Glossary

CMS Centers for Medicare & Medicaid Services: United States federal agency that administers Medicare and Medicaid and the Children's Health Insurance Program

Clinically appropriate intervention A treatment or screening procedure to diagnose disease, whose use is sanctioned by clinical tradition or professional consensus and codified into clinical guidelines

Coefficient of variation (CV) A statistical measure of variation defined as the ratio of the standard deviation to the mean. The greater the ratio, the more the variation. The CV is used in this book to compare the dispersion of utilization rates among regions for different conditions or treatments.

Delegated decision making Traditional process of clinical decision making in which patients delegate decisions to physicians who act as their agents in defining medical need and prescribing treatments. Decisions are delegated by patients under the assumption that physicians know which treatment is best for a given patient. This process leads to informed consent.

Effective care Evidence-based interventions where the benefits are thought to exceed the harms and thus all patients in need are urged to be treated

Evidence-based intervention A treatment or screening procedure to diagnose a disease, whose use is supported by strong evidence concerning efficacy

Hospital service area (HSAs) A geographic area in which most residents receive their care from local hospitals. Hospital service areas do not always fall within political boundaries, as patients may cross state lines to get to the nearest hospital. HSAs link populations with the hospitals that they use most and thus are useful for studying the influence of local providers on population-based rates of health care delivery (for details, see Appendix).

Hospital referral region (HRRs) An aggregation of hospital service areas into larger regions based on use of cardiac surgery and neurosurgery (for details, see Appendix). HRRs are useful for studying regional systems.

Informed consent The traditional normative standard for determining medical necessity based on patient consenting to the recommendation of the physician

Informed patient choice A new normative standard for determining medical necessity based on patient understanding of the harms and benefits of treatment options and participation in a shared decision-making process to ensure that the treatment chosen is in keeping with the patient's own values and preferences

Population-based rate A measure of utilization composed of a numerator (the number of events over a given period of time) and a denominator (the population eligible for the event over the same period of time)—for example, the number of hospitalizations experienced by residents of Maine in 2009 divided by the number of residents in Maine in 2009. Rates are typically expressed as events per 1,000 and are adjusted to remove the possible effects of age, sex, and race.

Preference-sensitive care Procedures, tests, and surgeries for conditions for which there is more than one clinically appropriate treatment option. Under the informed patient choice normative standard, the choice of treatment should depend on the patient's preferences (e.g., the choice between lumpectomy and mastectomy for early-stage breast cancer).

R^2 statistic A measure of the percentage of variation in one variable that is associated with variation in other variables. Called the coefficient of determination, it is frequently used in this book to measure association between two variables (see Appendix for further details).

Shared decision making The best process for establishing need for a given preference-sensitive treatment option. In a shared decision, a health care provider communicates to the patient personalized information about the options, outcomes, probabilities, and scientific uncertainties of available treatment options, and the patient communicates his or her values and the relative importance he or she places on benefits and harms. The patient and physician work together to decide which treatment option best serves the patient's preferences. The aim of this process is to ensure informed patient choice.

Supply-sensitive care Services such as physician visits, referrals, hospitalizations, and stays in intensive care units for patients with acute and chronic medical (non-surgical) conditions where the frequency of use (utilization) is closely association with the supply of available resources

Unwarranted variation Variation in the utilization of health care services that cannot be explained by variation in patient illness or patient preferences

Notes and References

CHAPTER 1. IN HEALTH CARE, GEOGRAPHY IS DESTINY

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CHAPTER 2. THE VERMONT EXPERIENCE

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8. The picture has recently been further clouded by the rise in rates of ductal carcinoma in situ (DCIS), which is being detected with the use of increasingly sensitive screening technology. Some DCIS will develop into invasive cancer, but there is little agreement on how often this occurs or which women are most at risk. Because DCIS is often found scattered in multiple sites in the same breast, many women must undergo mastectomy if they choose to have all sites removed. The theory that aggressive treatment of DCIS reduces mortality or improves quality of life needs to be tested. [See also H. Gilbert Welch, *Should I Be Tested for Cancer? Maybe Not and Here's Why* (Berkeley and Los Angeles, CA: University of California Press, 2004, Chapter 4), 82–88.]

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CHAPTER 5. UNDERSTANDING THE MARKET FOR PREFERENCE-SENSITIVE SURGERY

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5. The coefficients of determination between supply of surgeons and procedure rates were as follows: supply of vascular surgeons and carotid artery surgery (R^2 = 0.00) and lower extremity arterial bypass procedures (R^2 = 0.02); general surgeons and mastectomy (R^2 = .00) and gallbladder surgery (R^2 = 0.00); and urologists and prostatectomy (R^2 = 0.03).
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10. We found two case series reports in the British medical literature. One study was done by a group of British general practitioners who decided to follow their patients (for a period of up to five years) to see how they fared. In that period of time, only about 10% progressed to the point where surgery was actually undertaken (and it was not clear for what reason surgery was done). (See Ball, A. J., R. C. L. Feneley, and P. H. Abrams. 1981. The Natural History of Untreated "Prostatism." *British Journal of Urology* 53: 613–616.) The second study was by a skeptical British urologist who conducted a similar study with more or less the same results. (See Muller, A. 1965. When is Prostatectomy Indicated? *British Journal of Surgery* 52: 744–745.) We also were able to use some information obtained from clinical trials—not from comparisons of surgery to watchful waiting (there were none) but from FDA-required clinical trials that compared patients with BPH treated with experimental drugs to those treated with a placebo.
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16. "Benign Prostatic Hyperplasia: Choosing Your Treatment," Shared Decision Making Program Video, The Foundation for Informed Medical Decision Making, 1998.
17. By the summer of 1992, over 1,000 patients with BPH had viewed the SDP. Most (87%) agreed that the information presented was the amount they needed to make their decisions, while 6% said they would like more and 7% said they learned more than they needed to know. Ninety-nine percent thought that everything or most things were clear. While those who had less than a high school education more often reported that they received more information than they wanted, only a small minority thought this way: 16% compared to less than 5% for high school graduates.
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CHAPTER 8. UNDERSTANDING SUPPLY-SENSITIVE CARE

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9. Because hysterectomy is relatively infrequent in post-menopausal women and performed for different indications, we selected knee replacement as the boundary between moderate and high variation conditions.
10. In 2005, 29% of patients with primary diagnosis of heart attack patients were classified by CMS as surgical patients. We analyzed rates separately for surgical and non-surgical heart attack patients as well as for a combined group. Variation exceeded knee replacement in each case.

CHAPTER 9. CHRONIC ILLNESS AND PRACTICE VARIATION

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11. Physicians in the intervention group received estimates for their patients of the likelihood of six-month survival as well as periodic reports on functional disability—to make them aware of their poor prognosis and raise the need for advanced planning. Specially trained nurses were part of the intervention. Their job was to make "multiple contacts with the patient, family, physician and hospital staff to elicit preference, improve understanding of the outcomes, encourage pain control and facilitate advance care planning and patient-physician communication."
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CHAPTER 10. IS MORE BETTER?

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7. For every 10% increase in spending, the relative risk of death was 0.3% greater for patients with hip fracture, 1.2% for patients with colon cancer, and 0.7% for patients with acute myocardial infarction. The 95% confidence limits on the estimates for two of the three cohorts showed "statistical significance": for colon cancer, the lower bound estimate for the increase in mortality was 0.5% and the upper bound was 1.9%; for acute myocardial infarction, these bounds were 0.1% and 1.4%, respectively. The 95% confidence limit overlapped 1.0 for hip fracture: the lower bound suggested a 0.1% reduction in mortality, and the upper bound suggested a 0.6% increase.
8. In the typical RCT, patients are assigned by the toss of a coin to a "control" group (the group who receives usual care or no active treatment) and a "treatment" group (the group who receives the experimental intervention). The assumption is that randomization results in two groups of patients who are alike in all essential features affecting health care outcomes, save one—the treatment they receive.
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14. http://www.hcahpsonline.org/home.aspx.

CHAPTER 11. ARE "AMERICA'S BEST HOSPITALS" REALLY THE BEST?

1. http://health.usnews.com/articles/health/best-hospitals/2008/07/10/a-look-inside-the-hospital-rankings.html.
2. Even so, there are some differences in average reimbursements per day in hospital. What explains these differences? It does not appear to be due solely to differences in labor costs. While Medicare does adjust its DRG payments to account for local differences in cost of labor, the average hourly wages for these hospitals are essentially unrelated to their differences in reimbursements per day in hospital. For example, the wage index for Johns Hopkins was 1% below the national average, while the wage index of the Mayo Clinic's St. Mary's Hospital was 11% above. Yet the average reimbursement per day was 40% higher for Johns Hopkins than for the Mayo Clinic. Nor is the difference between the two adequately explained by differences in supplemental payments tied to the formulas for hospital reimbursement that subsidize medical education or help pay for care of the uninsured. For example, per capita reimbursements for inpatient care net of disproportionate share and indirect medical education were 70% greater for UCLA's patients than for the Mayo Clinic's during the last two years of life.
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CHAPTER 12. THE TOP TEN REASONS WHY WE NEED TO REFORM THE WAY WE MANAGE CHRONIC ILLNESS

1. About 21% is spent on community-based care. Ambulatory care—primarily physician services—garners about 16% of spending, while home health care and hospice care account for about 5% each.
2. There are a number of reasons why inpatient care prices may vary among regions. One is cost of living, which Medicare takes into account by adjusting DRG prices. Another is the differences in average length of stay. Yet another is that under traditional Medicare, average per diem spending includes supplements for graduate medical education and so called DSH payments to offset costs of providing uncompensated care. These supplements vary from hospital to hospital and region to region. Average reimbursement per day can also reflect differences in DRG coding practices and a hospital's propensity for use of the outlier payment provision.

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7. This compares the present value of Medicare spending, that is, where future spending, starting at 2006 per-capita measures of $10,810 in Los Angeles and $6,705 in Minnesota, is assumed to grow at the average per capita real (inflation-adjusted) rate of growth from 1992–2006 (3.5% annual rate). This future spending is further discounted both by a 4% real interest rate and by the risk of dying, taken from United States life tables: http://www.cdc.gov/nchs/data/nvsr/nvsr54/nvsr54_14.pdf.
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CHAPTER 13. PROMOTING ORGANIZED CARE AND REDUCING OVERUSE

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5. The estimate of savings is based on the use of Medicare claims to identify medical causes of hospitalization and calculate hospital-specific inpatient reimbursements under Part A and Part B Medicare. Compensatory increases in medical admissions in the other two hospitals have not been taken into account but would be limited unless bed capacity at these institutions was increased.
6. McCullough, Dennis. 2008. *My Mother, Your Mother: Embracing "Slow Medicine," the Compassionate Approach to Caring for Your Aging Loved Ones* (New York; HarperCollins).

CHAPTER 14. ESTABLISHING SHARED DECISION MAKING AND INFORMED PATIENT CHOICE

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2. The Cochrane Collaboration is a group of over 15,000 volunteers in more than ninety countries who review the effects of health care interventions tested in biomedical randomized controlled trials and cohort studies.
3. O'Connor, A. M., C. L. Bennett, D. Stacey, M. Barry, N. F. Col, K. B. Eden, V. A. Entwistle, V. Fiset, M. Holmes-Rovner, S. Khangura, H. Llewellyn-Thomas, and D. Rovner. "Decision aids for people facing health treatment or screening decisions (Cochrane Review)," In: The Cochrane Library, Issue 2, 2009, The Cochrane Collaboration. Published by John Wiley & Sons, Ltd. (http://www.thecochranelibrary.com).
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9. The group is the International Patient Decision Aids (IPDAS) Collaboration, a consortium of over 100 researchers, practitioners, patients and policy makers from fourteen countries. They have rated quality criteria in the following domains: information, risk communication, values clarification, balanced guidance in deliberation, systematic development, evidence base, disclosure of sources of support and conflicts of interest, and evidence of positive effects on decision quality. This work provides the basis for developing certification process called for in this chapter. For more information, go to this URL: http://ipdas.ohri.ca/.
10. American College of Physicians policy statement, March 2007. A copy of the policy statement can be downloaded at http://www.acponline.org/advocacy/where_we_stand/medical_home/approve_jp.pdf.

CHAPTER 15. FIVE WAYS TO CONTROL COSTS AND ACCELERATE HEALTH CARE REFORM

1. The simulation is based on a sample containing 2,891 hospitals that together accounted for 94.3% of Medicare inpatient reimbursements in that year. Altogether, the penalty would have affected about 3.4% of hospitals (0.8% of hospitals exceed the 98th percentile for both volume of patient days and physician visits; 1.3% for inpatient days only and 1.0% for physician visits only).
2. O'Connor, A. M., C. L. Bennett, D. Stacey, M. Barry, N. F. Col, K. B. Eden, V. A. Entwistle, V. Fiset, M. Holmes-Rovner, S. Khangura, H. Llewellyn-Thomas, and D. Rovner. "Decision aids for people facing health treatment or screening decisions (Cochrane Review)," In: The Cochrane Library, Issue 2, 2009, The Cochrane Collaboration. Published by John Wiley & Sons, Ltd. (http://www.thecochranelibrary.com).
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7. Mullan, Fitzhugh, and Elizabeth Wiley. Beware the Siren Song of New GME: Graduate Medical Education and Health Reform. *Health Affairs* (blog), June 15, 2009. http://healthaffairs.org/blog/. Copyright ©2006 Health Affairs by Project HOPE—The People-to-People Health Foundation, Inc.
8. In Vermont, we found that patients who lived in the regions with the most physicians, particularly medical specialists, had the greatest difficulty in getting an appointment (Chapter 1). In the Fowler study (Chapter 10), patients living in Atlas regions with the greatest numbers of physicians per capita had the greatest difficulty in getting an appointment, even though the Medicare patients living there had the highest rates for visiting their physicians.
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11. Wennberg, John, and Alan Gittelsohn. 1973. Small Area Variations in Health Care Delivery: A Population-Based Health Information System Can Guide Planning and Regulatory Decision-Making. *Science* 182: 1102–1108.
12. The 2008 edition of the Dartmouth Atlas compares the patient experience in several Los Angeles medical communities, providing maps and information on variation among local hospitals, all within close proximity. The interested reader can access this report on the Dartmouth Atlas website.

EPILOGUE

1. For example, by 2018, the target growth rate in Medicare spending is the average 5-year increase in GDP plus 1 percentage point. So if GDP has been growing at 2 percent, the target is 3 percent. If Medicare's growth is faster than that, then the Independent Medicare Advisory Board is charged with saving the lesser of (1) the difference between the target growth rate and the real growth rate or (2) 1.5 percentage points off the projected growth rate. Its authority to contain costs is unique: if Congress fails to vote to accept or reject the Board's proposal, it goes into effect anyway. If Congress votes against the recommendation and the president vetoes it, it will still go into effect unless Congress finds the two-thirds votes needed to overcome the veto. The Board's recommendations are turned down only if Congress votes against them and the president agrees.
2. Moody's Investor Service recently announced that health care reform legislation might lead the service to downgrade the bond ratings of the most costly hospitals. With limited access to the bond market, these providers will find it difficult to expand capacity.

APPENDIX ON METHODS

1. For a description of the coefficient of determination, see http://en.wikipedia.org/wiki/Coefficient_of_determination.
2. Wennberg, John E., Elliott S. Fisher, Thérèse A. Stukel, Jonathan S. Skinner, Sandra M. Sharp, and Kristen K Bronner. 2004. Use of Hospitals, Physician Visits, and Hospice Care during Last Six Months of Life among Cohorts Loyal to Highly Respected Hospitals in the United States. *British Medical Journal* 328: 607–610.
3. Wennberg, John E., Elliott S. Fisher, Laurence Baker, Sandra M. Sharp, and Kristen K. Bronner. 2005. Evaluating the Efficiency of California Providers in Caring for Patients with Chronic Illness. *Health Affairs* (Web exclusive, published online November 16, 2005).
4. See Iezzoni, Lisa I., Timothy Heeren, Susan M. Foley, Jennifer Daley, John Hughes, and Gerald A. Coffman. 1994. Chronic Conditions and Risk of In-Hospital Death. *Health Services Research* 29: 435–460. Over the five-year period, 6,762,021 deaths occurred among Medicare enrollees who were enrolled in Medicare Parts A and B (and not enrolled in managed care organizations). The vast majority (92.4%) had serious chronic illnesses, defined as the presence

of one or more of nine conditions specified by Iezzoni et al. Almost 90% of these were hospitalized at least once (87.7%). Our study population for the hospital-specific analyses was comprised of 4,732,448 enrollees who had one or more nonsurgical admissions for chronic illness during the five-year period.

5. Wennberg, John E., Elliott S. Fisher, Thérèse A. Stukel, and Sandra M. Sharp. 2004. Use of Medicare Claims Data to Monitor Provider-Specific Performance among Patients with Severe Chronic Illness. *Health Affairs* Supplement (Web exclusive): VAR5-18.
6. http://new.cms.hhs.gov/HospitalQualityInits/25_HospitalCompare.asp.
7. The five performance measures for acute myocardial infarction are the percentage of eligible patients receiving (1) aspirin at time of admission, (2) aspirin at time of discharge, (3) ACE inhibitor for left ventricular dysfunction, (4) beta blocker at admission, and (5) beta blocker at discharge. The two congestive heart failure measures are percentage of patients with (1) assessment of left ventricular function and (2) ACE inhibitor for left ventricular dysfunction. For pneumonia, the three measures are percentage of patients with (1) oxygenation assessment, (2) pneumococcal vaccination, and (3) timing of initial antibiotic therapy. The summary scores are equally weighted averages for the items in each category. Hospital-specific summary scores are given only for those hospitals for which four of the five acute myocardial infarction measures and all of the congestive heart failure and pneumonia measures were based on twenty-five or more patients. See Jha, Ashish K., Zhonghe Li, E. John Orav, and Arnold M. Epstein. July 21, 2005. Care in U.S. Hospitals—the Hospital Quality Alliance program. *New England Journal of Medicine* 353(3): 265–274. (Regional scores in this study are based on the average for each measure, obtained by summing numerator and denominator information across all reporting hospitals.)
8. Where hospital spending is reported by sectors (e.g., Part B spending by place of service), a "partitioning approach" has been used: each hospital's (fully modeled) total Part B payments were partitioned into components based on the proportional distribution of its *crude* component spending rates. Similarly, MedPAR payments for inpatient, long-term and SNF stays and hospice, home health, and DME payments were partitioned from the hospital's (fully modeled) total reimbursement rate based on the sum of payments from all these 100%-type files.

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Note: Page numbers followed by "*f*" and "*t*" denote figures and tables, respectively.