., Oster, G.; 2002; Arch Intern Med**

This study reviewed the use of oral antithrombotic agents in a random sample of 2,500 patients with known atherosclerotic cardiovascular disease (CVD) who were members of Northwest Permanente.

*Impact Of Patient Race On Receiving Head CT During Blunt Head Injury Evaluation*  
**Wall, S.P., Ha, E.S., Habicht, M.E., Wawda, H., Merchant, G.L., Ettner, S.L, Mower, W.R.; 2005; Acad Emerg Med**

This cohort study was completed at 1 emergency room to determine whether ethnicity predicts if a patient receives computed tomography (CT) of the head during evaluation of blunt head injury.

### Outcome

Inappropriate overuse of statins and liver function monitoring is common and costly. With the high percentage of patients who are on statin therapy inappropriately, decision support offered during the prescribing and laboratory test ordering processes may help physicians optimize use of these medications.

84% of respondents reported using either aspirin or a prescription antithrombotic agent. Continued efforts (such as encouraging use, messages to clinicians, direct mailings to patients, nurse care management, alerts in electronic medical records) should be made in all settings to optimize the use of antithrombotic therapy among persons at an elevated risk of atherothrombotic events.

Minority patients had a probability of receiving head CT 0.84 times as high as that of non-Hispanic whites, but this result was not statistically significant. Minority and non-Hispanic white patients may not have significantly different rates of receiving head CT during evaluation of blunt head injury.

## Utilization Variation

### Study

*Patterns And Correlates Of Local Therapy For Women With Ductal Carcinoma In Situ*

**Katz, S.J., Lantz, P.M., Janz, N.K., Fagerlin, A., Schwartz, K., Liu, L., Deapen, D., Salem, B., Lakhani, I., Morrow, M.; 2005; J Clin Oncol**

This study surveyed women with Ductal Carcinoma In Situ (DCIS) reported to Detroit and Los Angeles Surveillance Epidemiology and End Result (SEER) registries regarding whether breast-conserving treatment was offered.

### Outcome

Patients seem to be getting the appropriate treatment and follow-up care, taking into account the stage of their disease, their surgeon's recommendations, and their own preferences, which suggests that radical mastectomy, breast-conserving surgery, and radiation were not over- or underused, as some fear.

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*Sedative, Hypnotic, And Antianxiety Medication Use In An Aging Cohort Over Ten Years: A Racial Comparison*

**Blazer, D., Hybels, C., Simonsick, E., Hanlon, J.T.; 2000; J Am Geriatr Soc**

This study analyzed data from a community-based cohort of 4,000 older adults in North Carolina to determine sociodemographic and health characteristics associated with sedative, hypnotic, and anxiolytic use.

Correlates of use at baseline were female gender, white race, depressive symptoms, poor self-rated health, impaired physical function, and health services use.

## Utilization Variation

### Study

*The Quality Of Health Care Delivered To Adults In The United States*

**McGlynn, E.A., Asch, S.M., Adams, J., Keeseey, J., Hicks, J.DeCristofaro, A., Kerr, E.A.; 2003; N Engl J Med**

The Community Quality Index (CQI) study involved chart reviews and telephone interviews of over 6,000 patients, using 439 indicators for 30 conditions (including preventive care) to ascertain whether appropriate care was given.

### Outcome

Overall, participants received 54.9% of recommended care; performance was similar in the areas of preventive care, acute care, and care for chronic conditions. Care requiring an encounter or other intervention (e.g., the annual visit recommended for patients with hypertension) had the highest rates of adherence (73.4%), and processes involving counseling or education (e.g., advising smokers with chronic obstructive pulmonary disease to quit smoking) had the lowest rates of adherence (18.3%). There were more problems with underuse (46.3% of participants did not receive recommended care) than with overuse (11.3 percent of participants received care that was not recommended and was potentially harmful).

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*Use Of Medicare Claims Data To Monitor Provider-Specific Performance Among Patients With Severe Chronic Illness*

**Wennberg, J.E., Fisher, E.S., Stukel, T.A., Sharp, S.M.; 2004; Health Aff (Millwood )**

This study used Medicare claims to study end-of-life spending for patients who received most of their care at 77 well known U.S. hospitals.

Inpatient days in the last 6 months of life ranged from 8.5-23 days for solid tumor cancers, 10.1-29.6-days for chronic obstructive pulmonary disease (COPD) and 8.9-32.3 days for congestive heart failure (CHF). Intensive care unit days in the last 6 month of life ranged from 0.6-8.1 days for solid tumor cancers, 1.8-13.1 days for COPD, and 2.1-13.4 days for CHF. Physician visits per decedent ranged from 13-64.6 days for solid tumor cancer, 15.4-87.4 for COPD, and 15.2-99.3 for CHF. The study also correlates utilization in the last 6 months of life with utilization in the last 2 years of life.

## Utilization Variation

### Study

*Trends And Geographic Variation In Major Surgery For Degenerative Diseases Of The Hip, Knee, And Spine*

**Weinstein, J.N., Bronner, K.K., Morgan, T.S., Wennberg, J.E.; 2004; Health Aff (Millwood)**

Medicare claims data was used to determine the rates of hospitalization for hip fracture, hip and knee replacement, and spine surgery in each of 306 hospital referral regions. Utilization rates in 1992 were compared to rates in 2000.

*Variations In The Longitudinal Efficiency Of Academic Medical Centers*

**Fisher, E.S., Wennberg, D.E., Stukel, T.A., Gottlieb, D.J.; 2004; Health Aff (Millwood)**

This study used Medicare claims data to compare the content, quality, and outcomes of care provided by academic medical centers.

*Nonsteroidal Anti-inflammatory Drug Use Among Patients With GI Bleeding*

**Dominick, K.L., Bosworth, H.B., Jeffreys, A.S., Grambow, S.C., Oddone, E.Z., Horner, R.D.; 2004; Ann Pharmacother**

4,338 veterans hospitalized for gastrointestinal (GI) bleeding were examined 6 months after hospitalization to examine the use of traditional non steroidal anti-inflammatory drugs (NSAIDs), inhibitors, and gastro-protective agents (GPAs) among patients recently hospitalized for GI bleeding.

### Outcome

There was significant variability in the rates of total knee and hip replacement and back surgery among hospital referral regions. For example, patients in Bradenton, FL were 75% more likely than their neighbors in Tampa to receive spine surgery, after adjustment for multiple confounders. Rates in 1992 were highly correlated with rates in 2000.

Patients of academic medical centers in the highest spending Medicare quintile received up to 60% more care in the 5 years after diagnosis of acute myocardial infarction (MI), colorectal cancer, or hip fracture than patients in the lowest quintile. The increased utilization was partially explained by increased inpatient care, subspecialty consultation, and imaging. Quality of and access to acute MI care, as gauged by limited metrics, was no better as intensity increased.

20% of subjects were prescribed an NSAID or COX-2 inhibitor. Only 5% were prescribed a traditional NSAID with no GPA. Subjects < 65 years of age and those with arthritis were more likely to be prescribed a traditional NSAID without a GPA.

## Utilization Variation

### Study

*Introducing A Multifaceted Intervention To Improve The Management Of Otitis Media: How Do Pediatricians, Internists, And Family Physicians Respond?*

**Francis, D.O.** Beckman, H., Chamberlain, J., Partridge, G., Greene, R.A.; 2006; Am J Med Qual

This study retrospectively analyzes a cohort of primary care physicians to explore the differential adherence to a guideline for the treatment of acute otitis media among pediatricians, family practitioners, and internists before and after a multi-faceted intervention.

### Outcome

Physicians opt out of guidelines for otitis media frequently. Pediatricians made exceptions in 33.7% of cases, internists in 33.9%, and family physicians in 40%.

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*Association Between Hospital Process Performance And Outcomes Among Patients With Acute Coronary Syndromes*

**Peterson, E.D., Roe, M.T., Mulgund, J., DeLong, E.R., Lytle, B.L., Brindis, R.G., Smith, S.C., Jr., Pollack, C.V., Jr., Newby, L.K., Harrington, R.A., Gibler, W.B., Ohman, E.M.;** 2006; JAMA

This study examined 64,775 patients at 350 locations who were enrolled in the CRUSADE National Quality Improvement Initiative to determine if adhering to hospital guidelines resulted in improved outcomes among patients with acute coronary syndromes.

American College of Cardiology (ACC)/American Heart Association (AHA) guideline-recommended treatments were adhered to in 74% of eligible instances. The guideline adherence rate was significantly associated with in-hospital mortality, with observed mortality rates decreasing from 6.31% for the lowest adherence quartile

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### Outcome

*The Relationship Between Evidence-Based Practices And Survival In Patients Requiring Prolonged Mechanical Ventilation In Academic Medical Centers*

**Keroack, M.A., Cerese, J., Cuny, J., Bankowitz, R., Neikirk, H.J., Pinglton, S.K.; 2006; Am J Med Qual**

This study used chart reviews of ventilator dependent patients in 2 academic intensive care units (ICUs) to evaluate the impact of 6 care guidelines on survival.

Care guidelines are underused in ICUs for patients on ventilators, and greater use of sedation management and glycemic control guidelines could reduce hospital mortality for these patients. Sedation management and glycemic control were the only care guidelines associated with reduced hospital mortality. Ulcer prophylaxis, deep vein thrombosis (DVT) prevention, position to prevent ventilator-associated pneumonia (VAP), and spontaneous breathing trials were not significantly associated with reduced mortality.

*Use Of Hospitals, Physician Visits And Hospice Care During The Last Six Months Of Life Among Cohort Loyal To Highly Respected Hospitals In The United States*

**Wennberg, J.E., Fisher, E.S., Stukel, T.A., Skinner, J.S., Sharp, S.M., Bronner, K.K.; 2004; BMJ**

This study used Medicare payment files to evaluate the use of healthcare resources in the last 6 months of life at 77 hospitals judged "Best" by *U.S. News and World Reports* for heart, pulmonary, cancer and geriatric care.

Extensive variation in each measure existed among the 77 hospital cohorts. Days in hospital per decedent ranged from 9.4 to 27.1; days in intensive care units ranged from 1.6 to 9.5; number of physician visits ranged from 17.6 to 76.2; percentage of patients seeing 10 or more physicians ranged from 16.9% to 58.5%; and hospice enrollment ranged from 10.8% to 43.8%. The percentage of deaths occurring in hospital ranged from 15.9% to 55.6%, and the percentage of deaths associated with a stay in intensive care ranged from 8.4% to 36.8%.

*Compliance With Recommendations For Follow-Up Care In Latinos: The Los Angeles Latino Eye Study*

**Unzueta, M., Globe, D., Wu, J., Paz, S., Azen, S., Varma, R.; 2004; Ethn Dis**

This study conducted 335 telephone interviews in order to determine the rates of compliance with follow-up eye and health care among Latinos in Los Angeles.

68% obtained follow-up care. Among those who did not seek follow-up care, 50% cited cost of care as the main reason, 28% indicated a lack of knowledge as to where to go for care, and 17% indicated the unavailability of health care. Having insurance, having a systemic disease, and higher education were associated with receiving follow-up care.

## Utilization Variation

### Study

*Geographic Patterns Of Prostate Cancer Mortality And Variations In Access To Medical Care In The United States*

**Jemal, A.Ward, E.Wu, X., Martin, H.J., McLaughlin, C.C., Thun, M.J.; 2005; Cancer Epidemiol Biomarkers Prev**

National Center for Health Statistics, Surveillance Epidemiology and End Result (SEER), and behavioral risk factor surveillance system (BRFSS) data was used to examine the association between geographic variations in prostate cancer mortality and regional variations in access to medical care, as reflected by the incidence of late-stage disease, prostate-specific antigen (PSA) utilization, and residence in rural counties.

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*Who You Are And Where You Live: How Race And Geography Affect The Treatment Of Medicare Beneficiaries*

**Baicker, K., Chandra, A., Skinner, J.S., Wennberg, J.E.; 2004; Health Aff (Millwood)**

This study employed an extensive review of Medicare claims data to determine the role of ethnicity and race in regional variation in health service utilization rates.

### Outcome

Geographic variation in prostate cancer death is associated with incidence of late-stage diagnosis and inversely correlated with rates of PSA testing.

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There is significant variability of racial disparities across regions and for different procedures. For example, regions with high racial disparities for 1 procedure are not more likely to be high in other procedures, and differences in care are driven more by region than race.

## Utilization Variation

### Study

*Influence Of Insurance Type On The Use Of Procedures, Medications And Hospital Outcome In Patients With Unstable Angina: Results From The GUARANTEE Registry. Global Unstable Angina Registry And Treatment Evaluation*  
**Every, N.R., Cannon, C.P., Granger, C., Moliterno, D.J., Aguirre, F.V., Talley, J.D., Booth, J., Sapp, S., Ferguson, J.J;** 1998; *J Am Coll Cardiol*

This study used data from 35 hospitals participating in the GUARANTEE Registry to investigate whether or not there is an association between managed care (MC) insurance and the delivery and outcome of care in patients presenting with unstable angina.

*Geographic Variation In Health Care Utilization And Outcomes In Veterans With Acute Myocardial Infarction*  
**Subramanian, U., Weinberger, M., Eckert, G.J., L'Italien, G.J., Lapuerta, P., Tierney, W.;** 2002; *J Gen Intern Med*

This study used national Veterans Affairs (VA) databases to examine the records of 67,899 patients admitted for acute myocardial infarction (AMI) in order to determine regional differences in treatment intensity and outcome.

### Outcome

Although there was little difference in baseline characteristics and hospital treatments between cohorts, MC patients were more likely to be discharged on guideline-recommended medications (aspirin and beta-adrenergic blocking agents). In addition, fee-for-service (FFS) patients were more likely to undergo cardiac catheterization, but not revascularization during the hospitalization. There was no difference in hospital mortality (0.9% vs. 1.2%) in MC vs. FFS.

Region of the country independently predicted time to death following AMI, with lower risks in the Northeast and West compared with the South. Patients in the Northeast and West had more primary care physician and cardiology follow-up within 2 and 12 months of the index hospitalization.

## Utilization Variation

### Study

### Outcome

*Can Guidelines Impact The Ordering Of Magnetic Resonance Imaging Studies By Primary Care Providers For Low Back Pain?*  
**Rao, J.K., Kroenke, K., Mihaliak, K.A., Eckert, G.J., Weinberger, M.; 2002; Am J Manag Care**

This study analyzed the records of primary care patients seen at a university-associated Veterans Affairs Medical Center (VAMC) to estimate the rate of primary care physician (PCP) ordered Magnetic Resonance Imaging (MRI) and surgical referral for low-back pain.

Use of MRI for low-back pain did not change appreciably after dissemination of the Agency for Healthcare Research and Quality (AHRQ) guideline.

*Long-Term Outcomes Of Regional Variations In Intensity Of Invasive Vs. Medical Management Of Medicare Patients With Acute Myocardial Infarction*  
**Stukel, T.A., Lucas, F.L., Wennberg, D.E.; 2005; JAMA**

This was a national cohort study of 158,831 patients with acute myocardial infarction (MI) who were followed for 7 years in order to determine if survival rates differed among patients who received cardiac catheterization vs. those who received medical management (with beta-blockers).

Regions using high intensity medical management had a 7-year survival advantage of 6.2 percentage points. It is unclear whether intensive invasive management added marginal benefit.

*Geography And The Debate Over Medicare Reform*  
**Wennberg, J.E.; Fisher, E.S.; Skinner, J.S., 2002; Health Aff (Millwood)**

This article reviews a large number of primary sources in order to support a proposal for Medicare reform. The article pays special attention to how there are geographic areas within the U.S. have much higher Medicare spending without better health outcomes.

Higher levels of Medicare spending are due largely to increased use of “supply-sensitive” services physician visits, specialist consultations, and hospitalizations, particularly for those with chronic illnesses or in their last 6 months of life. Also, higher spending does not result in more effective care, or better health outcomes.

## Utilization Variation

### Study

*Health Care Utilization By Children With Chronic Illnesses: A Comparison Of Medicaid And Employer-Insured Managed Care.*

**Wennberg, J.E., Fisher, E.S., Skinner, J.S.; 2002; Health Aff (Millwood)**

This study used claims data from one Medicaid plan and 2 independent practice association (IPA) model health maintenance organizations (HMOs) to compare utilization of health care services by children with chronic conditions (asthma).

*Economic Implications Of Evidence-Based Prescribing For Hypertension: Can Better Care Cost Less?*

**Shatin, D., Levin, R., Ireys, H.T., Haller, V; 1998; Pediatrics**

This study used data from 133,624 patients in the Pharmaceutical Assistance Contract for the Elderly (PACE) drug assistance program in order to calculate the cost savings if patients were prescribed medications consistent with evidence-based guidelines instead of the medicines that they were actually on.

*Economics Of Suboptimal Drug Use: Cost-Savings Of Using JNC-Recommended Medications For Management Of Uncomplicated Essential Hypertension*

**Fischer, M.A., Avorn, J.; 2004; JAMA**

This article used data from 1,588 hypertensive patients in the Medical Expenditure Panel Survey (MEPS) in order to determine the compliance rates with Joint National Commission V (JNC V) guidelines, and the potential cost savings associated with better compliance with the guidelines.

### Outcome

Medicaid-enrolled children had more outpatient services, laboratory services, and radiography services than their counterparts in employer-based managed care.

In examining drug benefit for Medicare recipients, 815,316 prescriptions (40%) were identified for which an alternative regimen appeared more appropriate according to evidence-based recommendations. Making these changes would have reduced the costs to payers in 2001 by \$11.6 million.

Compliance rates with the JNC guidelines were low. About 36%, 67%, and 87% of patients in the nation received first-, second-, and third-line drugs, respectively. The use of first-line drugs (vs. second-line drugs) was associated with expenditures that were \$2.6 billion to \$3.2 billion lower.

## Utilization Variation

### Study

*Correlations Between Access To Mammography And Breast Cancer Stage At Diagnosis*  
**Marchick, J., Henson, D.E.; 2005; Cancer**

This study used Surveillance Epidemiology and End Result (SEER) data to compare breast cancer incidence rates and stage at diagnosis with the number of Food and Drug Administration (FDA) certified mammography facilities by county.

### Outcome

A correlation existed between the percent of incident breast cancers that were diagnosed as in situ disease and the number of mammography facilities per 10,000 women among both whites and African Americans.

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*Cervical Carcinoma In The Elderly: An Analysis Of Patterns Of Care And Outcome*  
**Wright, J.D., Gibb, R.K., Geevarghese, S., Powell, M.A., Herzog, T.J., Mutch, D.G., Grigsby, P.W., Gao, F., Trinkaus, K.M., Rader, J.S.; 2005; Cancer**

This study used data from a single hospital tumor registry to compare treatment patterns and outcomes in women less than 70 years old vs. those greater or equal to 70 who have cervical cancer.

Elderly women with cervical carcinoma are less likely to receive surgery (16% vs. 54%), 9 times more likely to receive no treatment, and more likely to die from their disease.

## Utilization Variation

### Study

*Primary Care Practice Adherence To National Cholesterol Education Program Guidelines For Patients With Coronary Heart Disease*

**McBride, P., Schrott, H.G., Plane, M.B., Underbakke, G., Brown, R.L.;** 1998; *Arch Intern Med*

Physician surveys and medical records from 603 patients in 45 different practices were examined to determine physician and patient factors associated with adherence, or lack of adherence, to national guidelines regarding cholesterol management.

### Outcome

A total of 199 patients (33%) with cardiovascular disease (CVD) were not screened with lipid panels, 271 patients (45%) were not receiving dietary counseling, and 404 (67%) were not receiving cholesterol medication. Only 84 patients (14%) with CVD had achieved the recommended low-density lipoprotein (LDL) level of less than 100 mg/dL and 302 (50%) had triglyceride levels lower than 200 mg/dL. Patients with a revascularization history and higher low-density lipoprotein and/or triglyceride levels were more likely to receive treatment, but other patient factors, including CVD risk factors, did not predict treatment. Physician specialty was not associated with differences in treatment, but physicians in practice for fewer years ordered more lipid panels.

*Timeliness And Quality Of Care For Elderly Patients With Acute Myocardial Infarction Under Health Maintenance Organization Vs. Fee-For-Service Insurance*

**Soumerai, S.B., McLaughlin, T.J., Gurwitz, J.H., Pearson, S., Christiansen, C.L., Borbas, C., Morris, N., McLaughlin, B., Gao, X., Ross-Degnan, D.;** 1999; *Arch Intern Med*

This study reviewed the medical record of 2,304 Medicare patients admitted for acute myocardial infarction (AMI) to compare the quality of emergency care provided in Minnesota who are covered by health maintenance organizations (HMO) vs. fee-for-service (FFS) insurance.

No indicators of timeliness and quality of care for elderly patients with AMIs were lower under HMO vs. FFS insurance coverage in Minnesota. 2 indicators of quality care were slightly higher, but statistically significantly in the HMO setting (use of emergency transportation and aspirin therapy).

## Utilization Variation

### Study

*Withdrawal Of Support In Intracerebral Hemorrhage May Lead To Self-Fulfilling Prophecies*

**Becker, K.J., Baxter, A.B., Cohen, W.A., Bybee, H.M., Tirschwell, D.L., Newell, D.W., Winn, H.R., Longstreth, W.T., Jr.; 2001; Neurology**

This study examined 87 patients with intracerebral hemorrhage (ICH), in order to determine if physicians' preconceived notions about a patient's prognosis may prompt withdrawal of support and poor outcomes that could have been avoided.

*The Impact Of Medicaid Managed Care On Hospitalizations For Ambulatory Care Sensitive Conditions*

**Bindman, A.B., Chattopadhyay, A., Osmond, D.H., Huen, W., Bacchetti, P.; 2005; Health Serv Res**

This study used data from California Temporary Assistance for Needy Families (TANF) eligible Medicaid beneficiaries (mandatory enrollment in managed care) to determine whether Medicaid managed care plans have lower ambulatory care sensitive conditions (ACSC) admission rates than Medicaid fee-for-service (FFS) plans.

### Outcome

The most important prognostic variable in determining outcome after ICH is the level of medical support provided. Withdrawal of support in patients felt likely to have a "poor outcome" biases predictive models and leads to self-fulfilling prophecies.

The rate of hospitalization for managed-care Medicaid patients in mandatory programs was 33% lower than for FFS programs (9.36 vs. 6.4 per month per 10 thousand patients).

## Utilization Variation

### Study

*Contemporary Trends In Imaging Test Utilization For Prostate Cancer Staging: Data From The Cancer Of The Prostate Strategic Urologic Research Endeavor*

**Cooperberg, M.R., Lubeck, D.P., Grossfeld, G.D., Mehta, S.S., Carroll, P.R.; 2002; J Urol**

This study used data from the Cancer of the Prostate Strategic Urologic Endeavor (CaPSURE) registry to evaluate the use of imaging tests in staging localized prostate cancer.

*Physician Referrals To Physical Therapy For The Treatment Of Musculoskeletal Conditions*  
**Freburger, J.K., Holmes, G.M., Carey, T.S.; 2003; Arch Phys Med Rehabil**

This study used National Ambulatory Medical Care Survey (NAMCS) data to analyze factors contributing to physical therapy (PT) referral decisions of orthopedists and primary care physicians (PCPs).

*Race And Gender Disparities In Rates Of Cardiac Revascularization: Do They Reflect Appropriate Use Of Procedures Or Problems In Quality Of Care?*

**Epstein, A.M., Weissman, J.S., Schneider, E.C., Gatsonis, C., Leape, L.L., Piana, R.N.; 2003; Med Care**

This study analyzed data from a random sample of 5,026 Medicare beneficiaries in 5 states who underwent inpatient coronary angiography to examine the effect of race and gender on revascularization (Percutaneous Transluminal Coronary Angioplasty or Coronary Artery Bypass Grafting) following coronary angiography.

### Outcome

Many low-and intermediate risk patients continue to receive unnecessary imaging, but a growing number of high-risk patients are proceeding to treatment without imaging.

There is considerable variation in PT referral rates after controlling for diagnosis and illness severity. Osteopathic PCPs were 103% more likely to make a PT referral than allopathic PCPs. Orthopedic surgeons were 95% more likely than PCPs to make PT referrals, and for all physicians' insurance type and PT supply significantly impacted referral.

Racial differences in procedure use reflect higher rates of clinical appropriateness among whites, greater underuse among blacks, and more frequent revascularization when not clinically indicated among whites. Underuse was associated with significantly worse survival among all patients over the course of follow-up.

## Utilization Variation

### Study

*Quality Of Care: Partial Cystectomy For Bladder Cancer—A Case Of Inappropriate Use?*

**Hollenbeck, B.K., Taub, D.A., Dunn, R.L., Wei, J.T.; 2005; J Urol**

This study used data from Surveillance Epidemiology and End Result (SEER) and the National Inpatient Survey to determine whether partial cystectomy was inappropriately used in institutions and populations.

### Outcome

Partial cystectomy was overused (18-20% use vs. expectable 6-10%), particularly in rural areas, nonacademic settings, and among female, elderly, and black patients.

*Suboptimal Prescribing In Older Inpatients And Outpatients*

**Hanlon, J.T., Schmader, K.E., Ruby, C.M., Weinberger, M.; 2001; J Am Geriatr Soc**

This paper reviews the literature regarding suboptimal prescribing of medications in the elderly from 1985-1999.

14-27% of older outpatients are prescribed inappropriate drugs, and up to 55% are not prescribed indicated drugs. 35% of hospitalized patients are prescribed inappropriate drugs.

*Access To Coronary Artery Bypass Surgery By Race/Ethnicity And Gender Among Patients Who Are Appropriate For Surgery*

**Hannan, E.L., van Ryn, M., Burke, J., Stone, D., Kumar, D., Arani, D., Pierce, W., Rafii, S., Sanborn, T.A., Sharma, S., Slater, J., DeBuono, B.A.; 1999; Med Care**

This study tracked 1,261 postangiography patients in 8 New York hospitals in 1994 to 1996, in order to determine if there were race or gender differences in access to coronary artery bypass graft (CABG) surgery among patients who have been designated as appropriate and as necessary for that surgery according to the RAND methodology.

African American patients had significant problems in obtaining access to CABG surgery. These problems appeared not to be related to patient refusals, appropriateness or necessity for CABG surgery.

## Utilization Variation

### Study

### Outcome

*Cost Efficiency Of U.S. Hospitals: A Stochastic Frontier Approach*

**Rosko, Michael; 2001; Health Econ**

This study examined the impact of managed care and other environmental factors on hospital inefficiency in 1,631 U.S. hospitals during 1990 to 1996.

The statistical analysis suggests that: (1) managed care induces hospitals to restrain cost increases, and (2) managed care penetration is associated with less inefficiency. Higher rates of inefficiency in hospitals were associated with: (1) Medicare hospitalizations, and (2) hospitals that were “for-profit” instead of having “non-profit” status.

*Routine Surveillance Care After Cancer Treatment With Curative Intent*

**Elston, Lafata J., Simpkins, J., Schultz, L., Chase, G.A., Johnson, C.C., Yood, M.U., Lamerato, L., Nathanson, D., Cooper, G.; 2005; Med Care**

Patient records in a large group practice were reviewed to compare the rate of cancer survivors receiving routine surveillance for recurrent cancer to guideline recommendations.

There was wide variation in the use of surveillance care. Less than two-thirds of colorectal cancer patients received recommended colon examinations in the initial year after treatment, but colorectal, lung, and prostate cancer patients received excessive physical exams, and recurrence and metastatic testing.

*Diagnostic Practices For Attention Deficit Hyperactivity Disorder: A National Survey Of Primary Care Physicians*

**Chan, E., Hopkins, M.R., Perrin, J.M., Herrerias, C., Homer, C.J.; 2005; Ambul Pediatr**

This study surveyed 1,076 pediatricians and family physicians to understand their attitudes about attention deficit hyperactivity disorder (ADHD) and estimate compliance with American Academy of Pediatrics (AAP) guidelines.

90% of physician respondents did not meet all AAP guidelines pertaining to the diagnosis of ADHD, and > 50% felt that ADHD was over-diagnosed.

## Utilization Variation

### Study

*The Quality Of Pharmacologic Care For Vulnerable Older Patients*

**Higashi, T., Shekelle, P.G., Solomon, D.H., Knight, E.L., Roth, C., Chang, J.T., Kamberg, C.J., MacLean, C.H., Young, R.T., Adams, J., Reuben, D.B., Avorn, J., Wenger, N.S.; 2004; Ann Intern Med**

In this study the medical records of 372 elderly patients enrolled in two managed care organizations (MCOs) were reviewed to evaluate 43 quality indicators for pharmacological care across the domains of prescribing indicated medicines, avoiding inappropriate medicines, education and continuity, and medication monitoring.

*Variations In Managing Asthma: Experience At The Medical-Group Level In California*

**Legorreta, A.P., Liu, X., Zaher, C.A., Jatulis, D.E.; 2000; Am J Manag Care**

This study surveyed patients identified as having asthma by pharmaceutical claims data to obtain their assessment of asthma care. 47 physician groups cared for at least 35 patients, and the study examined variation in guideline compliance across these 47 groups.

### Outcome

The rates of appropriate pharmacologic management ranged from 10% for documentation of risks of non-steroidal anti-inflammatory drugs (NSAIDs) to 100% for avoiding short acting calcium-channel blockers in congestive heart failure (CHF) patients and beta-blockers in asthma patients. Rates of avoiding inappropriate medications were higher than rates of prescribing indicated medications.

Compliance with national guidelines was generally low and quality of asthma care and service varied significantly across physician groups. Physician group rates for patient use of steroid inhalers ranged from 10.7% to 45.5% and daily peak flow meter use ranged from 0% to 13.1%.

## Utilization Variation

### Study

### Outcome

*Racial Differences In End-Of-Life Care For Patients With AIDS*

**Sambamoorthi, U., Walkup, J., McSpirtt, E., Warner, L., Castle, N., Crystal, S.; 2000; AIDS Public Policy J**

Significant differences in pain treatment and place of death existed between members of racial minority groups and whites.

This study used AIDS surveillance data and paid Medicaid claims data for 1991 to 1998 in order to examine the place of death for persons with AIDS, and the adequacy of the pain treatment that they received in their final months of life.

*Surgical Treatment Of Early-Stage Breast Cancer In The Department Of Defense Healthcare System*

**Kelemen, J.J., Poulton, III, T., Swartz, M.T., Jatoi, I.; 2001; J Am Coll Surg**

Breast-conservation therapy increased between 1986 and 1996 from 16% to 47%.

This study looks at changes in the choice of breast-conservation therapy (BCT) which is now considered the standard of care vs. modified radical mastectomy for Stage I or II breast cancer.

*Screening Mammography: Is It Suitably Targeted To Older Women Who Are Most Likely To Benefit?*

**Scinto, J.D., Gill, T.M., Grady, J.N., Holmboe, E.S.; 2001; J Am Geriatr Soc**

Screening mammography may be underutilized among older women who are the most likely to benefit and overutilized among those who are unlikely to benefit.

This study used Medicare claims data and community interviews to determine whether screening mammography is appropriately targeted to older women who are most likely to benefit from the technology.

## Utilization Variation

### Study

### Outcome

*Medicare Beneficiaries' Costs Of Care In The Last Year Of Life*

**Hogan, C., Lunney, J., Gabel, J., Lynn, J.;** 2001; **Health Aff (Millwood )**

This study used Medicare claims data and medicare current beneficiary survey (MCBS) data to estimate Medicare costs in the last year of life.

5% of Medicare beneficiaries die each year, consuming 27.4% of all Medicare spending. 38% of Medicare beneficiaries used a nursing home and 19% used a hospice during the last year of life.

*Variations In Treatment For Ductal Carcinoma In Situ In Elderly Women*

**Gold, H.T., Dick, A.W.;** 2004; **Med Care**

This study used Surveillance Epidemiology and End Result (SEER) data to quantify variation and variability in treatment of ductal carcinoma in situ (DCIS), and to assess diffusion of breast-conservation surgery (BCS).

Overall, the rate of BCS has increased, but treatment varied significantly by factors including year of diagnosis, socioeconomic status, race, age, location, and number of radiation oncologists.

*How Good Is The Quality Of Health Care In the United States?*

**Schuster, M.A., McGlynn, E.A., Brook, R.H.;** 1998; **Milbank Q**

This study conducted an exhaustive literature review, based upon an initial Medline search and articles identified from the bibliographies of identified articles, to evaluate the quality of health care delivered in the U.S.

50% of patients receive recommended preventive care; 70% recommended acute care, 30% contraindicated acute care, 60% recommended chronic care, and 20% contraindicated chronic care.

## Utilization Variation

### Study

*Disparities In Adherence To Recommended Follow-Up On Screening Mammography: Interaction Of Sociodemographic Factors*  
**Strzelczyk, J.J., Dignan, M.B.; 2002;**  
**Ethn Dis**

Data collected by the Colorado Mammography Project were reviewed to examine disparities in adherence to screening mammography and to investigate whether race, ethnicity, education, age, health insurance, and family history of breast cancer as unique factors influence adherence to recommended follow up on screening mammography.

*Hysterectomy: A Review of the Literature On Indicators, Effectiveness, and Risks. Chapter Two: Utilization And Appropriateness*  
**RAND; 1998**

In this chapter, entitled "Utilization and Appropriateness," the authors discuss the utilization rates of hysterectomy in the U.S., the literature that has tried to investigate the rates of appropriateness of hysterectomies, and how to determine what is or is not appropriate.

*Hysterectomy: A Review of the Literature On Indicators, Effectiveness, and Risks. Chapter Five: Cost And Benefit*  
**RAND; 1998**

In this chapter entitled "Cost and Benefit," the authors review 7 articles from 1977 to 1993 about the costs and benefits of hysterectomies done in the U.S.

### Outcome

Of the 17,358 women who received follow-up recommendations, 80.7% adhered. Overall, non-white women in each of the racial/ethnic groups were less likely to adhere to recommendations than were white women. Also less likely to adhere were younger, less educated, uninsured/underinsured and women who reported not having a family history of breast cancer.

There is considerable variation among different locations and ethnicities in the rate of hysterectomy use. Determining the appropriateness of hysterectomy is complex and different criteria have been developed. There are many studies that report high rates of inappropriate hysterectomy use.

One source estimates a national expenditure of \$3.25 billion in 1985 for hysterectomies. The cost-effectiveness of hysterectomy varies significantly depending upon the indication for the procedure. One source calculated the cost-effectiveness to be between \$11,000 and \$28,000 per quality-adjusted life year (QALY).

## Utilization Variation

### Study

*Carotid Endarterectomy Utilization And Mortality In 10 States*

**Saleh, S.S., Hannan, E.L.; 2004; Am J Surg**

This study used 1999 state-level healthcare cost and utilization project (HCUP) data for 10 states to determine rates of carotid endarterectomy (adjusted for demographic factors) and compare rates of postoperative mortality.

### Outcome

The age-adjusted rates of carotid endarterectomy varied by location, with Colorado having the lowest rate (3.35 per 10,000) and Florida having the highest rate (6.32 per 10,000). There were no significant differences in mortality at the state-level.

*Care In US Hospitals- The Hospital Quality Alliance Program*

**Jha, A.K.Li, Z.Orav, E.J.Epstein, A.M.; 2005; N Engl J Med**

This study linked publicly reported Medicare quality data Hospital Quality Alliance (HQA dataset) to American Heart Association (AHA) hospital data to estimate hospital-specific factors contributing to better reported results.

Performance on 10 quality indicators varied between hospital-referral regions. Predictors associated with higher quality of care included being at an academic hospital, being in the northeast or midwest, and being at a not-for-profit hospital.

*Racial Differences In Cardiac Revascularization Rates: Does "Overuse" Explain Rates Among White Patients?*

**Schneider, E.C., Leape, L.L., Weissman, J.S., Piana, R.N., Gatsonis, C., Epstein, A.M.; 2001; Ann Intern Med**

This study analyzed data from a random sample of 3,960 Medicare beneficiaries in 5 states who underwent in patient coronary angiography to test the hypothesis that the higher rate of cardiac revascularization among white patients is associated with a higher prevalence of overuse (revascularization for clinically inappropriate indication) among white patients than among African-American patients.

Out of 3,960 Medicare patients ages 65-75 who underwent angiography, 1,692 of them had percutaneous transluminal coronary angioplasty (PCTA) and/or coronary artery bypass grafting (CABG). (There were 1,711 total procedures). Inappropriate revascularization was only found to occur significantly more often in white men undergoing PCTA. There was no difference for CABG for women or when the population was not divided by gender.

## Utilization Variation

### Study

*The Association Of Medicare Health Care Delivery Systems With Stage At Diagnosis And Survival For Patients With Melanoma*  
**Kirsner, R.S, Wilkinson, J.D., Ma, F., Pacheco, H., Federman, D.G.; 2005; Arch Dermatol**

This study linked Surveillance Epidemiology and End Result (SEER) data and Medicare claims data to evaluate differences in the stage at diagnosis and survival rates for melanoma between the two most common types of Medicare health care delivery systems, fee-for-service (FFS) and managed care (health maintenance organizations [HMOs]).

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*Race/Ethnicity And The Intensity Of Medical Monitoring Under 'Watchful Waiting' For Prostate Cancer*

**Shavers, V.L., Brown, M., Klabunde, C.N., Potosky, A.L., Davis, W., Moul, J., Fahey, A.; 2004; Med Care**

Surveillance Epidemiology and End Result (SEER) data and Medicare claims data from 1994-1996 were used to examine the type and intensity of medical monitoring received by African American, Hispanic, and white patients with prostate cancer managed with "watchful waiting" in fee-for-service systems.

### Outcome

HMO patients were diagnosed with melanoma earlier in the disease course than FFS patients if it was their first cancer, but not if it was their second or later. Survival rate varied by stage at diagnosis.

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In general, Hispanic and African American men received less medical monitoring than white men. Nearly 6% of African American, 5% of Hispanic, and 1% of white men did not have any medical monitoring visits or procedures during the 60-month follow-up period.

## Utilization Variation

### Study

*Racial And Ethnic Differences In Patients' Preference For Initial Care By Specialists*  
**Wong, M.D., Asch, S.M., Andersen, R.M., Hays, R.D., Shapiro, M.F.; 2004; Am J Med**

This study used prospective patient interviews in physician waiting rooms to examine preferences in seeking care from a primary care physician or specialist among blacks, Asians and whites.

### Outcome

Whites are more likely to seek specialist care. While 13% of patients prefer a specialist over a primary care physician for initial care, blacks are 55% less likely to seek a specialist first, followed by Asians at 46%. Latinos are also less likely than whites to seek specialist care but the data is not statistically significant.

*The Urgent Need To Improve Health Care Quality: Institute Of Medicine National Roundtable On Health Care Quality*  
**Chassin, M.R., Galvin, R.W.; 1998; JAMA**

This consensus statement from the National Roundtable on Health Care Quality identifies issues related to the quality of health care in the U.S., including its measurement, assessment, and improvement, requiring action by health care professionals or other constituencies in the public or private sectors.

The waste and inefficiency that exist in clinical care puts patients at risk for serious harm. Quality of health care can be precisely defined and measured with a degree of scientific accuracy comparable with that of most measures used in clinical medicine. The problems with quality of care can be classified as underuse, overuse, or misuse.

*Trauma In The Very Elderly: A Community-Based Study Of Outcomes At Trauma And Nontrauma Centers*  
**Meldon, S.W., Reilly, M., Drew, B.L., Mancuso, C., Fallon, Jr., W.; 2002; J Trauma**

This study analyzed data from 450 patients in a trauma registry to describe demographics, mechanism of injury, and injury severity of very elderly patients (above 79 years old). The study also examined the association between trauma center verification and hospital mortality in this age group.

Trauma centers had significantly better outcomes than acute care hospitals in a subset of severely injured patients. Head injury, injury severity, and lack of trauma center verification are associated with hospital mortality in very elderly trauma patients.

## Utilization Variation

### Study

*Rational Use Of Antibiotics To Treat Respiratory Tract Infections*

**File, Jr., T.M., Hadley, J.A.; 2002; Am J Manag Care**

This study reviews evidence-based recommendations for appropriate antibiotic use.

### Outcome

Antibiotic drug overuse and inappropriate antibiotic drug selection are associated with increased drug resistance among respiratory pathogens, possible progression to chronic disease, and increased treatment costs.

Awareness of clinical texts that help differentiate viral from bacterial infection and the use of guidelines can promote the appropriate management of respiratory tract infections. Community-acquired pneumonia, acute bacterial rhinosinusitis, and selected cases of acute exacerbations of chronic bronchitis warrant antimicrobial therapy, whereas otitis media with effusion, acute bronchitis, and most rhinosinusitis are viral and do not require antibiotic therapy.

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*Racial Differences In Surgical Evaluation, Treatment, And Outcome Of Locoregional Esophageal Cancer: A Population-Based Analysis Of Elderly Patients*

**Steyerberg, E.W., Earle, C.C., Neville, B.A., Weeks, J.C.; 2005; J Clin Oncol**

This study used linked Surveillance Epidemiology and End Result (SEER) and Medicare claims data to investigate racial disparities in access to surgical evaluation, receipt of surgery, and survival among elderly patients with locoregional esophageal cancer.

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Black patients had higher mortality than whites (2-year survival 18% vs. 25%), which was explained statistically by the fact that the rate of surgery for black patients was half that of white patients (25% vs. 46%).

## Utilization Variation

### Study

*Neuromuscular-Blocking Drugs. Use And Misuse In The Intensive Care Unit*

**Murphy, G.S., Vender, J.S.; 2001; Crit Care Clin**

This article reviews the use and misuse of Neuromuscular-blocking (NMB) drugs in the intensive care unit (ICU).

### Outcome

The use of NMB agents for more than 24 to 48 hours in critically ill patients is associated with many potential complications. Neuromuscular blocking drugs should only be used when it is essential for optimal patient care. The indications for neuromuscular blockade must be defined clearly, and patients should be evaluated during treatment for the need for continued muscle relaxation. The smallest doses of NMB agents that will accomplish clinical goals should be used. This dosage can be determined through clinical-evaluations and peripheral nerve monitoring. It is essential that all patients treated with NMB drugs receive appropriate sedation and analgesia. Clinicians should be aware of risk factors that may predispose certain patients to neuromuscular complications, including sepsis, and the use of high-dose steroids. Neuromuscular-blocking agents should be avoided in these patients if possible. Although not proved, early recognition and treatment of iatrogenic neuromuscular complications may improve patient outcome.

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*When Access-To-Care Indicators Meet. Designated Shortage Areas And Avoidable Hospitalizations*

**Pathman, D.E., Ricketts, T.C., III; 1999; Arch Fam Med**

An editorial regarding the validity of the “health professional shortage area” designation studied in Michael Parchman’s Preventable Hospitalizations in Primary Care Shortage Areas, from the Archives of Family Medicine, Volume 8, November/December 1999 (CCE\_143).

This editorial comments on the difficulty of drawing conclusions from the association found in CCE\_143 (of living in a health professional shortage area and having an increased likelihood of ambulatory care-sensitive hospitalizations). The author comments on the inherently political nature of the health professional shortage area designation, and explains why this designation may not reliably identify areas with true shortages. The author also points out that the use of ambulatory care-sensitive admissions as an indicator of access to care has not been validated.

## Utilization Variation

### Study

### Outcome

*Differences In Use Of Health Services Between White And African American Children Enrolled In Medicaid In North Carolina*

**Buescher, P.A., Horton, S.J., Devaney, B.L., Roholt, S.J., Lenihan, A.J., Whitmire, J.T., Kotch, J.B.; 2003; Matern Child Health J**

This study used North Carolina Medicaid records to examine differences in use of health services between white and African American children.

African American children had consistently lower Medicaid expenditures and lower use of health services than did white children. Total annual Medicaid expenditures were \$207-\$303 less for African American children than white.

*Lost To Follow-Up: Ethnic Disparities In Continuity Of Hospice Care At The End Of Life*  
**Kapo, J., MacMoran, H., Casarett, D.; 2005; J Palliat Med**

This study followed a cohort of patients admitted to a single hospice program to determine whether African American patients who leave hospice are less likely to return before death.

African Americans were 47% less likely than other patients to return to hospice during the study period. Ethnic disparities in hospice utilization may extend even to those patients who do enroll in hospice.

*Assessment Of Psychological Factors Associated With Adherence To Medication Regimens Among Adult Patients With Asthma*  
**Schmaling, K.B., Afari, N., Blume, A.W.; 2000; J Asthma**

This study used a sample of 53 adult asthma patients recruited from a private asthma clinic, a university hospital emergency department (ED), and a public pulmonary clinic to assess psychological factors important to adherence with medication regimens.

Psychological factors important to medication adherence were stage of change, decisional balance, and self-efficacy.

## Utilization Variation

### Study

*The Influence Of Physician Race, Age, And Gender On Physician Attitudes Toward Advance Care Directives And Preferences For End-Of-Life Decision Making.*

**Mebane, E.W., Oman, R.F., Kroonen, L.T., Goldstein, M.K.;** 1999; *J Am Geriatr Soc*

This study surveyed 502 physicians to determine whether physicians' preference for end-of-life decision-making differ between blacks and whites in the same pattern as patient preferences, with blacks being more likely than whites to prefer life-prolonging treatments.

### Outcome

Physicians preferences for end-of-life treatment follow the same pattern by race as patient preferences, making it unlikely that low socioeconomic status or lack of familiarity with treatments account for the difference.

*The Reproducibility Of A Method To Identify The Overuse And Underuse Of Medical Procedures*

**Shekelle, P.G., Kahan, J.P., Bernstein, S.J., Leape, L.L., Kamberg, C.J., Park, R.E.;** 1998; *N Engl J Med*

This study evaluated the reproducibility of making treatment decisions using expert panels to rate procedures as "necessary" or "not necessary" (to evaluate underuse), and "inappropriate" or "not inappropriate".

The appropriateness method of identifying overuse is far from perfect. The degree of agreement among panels about care identified as inappropriate was only moderate. However, agreement among panels was nearly perfect regarding underuse.

## Utilization Variation

### Study

*Racial Disparities In Access To Renal Transplantation—Clinically Appropriate Or Due To Underuse Or Overuse?*

**Epstein, A.M., Ayanian, J.Z., Keogh, J.H., Noonan, S.J., Armistead, N., Cleary, P.D., Weissman, J.S., vid-Kasdan, J.A., Carlson, D., Fuller, J.Marsh, D.Conti, R.M.; 2000; N Engl J Med**

The authors first developed a set of criteria to rate potential kidney transplant recipients as appropriate, inappropriate, or equivocal, based on a review of the literature and consultation with an expert panel of nephrologists and transplant surgeons. They then reviewed charts and contacted three quarters of the patients by telephone 10 months after they started dialysis to determine patient characteristics and the rate of transplantation.

*International Comparison Of Health Resource Utilization In Subjects With Diabetes: An Analysis Of Canadian And American National Health Surveys*

**Klarenbach, S.W., Jacobs, P; 2003; Diabetes Care**

This study analyzed data from 1,346 patients from the National Health Interview Survey (U.S.) and the National Public Health Survey (Canada) in order to compare health resource utilization among diabetics in the U.S. vs. in Canada.

### Outcome

Renal transplantation is more likely to be underused in black patients, and to be overused in white patients. Blacks were less likely than whites to be considered appropriate candidates for transplantation (9.0% vs. 20.9%); the most common reasons were obesity, infection, and medical comorbidity. Of patients considered appropriate, blacks were less likely to be referred for transplant than whites (90% vs. 98%), less likely to be placed on a waiting list (71% vs. 87%), and far less likely to receive a transplant (17% vs. 52%). Of the inappropriate candidates, whites were more likely than blacks to receive a transplant (2% vs. 10%).

Subjects from Canada were more likely than their American counterparts to have contact with a general physician, eye specialist, or any physician in the past year, but were less likely to have contact with other medical specialists. Subjects in Canada were more likely to have been hospitalized overnight.

## Utilization Variation

### Study

*Patterns And Predictors Of Asthma-Related Emergency Department Use In Harlem*

**Ford, J.G., Meyer, I.H., Sternfels, P., Findley, S., E.McLean, D.E., Fagan, J.K., Richardson, L.; 2001; Chest**

This study surveyed a self-selecting sample of English-speaking adults who presented to Harlem Hospital with a diagnosis of asthma to assess the roles of poor access to care, psychological risk factors, and asthma severity in frequent emergency department (ED) use.

### Outcome

Frequent ED users present with serious medical conditions. They do not substitute physician care with ED care; they augment it to address serious health needs. Persons with moderate or severe asthma were 3.8 times more likely to be frequent ED users compared to those with mild asthma.

*Welfare Reform And The Perinatal Health And Health Care Use Of Latino Women In California, New York City, And Texas*

**Joyce, T., Bauer, T., Minkoff, H., Kaestner, R.; 2001; Am J Public Health**

This study used birth records from 1995 and 1998 in Texas, New York, and California to compare rates of prenatal care and birth outcomes among foreign-born vs. U.S.-born Latino women following enactment of the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) in August 1996.

Except for non-Dominicans in New York City, there was no increase in the proportion of low- or very-low-birth-weight births among foreign-born vs. U.S.-born Latinas between 1995 and 1996. Therefore, there was little evidence that PRWORA had an impact on the perinatal health and health care utilization of foreign-born Latinas relative to U.S.-born Latinas.

## Utilization Variation

### Study

*Length Of Stay For Specialized Pediatric Urologic Care*

**Kogan, B.A., Baskin, L.S., Allison, M.J.; 1998; Arch Pediatr Adolesc Med**

This study was a retrospective analysis of data collected in California. The study sought to determine if the quality and expense of pediatric urologic surgery was different if the surgery was done by a pediatric urology specialist or a general urologist. "Quality" was measured by operative results and patient satisfaction surveys. "Expense" or "Costs" was measured by length of hospital stay after the surgical procedure.

### Outcome

Hospital stays were shorter at the hospital where the surgeries were done by a pediatric urologist, in comparison to longer hospital stays at other hospitals where the surgery was done by a general urologist. Out of 38 patients, the surgical outcomes were good, and parent satisfaction rates were very high.

*Variations In Asthma Care By Race/Ethnicity Among Children Enrolled In A State Medicaid Program*

**Shields, A.E., Comstock, C., Weiss, K.B.; 2004; Pediatrics**

This study examined differences in the process of care for Medicaid-enrolled white, Hispanic, and black children with asthma.

There were significant differences in several processes of care for white, black, and Hispanic children with asthma. Hispanic children were less likely than whites to have a subspecialist visit. Black and Hispanic children were less likely to receive follow-up within five days of an emergency department (ED) visit.

*The Unnecessary Pacemaker Controversy Revisited*

**Kowey, Peter; 2002; PACE**

In this editorial, the author highlights his own research activities identifying the unexplained variation in pacemaker utilization.

Over 30 % of pacemakers have been thought to be unnecessary in at least 2 large reviews.

## Utilization Variation

### Study

### Outcome

*An Assessment Of The Appropriateness Of Respiratory Care Delivered At A 450-Bed Acute Care Veterans Affairs Hospital*  
**Shelledy, D.C., LeGrand, T.S., Peters, J.I.; 2004; Respir Care**

24% of the delivered respiratory therapies were not indicated. 12% of the patients assessed were not receiving respiratory care that was indicated.

In order to assess the appropriateness of respiratory care delivered at a Veterans Affairs hospital, this study evaluated 75 patients during a 3 month period (using a complete respiratory care assessment, including a medical records review, patient interview, physical assessment, and measurement of blood oxygen saturation and inspiratory capacity).

*Geographical Variations In Medicare Spending*  
**Shine, Kenneth; 2003; Ann Intern Med**

This editorial describes articles presenting evidence that medical spending is higher in certain geographic areas of the U.S., without improved outcomes.

An increasing amount of attention has been given to the importance of improving quality and patient safety in Medicare. Medicare now pays for the correction of medical errors but does not pay for the costs of putting systems in place that might prevent these errors. We need to find ways to encourage better practices, not discourage them by creating disincentives. We need more thought about how to reward physicians who practice high-quality, conservative medicine.

*Geographic Variation In The Appropriate Use Of Cesarean Delivery*  
**Baicker, K., Buckles, K.S., Chandra, A.; 2006; Health Aff (Millwood)**

This article introduces a new methodology to determine whether higher cesarean rates reflect less medically appropriate use of the procedure.

A large part of the variation in cesarean rates remains unexplained by risk factors other than geographic variation; increases in the cesarean rate are associated with declines in the average medical appropriateness of the procedure; higher cesarean rates did not significantly lower neonatal or maternal mortality.

## Utilization Variation

### Study

### Outcome

*The New Era Of Medical Imaging, Progress And Pitfalls*

**Iglehart, John; 2006; N Engl J Med**

This narrative review discusses the recent rise in health care expenditures on imaging studies, and the efforts by Medicare, government and private industry to address this.

There are no specific outcomes reported.

*Underuse Of Cardiac Procedures: Do Women, Ethnic Minorities, And The Uninsured Fail To Receive Needed Revascularization?*

**Leape, L.L., Hilborne, L.H., Bell, R., Kamberg, C., Brook, R.H.; 1999; Ann Intern Med**

This study used retrospective medical records review to identify 631 patients who had angiography and met RAND criteria for revascularization in New York during 1 year, and then retrieved information from their medical records in order to try to answer if women, minorities, and the uninsured fail to receive cardiac procedures when they need them.

Although revascularization procedures are substantially underused, no variations in rate of use by sex, ethnic group, or payer status were seen among patients treated in hospitals that provide coronary artery bypass graft (CABG) surgery and percutaneous transluminal coronary angioplasty (PTCA). However, “underuse” was significantly greater in hospitals that do not provide these procedures, particularly among uninsured persons.

*Immigration/Acculturation, And Ethnic Variations In Breast Conserving Surgery, San Francisco Bay Area*

**Gomez, S.L., France, A.M., Lee, M.M.; Socioeconomic Status; 2004; Ethn Dis**

Previous studies have demonstrated substantial variations in breast-conserving surgery (BCS) across sociodemographic groups. This study explored the joint influences of socioeconomic, immigration/acclturation, and clinical factors on ethnic differences in breast cancer surgery for early-stage disease.

The option of BCS or no surgery varied by ethnicity and immigration status—whites, 45%; blacks, 45%; Hispanics 34%; Chinese 20%. Choice also varied by age, tumor size, and treatment site.

## Utilization Variation

### Study

### Outcome

#### *Understanding Variation In Chronic Disease Outcomes*

**Johnson, P.E., Veazie, P.J., Kochevar, L., O'Connor, P.J., Potthoff, S.J., Verma, D., Dutta, P; 2002; Health Care Manag Sci**

This study proposes an explanation for variation in disease outcomes based on patient adaptation to the conditions of chronic disease. The study developed the model of patient adaptation, using data from 609 patients with type 2 diabetes.

Outcomes of diabetes are associated with disease severity and patient archetype.

#### *Hospital And Outpatient Health Services Utilization Among HIV-Infected Adults In Care 2000-2002*

**Fleishman, J.A., Gebo, K.A., Reilly, E.D., Conviser, R., Christopher, Mathews W., Todd, Korthuis P., Hellinger, J., Rutstein, R., Keiser, P., Rubin, H., Moore, R.D.; 2005; Med Care**

A chart review of 11 sites in the HIV Research Network (8 academic sites), to examine resource utilization by HIV-infected adults, and to determine what variables influence both inpatient and outpatient visits and utilization.

From 2000-2002 there was no substantial change in the combined inpatient utilization by HIV-infected adults, but outpatient utilization dropped by about .5 days per person per year (from 6.06 to 5.66). Minorities and disadvantaged groups had higher hospitalization rates, and clinical costs for patients on highly active antiretroviral therapy (HAART) were not significantly different from those not on HAART. Overall, only about 18-23% of the patients were not receiving HAART. Outpatient visits were lower for uninsured patients, and highest for those with Medicare or Medicaid. Hospital admission rates were also highest for Medicare and Medicaid patients (23%-25% versus 11%-16%).

## Utilization Variation

### Study

### Outcome

*Latino Children With Asthma: Rates And Risks For Medical Care Utilization*

**Berg, J., Wahlgren, D.R., Hofstetter, C.R., Meltzer, S.B., Meltzer, E.O., Matt, G.E., Martinez-Donate, A., Hovell, M.F.; 2004; J Asthma**

This study analyzed a cohort of 193 Latino families containing children with asthma to determine the type and frequency of health care utilization.

74% of families reported an unscheduled event within the past year—23% a hospitalization and 45% an emergency department (ED visit). 78% never used an inhaler, and environmental triggers, including tobacco smoke, were extremely common.

*Review Of Studies That Compare The Quality Of Cardiovascular Care In HMO Versus Non-HMO Settings*

**Seidman, J.J., Bass, E.P., Rubin, H.R.; 1998; Med Care**

A review of studies before November 1995 that used process or outcome measures to evaluate the quality of cardiovascular care in health maintenance organization (HMO) vs. non-HMO settings.

7 of the 11 studies that examined process measures for cardiovascular care in HMO vs. non-HMO patients found more differences in 1 or more process measures that favored HMOs. 7 of the 10 studies that examined outcome measures found no statistically significant differences in patient care between HMO and non-HMO settings.

*Real World Compliance With Strategies To Prevent Early-Onset Group B Streptococcal Disease*

**Riley, L., Appollon, K., Haider, S., Chan-Flynn, S., Cohen, A., Ecker, J., Rein, M., Lieberman, E.; 2003; J Perinatol**

This study retrospectively reviewed medical records from 3 hospitals in order to assess the compliance rates with risk-based strategy vs. the culture-based strategy to prevent early-onset group B streptococcal disease in newborns.

Intrapartum compliance with the risk-based approach was similar to the culture-based approach. There were more cultures not done and cultures done at inappropriate gestations at the community hospital practice.

## Utilization Variation

### Study

*Health Care For Children And Youth In The United States: Annual Report On Patterns Of Coverage, Utilization, Quality, And Expenditures By Income*

**Simpson, L., Owens, P.L., Zodet, M.W., Chevarley, F.M., Dougherty, D., Elixhauser, A., McCormick, M.C.; 2005; *Ambul Pediatr***

This study reviewed medical expenditure panel survey (MEPS) and healthcare cost and utilization project (HCUP) data to evaluate how different levels of household income were associated with the following: insurance coverage, health care utilization, expenditures, and quality of care.

### Outcome

Low income children were more likely to be uninsured or covered by public insurance, less likely to have had a medical or dental visit, and less likely to have had a prescription filled. They were less likely to have used a hospital service other than emergency department (ED) and ambulatory care sensitive conditions (ACSC) admissions, where they were more likely than high income children. Perceptions of quality, including access to both primary care and specialists, provider attentiveness, and provider respect, were significantly lower.

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*Quality Of U.S. Outpatient Care: Temporal Changes And Racial/Ethnic Disparities*

**Ma, J., Stafford, R.S.; 2005; *Arch Intern Med***

This study examined 23 outpatient quality indicators in 1992 and again in 2002 to measure overall performance and racial/ethnic disparities in outpatient care in the United States using data from the The National Ambulatory Medical Care Survey (NAMCS) and the National Hospital Ambulatory Medical Care Survey (NHAMCS).

Changes in quality between 1992 and 2002 were modest, with significant improvements in 6 indicators.

## Utilization Variation

### Study

### Outcome

*The Longitudinal Pattern Of Care*  
**Ostermann, J., Sloan, F.A., Herndon, L., Lee, P.P.; Racial Differences In Glaucoma Care; 2005; Arch Ophthalmol**

African Americans were not less likely to undergo eye examinations than non-African Americans. African Americans were 76% more likely to undergo surgical procedures.

This study is an analysis of Medicare claims data to examine if differences in long-term management of glaucoma existed between people of different races.

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*What Is Known About The Economics Of End-Of-Life Care For Medicare Beneficiaries?*  
**Buntin, M.B., Huskamp, H.; 2002; Gerontologist**

Studies have documented poor quality of care, dissatisfaction with care, and limitations in the coverage of end-of-life care for Medicare beneficiaries. Further research on how treatment decisions at the end of life are made and prospective studies of costs, satisfaction, and outcomes are needed.

This study reviews literature pertaining to overuse of services near end of life.