

Health Spending In OECD Countries In 2004: An Update

The United States had lower rates of alcohol and tobacco use than most countries in the Organization for Economic Cooperation and Development, but higher health spending nevertheless.

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ABSTRACT: In 2004, U.S. health care spending per capita was 2.5 times greater than health spending in the median Organization for Economic Cooperation and Development (OECD) country and much higher than health spending in any other OECD country. The United States had fewer physicians, nurses, hospital beds, doctor visits, and hospital days per capita than the median OECD country. Health care prices and higher per capita incomes continued to be the major reasons for the higher U.S. health spending. One possible explanation is higher prevalence of obesity-related chronic disease in the United States relative to other OECD countries. [*Health Affairs* 26, no. 5 (2007): 1481–1489; 10.1377/hlthaff.26.5.1481]

IN PREVIOUS PAPERS WE HAVE EXPLORED FACTORS that might contribute to higher health care spending in the United States compared with the other twenty-nine industrialized countries that are members of the Organization for Economic Cooperation and Development (OECD). Those papers have examined the influence of health care use, administrative complexity, aging of the population, threat of malpractice litigation, defensive medicine, and waiting lists.¹ In each of the studies, we arrived at the same conclusion: The higher level of spending in the United States is primarily attributable to two factors: (1) the higher gross domestic product (GDP) per capita in the United States and (2) the much higher prices that Americans pay for health care services (“It’s the Prices, Stupid!”).²

These same conclusions apply to data from 2004—the most recent data available from this source. In 2004, the U.S. health care system continued to provide less access to health care resources than the health systems in many other OECD countries; however, the United States continued to have the highest level of spending. In this paper we highlight the burden of chronic disease because it is responsible for 80 percent of health care use in most OECD countries.³ If the United

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States and other OECD countries do not address the growing prevalence of chronic disease, then their health care systems will have difficulty improving the quality of care and controlling health care spending.

The OECD Health Spending Picture

■ **Per capita health spending.** As in previous years, in 2004 the United States continued to have the highest level of health care spending per capita (\$6,102) in the OECD (Exhibit 1). U.S. spending was about two and a half times the per capita health spending in the median OECD country (\$2,522).⁴ Only two non-U.S. countries (Luxembourg and Switzerland) spent more than \$4,000 per capita on health care in 2004. The United States spent more than \$1,000 more per capita than Luxembourg, \$2,000 more per capita than Switzerland, and approximately \$3,000 more per capita than Canada, France, or Germany.

■ **Proportion of GDP.** In 2004, the United States spent the largest proportion of gross domestic product (GDP) on health care, 15.3 percent.⁵ Health care spending has been capturing a growing proportion of GDP over time, leaving a smaller share available for other goods and services. Only seven other countries spent more than 10 percent of their GDP on health care.⁶

■ **Spending trends.** Spending more per capita and a greater percentage of GDP on health care in the United States is a long-term trend. The average annual real growth rate between 1994 and 2004 for U.S. health care spending per capita was similar to the OECD median (3.7 percent versus 3.8 percent), which suggests that all of the recent U.S. initiatives to control health care spending have merely brought increases in U.S. health spending in line with the health spending of other OECD countries. The four OECD countries with the highest rates of growth in spending between 1994 and 2004 started in 1994 with very low health spending: Turkey, Iceland, Korea, and Poland.

■ **Spending on inpatient care.** While some OECD countries have maintained a hospital-centric health care system, the United States has pursued policies to reduce the number of hospital days and inpatient admissions as a method of containing costs. Possibly as a result of these policies, per capita U.S. spending for inpatient care was less than inpatient spending in some other OECD countries. Switzerland spent the most per capita on inpatient care (curative and rehabilitative care and long-term nursing care), followed by Iceland and Luxembourg. The United States was fourth in spending on inpatient care and virtually tied with Norway. However, U.S. inpatient spending was still approximately twice the OECD median in 2004.

■ **Spending on outpatient care.** Analysis of spending data suggests that the United States places more emphasis on outpatient care than most other OECD countries. On a per capita basis, the United States spent 3.6 times what the median OECD country spent in 2004 on outpatient care (physician, dental, and ancillary services). The United States outspent the next-highest country, Sweden, by nearly \$1,300 in 2004. Detailed analysis shows that most of the difference is attributable to

EXHIBIT 1
Health Spending In Organization For Economic Cooperation And Development (OECD)
Countries, 2004

Country	Health spending per capita		Total health spending (% GDP)	Spending per capita, by component (U.S. \$PPP)			
	Total health spending (US \$PPP)	Average real annual growth, 1994–2004 (%)		Inpatient	Outpatient	Prevention, public health	Other misc. services
Australia	3,120	4.4	9.6	1,198	950	46	926
Austria	3,124	4.2	9.6	1,302	727	63	1,032
Belgium	3,044 ^a	4.1 ^b	10.1 ^a	– ^c	– ^c	40 ^a	3,004 ^a
Canada	3,165	2.8	9.9	914	792	185	1,274
Czech Rep.	1,361	3.3	7.3	427 ^d	336 ^d	27	– ^e
Denmark	2,881	2.3	8.9	868	734	15	1,264
Finland	2,235	3.1	7.5	777	770	87	601
France	3,159	3.2	10.5	1,069	670	90	1,330
Germany	3,043	2.1	10.6	1,061	700	100	1,182
Greece	2,162	3.6	10.0	– ^c	– ^c	– ^c	– ^c
Hungary	1,276	3.8	8.0	323 ^d	252 ^d	54 ^d	– ^e
Iceland	3,331	4.9	10.2	1,804	767	40	700
Ireland	2,596	6.9	7.1	– ^c	– ^c	– ^c	– ^c
Italy	2,467	3.0	8.7	1,088	719	15	645
Japan	2,249 ^a	2.3 ^b	8.0 ^a	879 ^a	704 ^a	50 ^a	616 ^a
Korea	1,149	6.8	5.6	264	421	21	443
Luxembourg	5,089	7.7	8.0	1,686	1,281	63	2,059
Mexico	662	2.1	6.5	225	198	18	221
Netherlands	3,041	3.3	9.2	1,043 ^d	604 ^d	148	– ^e
New Zealand	2,083	3.8	8.4	– ^c	– ^c	– ^c	– ^c
Norway	3,966	4.6	9.7	1,623	721	75	1,547
Poland	805	6.1	6.5	226	165	14	400
Portugal	1,824	5.2	10.1	410	562	36	816
Slovak Rep.	777 ^a	– ^c	5.9 ^a	236 ^a	119 ^a	13 ^a	409 ^a
Spain	2,094	3.8	8.1	543	697	29	825
Sweden	2,825	3.8	9.1	885	1,381	– ^c	559
Switzerland	4,077	2.9	11.6	1,941	1,116	89	931
Turkey	580	10.4	7.7	– ^c	– ^c	– ^c	– ^c
U.K.	2,508	4.1	8.1	– ^c	– ^c	– ^c	– ^c
U.S.	6,102	3.7	15.3	1,636	2,668	224	1,574
OECD median	2,552	3.8	8.8	900	712	48	876

SOURCE: Organization for Economic Cooperation and Development, *OECD Health Data 2006* (Paris: OECD, 2006).

NOTES: Average real annual growth calculated by authors using national currency units at 2000 gross domestic product (GDP) price level. Average annual growth rates are calculated using national currency units. Outpatient services spending includes physician, dental, and ancillary services. Inpatient services spending includes long-term nursing care and curative and rehabilitative care. "Other misc. services" includes personal health care, day care, home care, pharmaceuticals and other medical nondurables, therapeutic and other medical nondurables, and health administration and insurance. PPP is purchasing power parity.

^a 2003.

^b 1994–2003.

^c Data not available for 2002, 2003, or 2004.

^d 2002.

^e Data cannot be calculated given mismatch in years of data.

higher spending on physician services (data not shown).

■ **Prevention spending.** Many U.S. policymakers may be surprised that the United States spent the most per capita on public health and prevention, followed by Canada. U.S. prevention spending per capita was almost five times the OECD

median. Further analysis is needed to see how much of this difference is simply higher prices versus greater quantity. Another possibility is that countries classify different items into the public health/prevention category, despite OECD efforts to promote uniformity in data reporting.

Supply And Use Of Health Care Resources

■ **Supply of resources.** In spite of much higher levels of per capita spending, the United States had fewer physicians, nurses, and hospital beds per capita than the OECD median in 2004 (Exhibit 2). The number of magnetic resonance imaging (MRI) and computed tomography (CT) units in the United States was similar to the number of units in the median OECD country (data not shown). Japan had the most CT scanners and MRI machines per million people.

■ **Use of resources.** The United States also continued to have lower utilization rates than the OECD median for physician visits per capita, acute care bed days, and average length of inpatient stay. For example, the United States had 30 percent fewer inpatient hospital days and 36 percent fewer physician visits per capita than the OECD median in 2004. In contrast, Japan had some of the highest utilization rates among the OECD countries, including the longest average length-of-stay for inpatient care and the most physician visits per capita, in spite of spending 63 percent less per capita than the United States.

■ **U.S. health care use versus costs.** Although these are crude measures, the low resource levels and low utilization rates coupled with the high level of health care spending in the United States suggest that U.S. prices for health resources are higher than in other OECD countries. The high level of spending on U.S. health care may reflect that the system more quickly adopts expensive new technology and pays much higher prices for the real resources used in health care. More research is needed to compare the real resources used during a doctor visit or a hospital day.

Chronic Disease In Four OECD Countries

While the prevalence of acute and infectious diseases has declined in industrialized countries over the past century, the prevalence of chronic disease has risen. Policymakers in the United States and in other countries have begun to pay greater attention to chronic disease.⁷ It is becoming an increasing financial burden in the United States, particularly as the U.S. baby-boomer population ages.⁸ Two recent studies have shown that the prevalence of chronic disease is much higher in the United States than in Canada or England. A U.S.-Canadian comparison found that Americans were more likely to have hypertension, diabetes, and arthritis.⁹ A second study found that Americans in their late middle age were less healthy in seven categories of chronic disease than comparably aged people in England, controlling for risk factors.¹⁰

■ **Death rates from five chronic diseases.** Five of the most common chronic diseases—diabetes mellitus, chronic lower respiratory disease, cerebrovascular dis-

EXHIBIT 2
Supply And Use Of Selected Health Care Resources In Organization For Economic Cooperation And Development (OECD) Countries, 2004

Country	Physicians		Nurses	Hospitals		
	Practicing MDs (per 1,000 pop.)	MD consultations (per capita)	Practicing nurses (per 1,000 pop.)	Acute care beds (per 1,000 pop.)	Acute care bed days (per capita)	Average length-of-stay, inpatient (days)
Australia	2.6 ^a	6.0	10.4 ^a	3.8	1.0	17.3
Austria	3.5	6.7	9.3	6.5	1.8	7.8 ^a
Belgium	4.0	7.6	6.0	4.8	1.2 ^a	– ^b
Canada	2.1	6.1 ^a	9.9	3.0 ^a	1.0 ^a	– ^b
Czech Rep.	3.5	13.1	8.1	6.4	1.8	10.7
Denmark	3.0 ^a	7.5	7.0 ^a	3.3 ^a	– ^b	5.2
Finland	2.4	4.2	7.6	3.0	0.9	10.0
France	3.4	6.7 ^a	7.5	3.8	1.0	13.4
Germany	3.4	– ^b	9.7	6.4	1.8	10.4
Greece	4.9	– ^b	3.8 ^c	3.8 ^c	– ^b	– ^b
Hungary	3.3	12.6	8.6	5.9	1.7	8.2
Iceland	3.6	– ^b	13.7	– ^b	– ^b	– ^b
Ireland	2.8	– ^b	15.0	2.9	0.9	7.5
Italy	4.2	– ^b	5.4 ^a	3.7 ^a	1.0 ^a	7.7 ^a
Japan	2.0	13.8 ^a	9.0	8.4	2.1	36.3
Korea	1.6	10.6 ^c	1.8	5.9 ^a	– ^b	13.5 ^a
Luxembourg	2.8	6.1	12.7	5.7	1.4	– ^b
Mexico	1.6	2.5	2.2	1.0	0.4	4.1 ^a
Netherlands	3.6	5.3	14.2	2.8 ^a	– ^b	– ^b
New Zealand	2.2 ^a	3.2 ^a	9.5	– ^b	– ^b	6.9
Norway	3.5	– ^b	14.9	3.1	0.9	8.2
Poland	2.3	6.2	4.9	4.8	1.4 ^c	7.9 ^c
Portugal	3.4	3.8	4.4	3.0	0.8 ^a	8.9
Slovak Rep.	3.1	11.9	6.3	5.9 ^a	1.4	8.6
Spain	3.4	9.5 ^a	7.4	2.8 ^a	0.8 ^a	8.7 ^a
Sweden	3.3 ^a	– ^b	10.3 ^a	2.2	– ^b	6.0
Switzerland	3.8	3.4 ^c	– ^b	3.8	1.2	11.9
Turkey	1.4 ^a	3.1	1.7 ^a	2.4	0.4 ^a	5.7
U.K.	2.3	5.3	9.2	3.6	1.1	7.2
U.S.	2.4	3.9 ^c	7.9 ^c	2.8	0.7	6.5
OECD median	3.2	6.1	8.1	3.8	1.0	8.2

SOURCE: Organization for Economic Cooperation and Development, *OECD Health Data 2006* (Paris: OECD, 2006).

^a 2003.

^b Data not available for 2002, 2003, or 2004.

^c 2002.

ease, ischemic heart disease, and malignant neoplasm—are responsible for approximately half to two-thirds of deaths from all causes in most high-income countries (Exhibit 3).¹¹ The combined share of the five chronic diseases is highest in the United States, accounting for about two-thirds of all deaths there.

■ **Death rates from selected chronic diseases.** The United States does not necessarily have the highest mortality rates for all chronic diseases (Exhibit 4). For instance, among the four countries, Germany has the greatest mortality rate from cardiovascular disease. Germany and the United Kingdom have slightly greater mortality rates from malignant neoplasm than the United States. The death rate as-

EXHIBIT 3
Selected Disease Causes Of Death As Percentage Of All Causes Of Death In High-Income Countries, 2004

Cause of death	High-income countries	Australia	Germany	U.K.	U.S.
HIV infection	0.3	0.1	<0.1	0.1	0.7
Diabetes mellitus	3.0	2.7	2.9	1.1	3.1
Chronic lower respiratory disease	6.4	4.4	0.6	4.5	5.1
Cerebrovascular disease	9.5	9.1	8.4	10.3	6.3
Ischemic heart disease	17.0	18.5	18.7	18.0	27.2
Malignant neoplasm	26.2	28.7	25.6	26.2	23.1

SOURCES: World Health Organization, "Projections of Mortality and Burden of Disease to 2030, Annex Table A-8: Deaths ('000s) by Age, Sex, and Cause, by WHO Region, Baseline Scenario—World, 2005," October 2005, <http://www.who.int/healthinfo/statistics/bodprojectionsannex08-15.xls> (accessed 28 August 2006). For Australia: Australian Bureau of Statistics, "Causes of Death, Australia: Preliminary Summary Tables—2004," 12 July 2005, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3303.0.55.0012004?OpenDocument> (accessed 30 August 2006). For Germany: Organization for Economic Cooperation and Development, *OECD Health Data 2006* (Paris: OECD, 2006). For the United Kingdom: U.K. National Statistics, "Death Registrations in England and Wales, 2004: Causes, Table 2," *Health Statistics Quarterly* no. 25 (2005): 62–69. For the United States: A. Minino et al., "Deaths: Final Data for 2004, Table 2," 31 March 2006, http://www.cdc.gov/nchs/products/pubs/pubd/hestats/finaldeaths04/finaldeaths04_tables.pdf#1 (accessed 12 January 2007). Final data for 2004 on mortality from HIV infection not publicly available; preliminary data for 2004 were used: A.M. Miniño, M.P. Heron, and B.L. Smith, "Deaths: Preliminary Data for 2004, Table 2," 28 June 2006, http://www.cdc.gov/nchs/data/nvsr/nvsr54/nvsr54_19.pdf (accessed 12 January 2007).

NOTES: The United Kingdom defines its chronic disease category "bronchitis, emphysema, and other COPD" (chronic obstructive pulmonary disease) rather than "chronic lower respiratory disease." U.K. statistics include only England and Wales. High-income countries' data are from 2005.

sociated with ischemic heart disease is highest in the United States.

■ **HIV/AIDS versus chronic disease.** One communicable disease that has received considerable attention in recent years is HIV/AIDS. Deaths resulting from HIV infection are a small portion of all causes of death (Exhibit 3). Considering its high level of disease burden, policymakers in the United States and elsewhere need to give more attention to chronic disease, and this is beginning to happen.¹² Policymakers in the United States, Australia, Germany, and the United Kingdom have recently recognized the necessity of coordinating efforts to manage chronic disease,

EXHIBIT 4
Age-Standardized Mortality Rates (Per 100,000 People), By Selected Disease Cause, In Four High-Income Countries, 2002

Cause	Australia	Germany	U.K.	U.S.
HIV infection	<10	<10	<10	5
Chronic diseases	362	444	434	460
Cardiovascular disease	140	211	182	188
Malignant neoplasms	127	141	143	134

SOURCE: World Health Organization, "World Health Statistics 2007: Health Status: Mortality," 2007, http://www.who.int/whosis/whostat2007_1mortality.pdf (accessed 29 May 2007).

NOTES: HIV infection data are from 2005. Cardiovascular disease includes heart disease, cerebrovascular disease, and high blood pressure.

especially for people with multiple chronic diseases. Some of the work involves attempting to modify behavioral factors.

Behavioral Factors Associated With Chronic Disease Prevalence

Exhibit 5 compares certain behavioral factors—alcohol consumption, tobacco consumption, and obesity—that have been shown to increase the risk of developing chronic diseases.¹³ Although the pathways are often difficult to discern, di-

EXHIBIT 5
Selected Health Status Measures In Organization For Economic Cooperation And Development (OECD) Countries, 2004

Country	Screening		Behavior		
	Mammography (% women ages 50–69)	Cervical cancer (% women ages 20–69)	Alcohol consumption (liters per person age 15+)	Tobacco consumption (% pop. daily smokers)	Overweight or obese (% pop. with BMI > 25 kg/m ²)
Australia	56.1 ^a	60.5	9.8	17.7	– ^b
Austria	– ^b	– ^b	11.1 ^c	– ^b	– ^b
Belgium	– ^b	63.1	10.7 ^c	27.0 ^c	44.1
Canada	70.6 ^c	74.9 ^c	7.9 ^c	15.0	57.5
Czech Rep.	26.6 ^a	38.8 ^a	11.5	24.1 ^a	51.1 ^a
Denmark	– ^b	45.2	11.4	26.0	– ^b
Finland	87.7 ^c	71.5 ^c	9.9	23.0	45.3
France	72.8 ^c	74.9 ^c	14.0 ^c	23.0	34.6
Germany	– ^b	55.9 ^a	10.1	24.3 ^c	49.2 ^c
Greece	– ^b	– ^b	9.0 ^c	38.6	57.1 ^c
Hungary	55.1	28.1	13.2 ^c	30.4 ^c	52.8 ^c
Iceland	61.0	73.0	6.7	20.2	48.8 ^a
Ireland	77.1	70.1 ^c	13.6	27.0 ^a	47.0 ^a
Italy	– ^b	– ^b	8.1 ^c	24.2 ^c	42.6 ^c
Japan	2.6 ^c	23.7 ^c	7.6 ^c	29.4	24.9 ^c
Korea	– ^b	– ^b	8.3	– ^b	– ^b
Luxembourg	63.1	– ^b	15.5 ^c	27.0	52.8
Mexico	– ^b	38.9 ^a	4.6 ^c	26.4 ^a	– ^b
Netherlands	81.6 ^c	67.9 ^c	9.7 ^c	30.0	46.5
New Zealand	63.0 ^a	72.0 ^a	9.2	22.0	56.2 ^c
Norway	98.0 ^c	72.5	6.2	26.0	42.7 ^a
Poland	– ^b	72.5	8.1 ^c	26.3	45.3
Portugal	60.1 ^c	– ^b	11.4 ^c	– ^b	– ^b
Slovak Rep.	– ^b	– ^b	9.4	24.3 ^a	47.6 ^c
Spain	– ^b	– ^b	11.7 ^c	28.1 ^c	48.4 ^c
Sweden	83.6	72.0 ^a	6.5	16.2	42.6
Switzerland	27.0 ^a	– ^b	10.7	26.8 ^a	37.1 ^a
Turkey	– ^b	– ^b	1.5 ^c	32.1 ^c	43.4 ^c
U.K.	74.9	– ^b	11.5	25.0	63.0
U.S.	60.8 ^c	82.6 ^c	8.4 ^a	17.0	66.3
OECD median	63.1	70.1	9.8	26.0	47.3

SOURCE: Organization for Economic Cooperation and Development, *OECD Health Data 2006* (Paris: OECD, 2006).

^a 2002.

^b Data not available for 2002, 2003, or 2004.

^c 2003.

etary factors and inactive lifestyles have been linked as the underlying causes of many chronic diseases prevalence and deaths.¹⁴ The U.S. and U.K. populations were the most overweight or obese in 2004, with almost two-thirds of these populations having a body mass index (BMI) above 25 kg/m².

■ **Alcohol and tobacco use.** The United States had rates of alcohol and tobacco consumption below the OECD median in 2004. Only Canada and Sweden had a lower percentage of smokers than the United States. The tobacco consumption statistics could be misleading in terms of their impact on health status; studies suggest that the effect of smoking is often not apparent for many decades. U.S. smoking rates have declined over the past forty years, while smoking rates have increased in many other industrialized countries.

The U.S. alcohol consumption rate in 2004 was 9.8 liters per capita for people over age fifteen. Turkey had the lowest consumption rate (1.5 liters per capita), and Luxembourg had the highest (15.5 liters). Given that the alcohol consumption measures are per capita figures, they do not provide information on the number of people who drink to excess, which is probably a better predictor of alcohol-related problems than per capita consumption. Unfortunately, this information is not available in the OECD data.

■ **Prevention measures.** On certain prevention measures, the United States was doing comparatively well in 2004. It had the highest percentage of women ages 20–69 screened for cervical cancer but fell short of the OECD median for mammography screening rates for women ages 50–69. Norway was able to screen almost every woman ages 50–69 (98 percent) in 2004, compared with only 60.8 percent in the United States.

TO SUMMARIZE, THE UNITED STATES CONTINUED to have much higher real health care spending per capita and as a percentage of GDP in 2004 than all other OECD countries. However, the availability of health care resources and the actual use of services in the United States were below those of most industrialized countries. The average annual growth rate in real health care spending per capita in the United States was actually similar to the OECD median growth rate between 1994 and 2004. Chronic disease prevalence and mortality were high in the United States compared to other OECD countries, which may be associated with the fact that a large proportion of the U.S. population was overweight or obese.

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NOTES

1. G.F. Anderson et al., "Health Spending in the United States and the Rest of the Industrialized World," *Health Affairs* 24, no. 4 (2005): 903–914; U.E. Reinhardt, P.S. Hussey, and G.F. Anderson, "U.S. Health Care Spending in an International Context," *Health Affairs* 23, no. 3 (2004): 10–25; G.F. Anderson et al., "It's the Prices, Stupid: Why the United States Is So Different from Other Countries," *Health Affairs* 22, no. 3 (2003): 89–105; and U.E. Reinhardt, P.S. Hussey, and G.F. Anderson, "Cross-National Comparisons of Health Systems Using OECD Data, 1999," *Health Affairs* 21, no. 3 (2002): 169–181.
2. Anderson et al., "It's the Prices, Stupid."
3. World Health Organization, *Preventing Chronic Diseases: A Vital Investment, WHO Global Report, 2005*, http://www.who.int/chp/chronic_disease_report/en (accessed 31 May 2007).
4. Spending is measured in purchasing power parities (PPPs), which adjust for cost-of-living differences between countries by comparing the price of an economywide market basket of goods.
5. For U.S. health care expenditures, the OECD Health Data set references C. Smith et al., "National Health Spending in 2004: Recent Slowdown Led by Prescription Drug Spending," *Health Affairs* 25, no. 1 (2006): 186–196. The paper states that health care expenditures are 16 percent of GDP. The OECD and National Health Expenditures (NHE) definitions use slightly different definitions of what constitutes health care. For more information, see Organization for Economic Cooperation and Development, "Definitions, Sources, and Methods: Country Specific Information on Health Expenditure and Finance Data," in *OECD Health Data 2006* (Paris: OECD, 2006).
6. Switzerland, Portugal, Iceland, Greece, Germany, France, and Belgium.
7. G.F. Anderson and E. Chu, "Expanding Priorities—Confronting Chronic Disease in Countries with Low Income," *New England Journal of Medicine* 356, no. 3 (2007): 209–211; and G.F. Anderson, "Medicare and Chronic Conditions," *New England Journal of Medicine* 353, no. 3 (2005): 305–309.
8. G. Anderson and J. Horvath, "The Growing Burden of Chronic Disease in America," *Public Health Reports* 119, no. 3 (2004): 263–270.
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10. The seven chronic diseases analyzed were diabetes, hypertension, heart disease, myocardial infarction, stroke, chronic lung disease, and cancer. J. Banks et al., "Disease and Disadvantage in the United States and in England," *Journal of the American Medical Association* 295, no. 17 (2006): 2037–2045.
11. *International Classification of Diseases, Ninth Revision (ICD-9) Codes: 279.5(=042–044) HIV Infection, 140–208 Malignant Neoplasms, 250 Diabetes Mellitus, 470–478 and 490–519 Chronic Lower Respiratory Disease, 410–414 Ischemic Heart Disease, and 430–438 Cerebrovascular Disease.*
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