

CHAPTER 9: HEALTH FOR ALL

I. Universal Health Coverage

Good health stands at the center of sustainable development. Good health is at the center of wellbeing, and is vital for everything else we hold dear. Good health aids children to not only survive disease, but also to flourish, learn, and make their way through school and on to adulthood and the labor force. It also enables a workforce to be productive. Thus, good health enhances the ability of a community to develop human capital, undertake economic activities, and attract investment.

Health has also long been regarded as a basic human need and basic human right. Technically the goal is the “highest attainable standard of physical and mental health.” Why do we refer to the “highest attainable” standard? Perfect health cannot be a human goal. Every human being will face disease and death. The highest attainable health refers to what is possible given current knowledge and technology. The world is far from this practical standard. Around 6 million children die each year before their 5th birthday, almost all of them in developing countries, and almost all as the result of disease conditions that are preventable or treatable; in other words, better health is attainable.

Since the beginning of the United Nations itself, the priority of health has been clear. In 1948, the Universal Declaration of Human Rights made it clear that health is a human right and basic need; and that even when these kinds of rights cannot be achieved immediately, they should be progressively realized. Yet time is progressing and we could still move faster. When the World Health Organization (WHO) was created, also in 1948, it declared in its central constitution that the highest attainable standard of health is a fundamental human right “without distinction of race, religion, political belief, economic or social condition.” But we have yet to achieve this goal.

One notable global effort after 1948 to achieve universal health was launched in 1978 in Alma-Ata, now Almaty, Kazakhstan. World health officials gathered and adopted the important Alma-Ata Declaration, which called for universal health by the year 2000. Unfortunately when 2000 came around, there was not health for all. Instead, there were pandemics and poor health outcomes in many parts of the world. The HIV/AIDS pandemic was running rampant. An estimated 36.1 million people were infected with the HIV virus. Malaria, a tropical killer disease, rose tremendously in number of infections and in number of deaths, because the first line medicine used in Africa to treat malaria lost its efficacy – the parasite had become resistant to the chloroquine drug. 2000 was a very bleak year for malaria, with a surging death toll – around 985,000 people. The year 2000 was also bleak for tuberculosis, another horrific scourge of humanity that claims millions of lives each year. The tuberculosis surge was partly riding on the HIV/AIDS pandemic, because immunocompromised individuals suffering from AIDS died in very large numbers from tuberculosis. Like malaria, there was a crisis of drug resistance. New and lethal strains were spreading multidrug-resistant tuberculosis (MDR TB) bacteria that were resistant to a wide spectrum of traditional medicines. This became extensively drug-resistant tuberculosis (XDR TB), where

even the most heavy-duty rescue medicines lost their effectiveness as the bacteria continued to evolve resistance.

In other words, the year 2000 did not meet the hopes and aspirations of the health ministers who had assembled in 1978, nor did it fulfill the promise of the Universal Declaration of Human Rights, nor the Constitution of the World Health Organization. So it was notable that in 2000, the Millennium Development Goals (MDGs) centrally took up the challenge of fighting these spreading scourges of killer diseases. We have made a lot of progress since then. The time from 2000 until now is a period of tremendous progress. It rekindles the hopes of 1978. Indeed, we see within reach the possibility of truly honoring the commitment to health as a basic human right.

It is notable that three of the eight MDGs, which seek to end extreme poverty, are centrally about health. MDG 4 is about reducing child mortality. MDG 5 is about reducing maternal mortality. MDG 6 is about controlling mass killer epidemic diseases including AIDS and malaria. All of the other goals, such as ending poverty and hunger, having children in school, and gender equality, are also goals in which health plays an important role, both as a determinant of outcomes and also as one of the main objectives.

There has been significant progress in health since 2000, and especially since around 2005. The science of public health, breakthroughs in modern medicine, and breakthroughs in areas such as food production and urban infrastructure have led to important gains. However, there are still major challenges. I've already noted that millions of children, especially in the poorest countries, die each year of preventable or treatable causes could have been ended with a well-directed, well-implemented effort. These lives could be saved. Children who are dying today or are left with life disabilities could, with proper organized responses, have happy, safe lives that could give them the many opportunities they desire.

Around the world, most people consider health to be a merit good – a good that should be accessible very broadly or indeed universally in the population. Health is generally considered to be such a good, not only because it is vital for each individual from a moral and ethical point of view; but also from a practical point of view. Untreated disease is a serious societal threat that spills over to the rest of the population. Think of the devastation that comes when a highly communicable disease races through a country or continent, the way AIDS has. The time and money spent fighting such infections, and the death tolls that result, are a huge cost to communities both in lives and in finances. Governments have a necessary leadership role to ensure widespread coverage as well as the efficiency and orientation of the healthcare system.

The great progress of public health, like economic development itself, is one of great achievement of the modern era. At the time of the Industrial Revolution, worldwide **life expectancy at birth** (LEB) was perhaps 35 years (there are not records to precisely establish a worldwide number, but this is a reasonable estimate). This does not mean that people were dying at the age of 35. It means that a newborn on average would reach an average age of 35, taking into account that a very large number of

deaths were within the first five years of life. Therefore, if individuals reached the age of 20, there was a good chance that they would reach the age of 50 or higher. Life expectancy at birth is therefore a measure made just at the time of birth. The life expectancy of an individual who has already survived childhood (say at age 20) can therefore be far higher than the life expectancy at birth.

By 1950, just after World War II, there were some gains in the world's average LEB compared with the pre-industrial era, but it is worthwhile to recall how much of the world was still mired in poverty in the middle of the last century. The United Nations estimated that during the five-year period from 1950 to 1955, the worldwide life expectancy at birth was around 46 years. Figure 9.1 considers the trend in LEB since then for various groupings of countries.

As we see in the graph, the LEB for the entire world in 1950-55 is estimated at around 47 years. In the developed regions, LEB was already around 65 years, while in the least developed countries LEB was still only around 40 years, not much different from the estimated LEB for the pre-industrial world. Note that in the landlocked developing countries, the LEB was even lower, at around 36 years. This very low LEB reflects the poverty and isolation typical of landlocked developing countries. It may also reflect the highland geography of many of those countries. As of 2010-15, world life expectancy has increased to 70 years, roughly twice the life expectancy from the start of the Industrial Revolution. This is one of the great achievements of modern humanity, of modern science and of economic development.

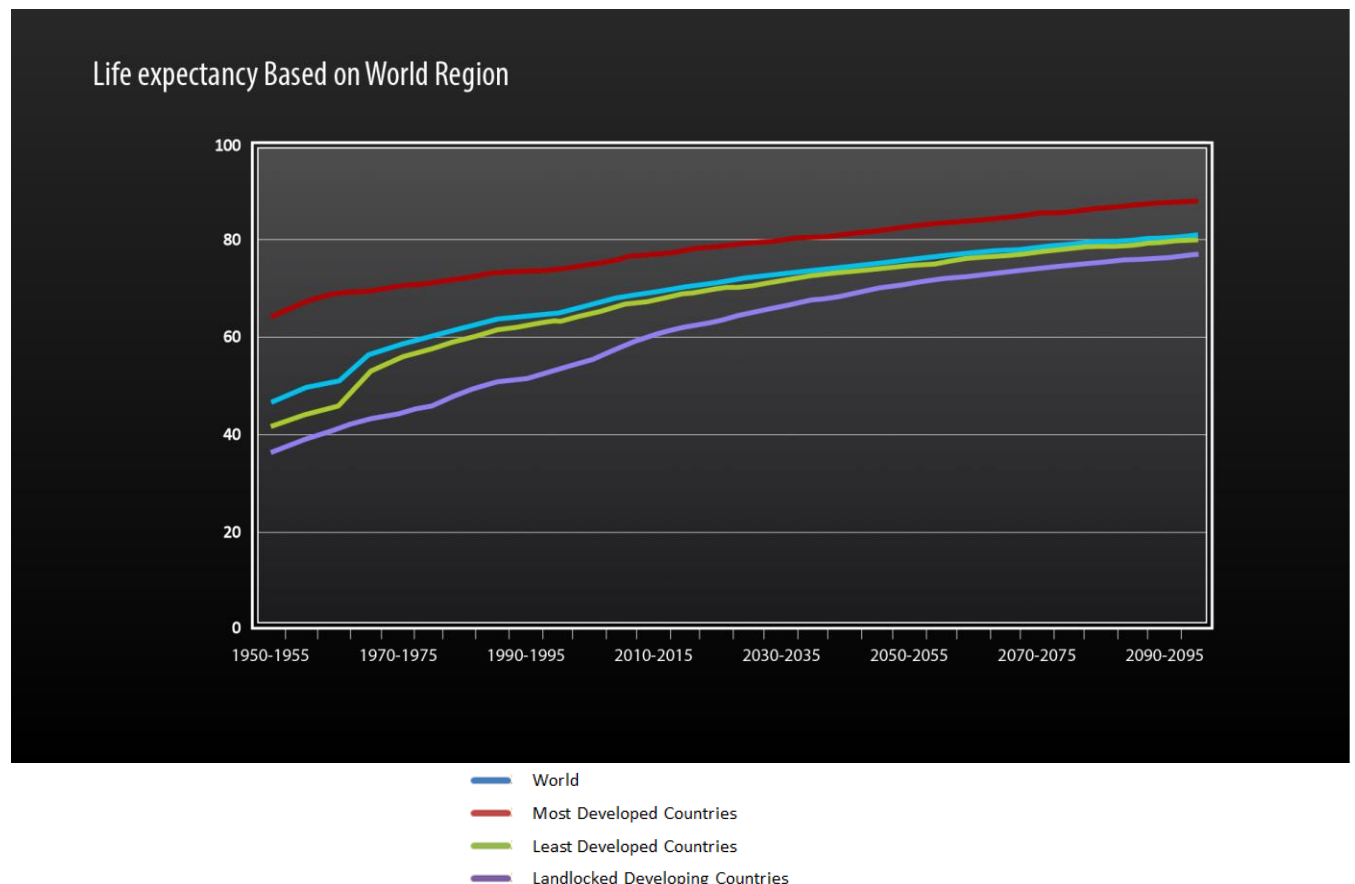


Figure 9.1. Life Expectancy by World Region

Nonetheless, there are still enormous health gaps between the developed and developing countries. In the developed countries, life expectancy is almost 80 years, whereas in the least developed countries LEB is only 60 years, and less in many LDCs. In other words, there is roughly a two-decade gap in average life expectancy between the richest and poorest countries. These two decades of survival offer an indication of how much can be done to improve the health of the poorest countries.

In public health, it is now typical to speak of a full lifetime of 80 years, and to define excess mortality as a death under the age of 80. When an individual dies at age X (say 30 years), we can speak of the number of years of life that are lost, measured by $80 - X$ (= 50 years lost for a death at age 30). Most of the excess mortality in LDCs is caused by poverty in some way, directly or indirectly. From a medical and public health point of view, most “excess deaths” (that is, deaths under the age of 80) are the result of preventable or treatable conditions. There is therefore a strong chance that improved public health can spread throughout the whole world in the same way as economic development, thereby raising the life expectancy in the poor countries towards the LEB of the rich countries. We can speak of the convergence of public health in the same way we speak of the convergence of GDP per capita.

Figure 9.2 shows the worldwide relationship between the per capita income of a country and its life expectancy at birth. The GDP per capita of each country is placed on the horizontal axis and the life expectancy at birth is placed on the vertical axis. Notice the rising curve in this graph, showing the overall “best fit” relationship between these two variables. Richer countries have a higher life expectancy than poorer countries. Notice also that the curve flattens out at high income, however, meaning that once a country has reached a certain level of development, there are not huge gains to LEB for further increases in GDP per capita. That top threshold seems to be around \$20,000 (measured at international prices).

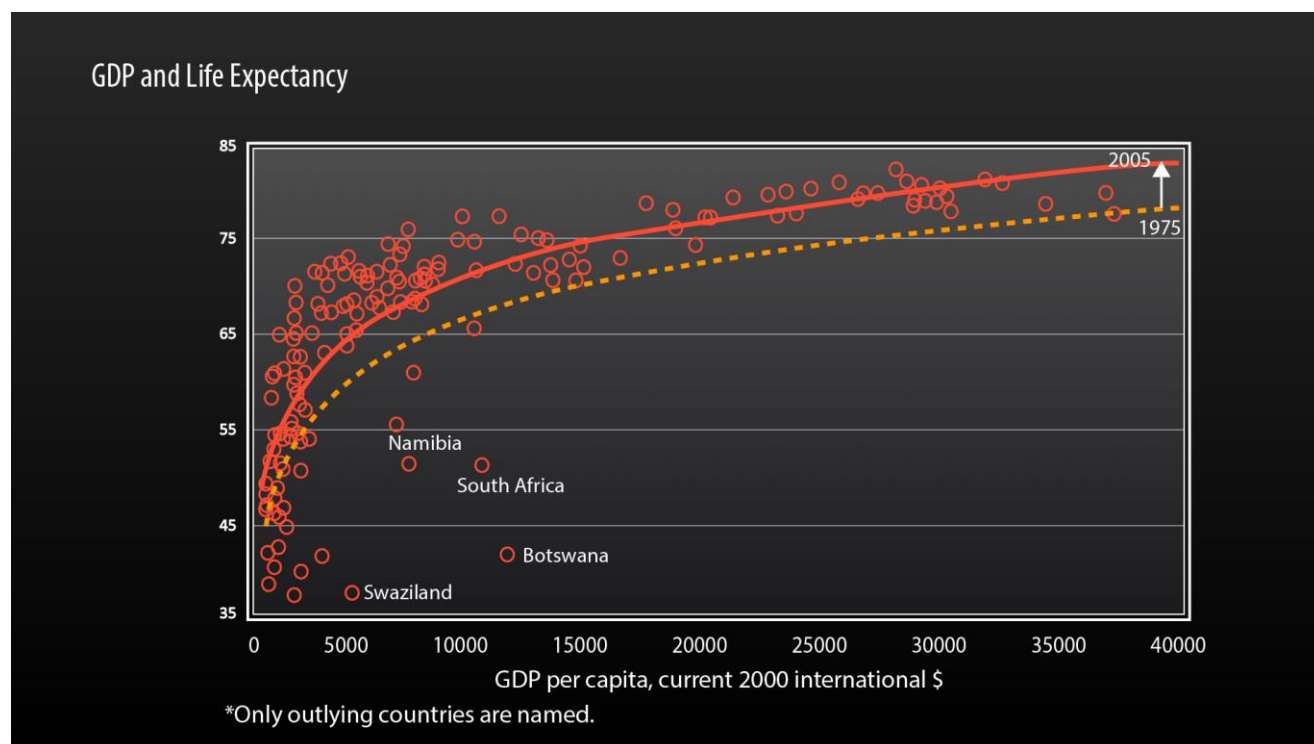


Figure 9.2. GDP and Life Expectancy

The solid line and the scatter plot are for the year 2005. A dotted line is also drawn showing the relationship that applied in 1975. Notice that the entire curve shifted upward, meaning that during the 30-year interval, at any given level of income, an individual could expect to live longer in 2005 than in 1975. The main reasons are the technological and social improvements in public health, such as improved diagnostics, medicines, and surgical procedures; and also more healthy lifestyles (such as reduced cigarette smoking) in some populations. Of course many of the advances are outside of the health sector itself. As one simple example, people can now use their mobile phones to call for emergency help if necessary. The spread of literacy and public awareness about health and disease also enable people to promote their own health and survival.

There is another extremely important, yet subtle, lesson in Figure 9.2. Note that the very steepest part of the curve is at very low incomes (that is, on the left-hand side of the graph). When countries are very poor, even small incremental changes in income (say, from \$1,000 per year to \$2,000 per year) lead to very steep gains in life expectancy, while the gains in health as the result of higher incomes tend to level off at higher incomes. For instance, according to the relationship depicted by the solid line, a rise in income from \$1,000 to around \$3,000 is associated with roughly 10 years of added life expectancy, from 45 years to 55 years. Yet going from \$31,000 to \$33,000, the same **absolute** gain in income, is associated with less than one added year of LEB.

Now, some people might claim that Figure 9.2 shows that the best, or perhaps the only, way to higher life expectancy is through overall economic development. Get rich and get healthy as well. But that would be a mistaken interpretation. The fact that very small changes in the income of the poor can lead

to huge changes in health outcomes suggests an alternative interpretation: that modest but targeted investments in public health for poor people can make a profound difference for their health outcomes.

Consider the following example, which is quite realistic. Suppose that health care depends on income in the following way. Typically a poor country will raise around 20% of its GDP in domestic revenues and will spend roughly 15% of those revenues on public health. The other 85% of the budget will be spent on other needs like education, roads, power, water, public administration, interest on the public debt, and so forth.

Now consider what happens when income rises from \$1,000 to \$3,000. Total taxes rise from \$200 per capita to \$600 per capita (20% of GDP). Spending on public health therefore rises from \$30 per capita to \$90 per capita (15% of the total revenues). The extra \$60 per person of public spending on health can make a huge difference, by ensuring proper coverage of all core health interventions, such as vaccinations of children, safe childbirth, malaria control, and AIDS treatment for those individuals infected with the HIV virus.

Now here is the exciting point. Figure 9.2 implicitly suggests that even a small incremental sum, as small as \$60 per person per year, could enormously boost public health. This is correct. Yet the poor country may simply lack the budgetary means to provide that increment, since it would exceed its budgetary revenues. What if a foreign funding source, such as the Global Fund to Fight AIDS, TB, and Malaria, picked up the modest extra costs? The results could be enormous, even historic. Lives could be saved by the millions; and with better health, the economy could actually enjoy a surge of economic growth. Soon enough, it would be able to cover the health bills on its own, out of its own revenues, once it reached a somewhat higher level of GDP per capita! This is the basic idea behind the successful concept of Development Assistance for Health, which I discuss in greater detail later in the chapter.

Figure 9.3 maps out the under-five mortality rate (U5MR), which signifies how many children under the age of five die for every 1,000 live births. The world average for the five-year period 2010-15 is 52 per 1,000, according to the UN Population Division estimates. For the developed countries it is 7/1,000, and for the developing countries it is 57/1,000. For the Least Developed Countries, it is 99/1,000. Among the world's regions, the under-five mortality rate is the highest in sub-Saharan Africa (110/1,000), and then South Asia (55/1,000). These two locations are the epicenters of the challenges of extreme poverty and health.

Under 5 Mortality per 1,000 Births

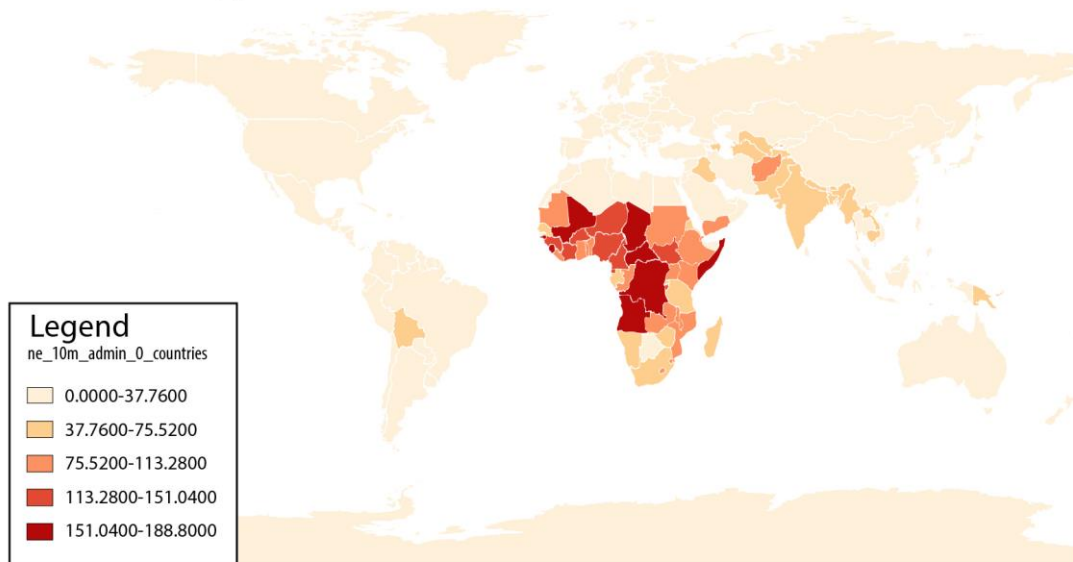


Figure 9.3. Under-5 Mortality per 1,000 Births

Figure 9.4 shows another very crucial aspect of public health: maternal mortality. This is measured as the number of pregnancy-related deaths (typically at childbirth but also earlier during pregnancy) for every 100,000 live births. Pregnancy-related deaths have huge variation between countries since very few women die of pregnancy-related causes in rich countries (16/100,000), compared to poor regions like sub-Saharan Africa where around 500 women die for every 100,000 births. However, the maternal mortality rate (MMR) in the developing regions is falling sharply. It was around 440 deaths per 100,000 live births back in 1990, but as of 2010 is below 250 deaths per 100,000 live births, an enormous achievement in saving women's lives.

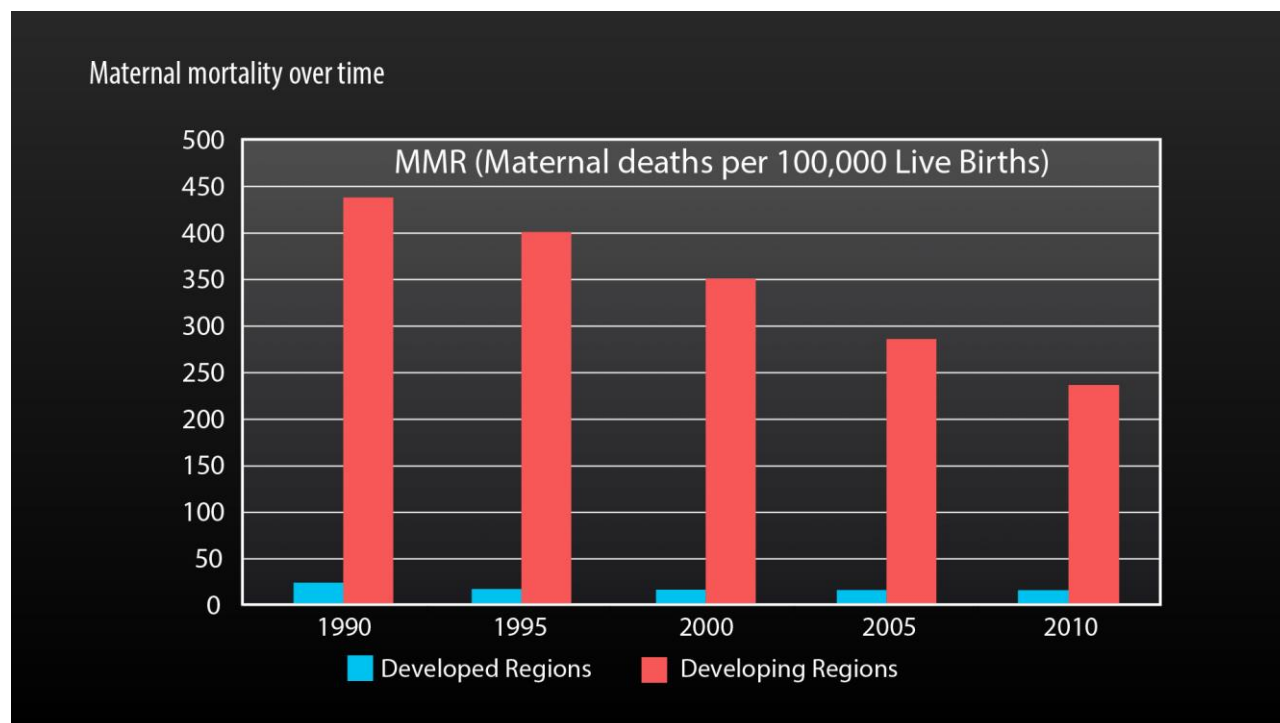


Figure 9.4. Maternal Mortality for Developed and Developing Regions

In general, the reasons for death in rich and poor countries differ. The poor die from many of the same causes that the rich do: cancer, cardiovascular diseases, and metabolic disorders such as diabetes. But the poor also die of conditions that rich people no longer die of, especially communicable diseases such as measles, malaria, or other kinds of infections. One basic principle of health is that under-nutrition leads to the weakness of the immune system to resist infections (known as immunosuppression). For that reason, children in very poor countries, who are more likely to be undernourished, die of diarrheal diseases or respiratory infections that would not kill a better-nourished child in a richer country.

The disparities between rich and poor, and across ethnic groups, also apply within countries as well. The United States, already noted as having the highest income inequality among the high-income countries, also has significant disparities in life expectancy. Figure 9.5 shows the measured life expectancy for women across counties of the United States. The northeast seaboard of the United States, including Boston and New York City, has high life expectancies. However, counties of the deep south of the United States, in states such as Alabama or Georgia, have several years fewer in life expectancy. African-Americans have significantly fewer years of life expectancy compared with white non-Hispanic Americans. The gaps cross both class and racial lines, and perhaps also reflect direct effects of geography as well.

Life expectancy in US, Female (2010)

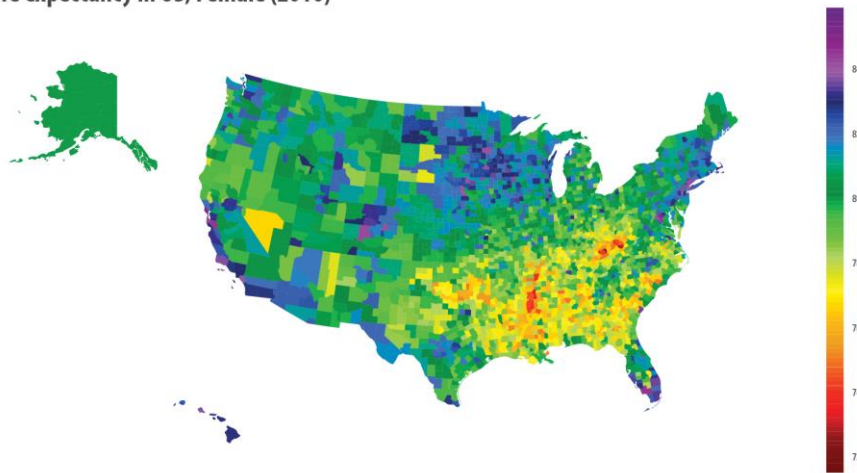


Figure 9.5. Life expectancy in US, Female (2010)

Various statistics are used to measure health outcomes. Life expectancy at birth, the under-five mortality rate, and the maternal mortality rate are three important statistics we have already noted. Another important and very widely used concept is Disability-Adjusted Life Years (DALYs). As I noted earlier in referring to life-years lost, a normal lifespan is 80 years. If an adult dies at age 60, then 20 years of life are lost. DALYs count not only premature mortality but also disabilities. A year of life with a disability is counted as a part of a year of life lost, with the portion dependent on the severity of the disability. Thus, living a year with a very serious disability such as paraplegia, schizophrenia, or blindness, is counted as a substantial fraction of a life-year lost, perhaps up to 0.9 years lost for each year lived with the condition (depending on the specifics).

The DALYs of a population is the sum of life years lost plus the years lost to disability. It is standard to divide the total DALYs by the population to calculate the DALYs per capita, just as we divide GDP by the population to calculate GDP per capita. DALYs per capita are used to understand the varying disease burdens across the world, as demonstrated in Figure 9.6. Every colored segment on the bar refers to the DALYs per capita of a *specific category of disease*. The bar at the top of the chart is the DALYs per capita of the high-income countries by disease category. The other bars refer to various regions of developing countries. A large bar means that that the total DALYs per capita is high; that is, that the disease burden is very high, with considerable premature death and disability. Clearly, sub-Saharan Africa has by far the highest disease burden, while not surprisingly the high-income countries have the lowest disease burden of any grouping.

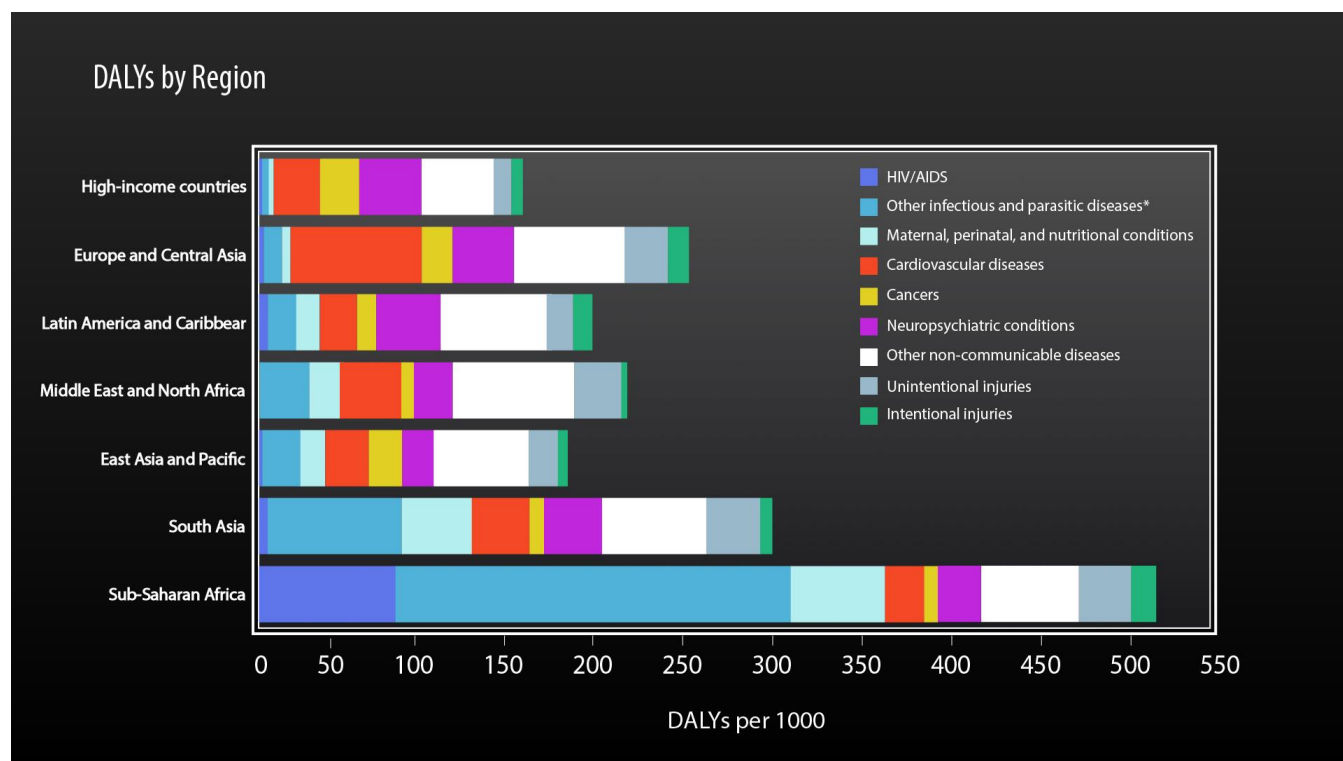


Figure 9.6. DALYs by Region

The bars are divided by colors in an interesting way; they refer to different disease categories. Sub-Saharan Africa, for example, has the highest disease burden of HIV/AIDS (the dark blue portion at the left-hand of the bar). This is not surprising, as Sub-Saharan Africa is the epicenter of the global AIDS pandemic. The light blue portion of the bar to the right of the HIV category shows the DALYs caused by other (non-HIV) infectious and parasitic diseases, such as malaria or typhoid. Here too the DALYs per capita in sub-Saharan Africa is “off the charts” compared with the other regions.

Compare the bar for sub-Saharan Africa with the top bar for high-income countries. In the top bar we see that HIV/AIDS is a tiny sliver. This does not mean that there are no deaths and disease from HIV/AIDS in the high-income world, only that the burden of HIV per person is low compared with the massive burden in sub-Saharan Africa. In the high-income countries, the category of communicable and parasitic diseases is virtually imperceptible because it is so low on a per capita basis. Many of the communicable diseases are either completely absent (e.g. malaria) or are prevented by standard public health measures such as immunizations (e.g. measles). Other communicable diseases, such as diarrheal and respiratory infections, are generally treated by antibiotics and are rarely fatal in the high-income countries. The good news is that the field of public health already offers the tools to shrink the dark blue and light blue bars in sub-Saharan Africa.

The very light blue bar to the right of the communicable disease category is “maternal, perinatal, and nutritional conditions.” This category combines deaths due to pregnancy and childbirth, and deaths due to severe under-nutrition. Once again, we see that Africa has an extraordinarily high disease burden in

these categories, far higher than in almost all of the rest of the regions. Only South Asia, like Africa, has a very high disease burden for pregnancy and nutrition-related diseases.

Notice by comparing the DALYs per capita across the disease categories and regions that sub-Saharan Africa's extraordinary disease burden (in comparison with all of the rest of the regions) is heavily concentrated in the first three conditions: HIV/AIDS, other communicable diseases, and pregnancy and nutrition-related conditions. For all of the rest of the conditions, such as cardiovascular diseases or cancers, the DALYs per capita in Africa and the rest are not very different. The key point is that Africa's high disease burden is not a general phenomenon but a specific one: it refers to infectious diseases (including HIV), pregnancy-childbirth, and nutrition. By focusing on these main conditions, it would be possible to have Africa's public health conditions converge substantially with the disease conditions in the rest of the world.

(There is only one other area that stands out: cardiovascular disease in Eastern Europe and Central Asia, shown as the red category in the graph. We know that middle-aged men in Russia and some other parts of the former Soviet Union are suffering massive disease burdens from heart attacks and other disorders. There is no single accepted explanation for this, but it probably relates heavily to lifestyles: heavy tobacco and alcohol use, binge drinking, little exercise, and a highly fatty diet.)

II. Poverty and Disease

Health is a challenge for all societies. In the rich world, where health conditions are far better than in poor countries, the problems of high and rising healthcare costs are front and center of the political and economic agenda. In the poorest countries, the challenges are also about finances, but much more importantly are about the still very high burdens of disease and the tragic loss of lives.

Poverty and ill health go together. This linkage must be understood to address the challenges of heavy disease burdens in poor countries, and the explanations need to be used to identify tools to break the poverty trap itself. There is a two-way causation whereby poverty contributes to disease, while disease also contributes to poverty. An individual suffering from disease cannot work at full capacity and so loses income. A community or country with a heavy disease burden similarly loses income from the resulting lack of productivity and the other high costs of health care.

Disease contributes through many channels. First, diseases of young children adversely impact the entire lifecycle development of a young child. Repeated illnesses at a young age are likely to set a child back in terms of readiness for school, capacity to learn, and even vulnerability to diseases as an adult. For example, adult cardiovascular diseases can be exacerbated by poor nutrition of children at a young age. Human development across the entire lifecycle is strongly affected by health and disease at early stages of the life cycle.

Over the long term, a high death rate of children can contribute to adverse demographic problems. Consider what happens when 200 of every 1,000 children born do not reach adulthood. Parents know

the high risks of children's deaths and respond by having very large numbers of children. For example, if the low-income parents want to be as sure that they raise a surviving son, either for cultural reasons (such as to perform funeral rites) or pragmatic economic reasons (such as to support the parents in old age), they may choose to have very many sons to ensure that at least one survives. (Note that the preference for boys still applies in many cultures, and notably in many low-income settings in Africa and Asia.) Yet aiming to have three or more sons might mean six or more children in total, sons and daughters, leading to extremely rapid population growth and very low levels of **investment per child** in health, nutrition, and education.

A high disease burden can have a strong direct adverse effect on a local or national economy as well. It is not uncommon for a whole farm community to be knocked out by malaria and thus physically unable to harvest the crops necessary for their survival. This kind of epidemic can have very serious harmful consequences for poverty, destitution, and hunger. Another obvious negative economic consequence of ill health is the direct cost of healthcare itself. Treating diseases can seriously deplete an already squeezed household budget. What would seem to be modest outlays of a few dollars per disease, an amount that would hardly be noticed in the rich world, can actually eliminate the margin of survival for a very poor family.

Finally, it is obvious that investors are not very keen on investing into areas with high malaria or AIDS prevalence. If a potential investors is aware that the labor force is likely to be sick, and that there will be a need to replace absentee or dying workers and to cover their healthcare costs, the potential returns on an investment are lower, perhaps decisively so. Nor is it helpful for tropical tourism if the risks of infection of malaria, dengue, or other tropical disease are high.

The arrow of causation also goes in the reverse direction, from poverty to disease. That is the direction of causation that people most naturally consider: poverty leading to poor health. There are many ways that poverty causes disease and premature mortality. Most obviously, the poor often cannot afford a doctor even when an illness is serious. They may be unable to afford the needed medicines, or the transport to get to a hospital. Yet there are many other, less obvious ways in which poverty contributes to a heavy disease burden.

One that I've already mentioned is the immunosuppression caused by under-nutrition. Children who are not fed well, who lack basic micronutrients, and thereby have degraded immune systems are consequently unable to resist disease and often succumb to infections that would be mild irritants of well-fed and affluent children.

Poverty also tends to create a more dangerous home environment. Poor families in rural areas typically do not have reliable sources of safe drinking water and sanitation. This means that many diseases are spread by open defecation and then drinking unsafe water. Diseases like cholera are notoriously spread in this manner. Poor communities have poor infrastructure (piped water, sewerage, electricity to refrigerate or heat foods safely). Even the physical structure of housing can make a very big difference. Many poor people live in adobe huts with thatched roofs, where there is often a gap between the thatch

and the walls through which various disease-carrying insects and other animals can easily enter the household.

Poverty is also related to the ecological conditions of disease. Worm infections like hookworm, trichuris, and ascaris are found in warm, moist tropical climates, so poor people living in those areas are especially vulnerable to debilitating worm infections. Malaria is also a disease of the tropics, since malaria only transmits in warm temperatures (generally above 18-degrees C or 64 degrees F). As a result, the poor people living in tropical regions have that extra burden of disease. One can say that malaria is a condition of poverty, but it is really a condition of the geography where many poor people live. I should add that Africa's malaria burden is especially deadly, and it is estimated that sub-Saharan Africa accounts for up to 90% of the global malaria deaths. This seems to be caused by three main factors: very warm temperatures, specific species of mosquitos that are particular to Africa, and enough rainfall to support breeding sites of the mosquitos.

Poverty is also associated with illiteracy, innumeracy, and therefore poor health knowledge and weak health-seeking behaviors. Illiterate people may have a great difficulty understanding how to fill a prescription or adhere to a drug regimen. Health-seeking behavior is extremely important for all of us. Poor people with less formal education have a harder time and lesser ability to ferret out the right kinds of advice and help. This is why trained local health workers, such as Community Health Workers (CHWs), can be vital to help poor people to understand how to keep themselves safe (e.g. by using an anti-malaria bed net) and how to make the connections with the health system itself in the event of an emergency or special need (e.g. safe childbirth or immunizations for children).

People living in poverty are also very vulnerable to being pushed into dangerous work, such as young women who, because of their poverty, are cajoled or forced into sex work, and thereby become highly vulnerable to AIDS and other sexually transmitted diseases, as well as to job-related violence and other life-threatening conditions.

There are therefore the two directions of causation: poor health leads to poverty and poverty leads to poor health. Whenever the arrows work in both directions such as this, there is the possibility of a **vicious spiral**. A household can get trapped in poverty, and thereby succumb to disease, which in turn lowers the earning power, and further traps the household in debt and poverty, and so forth.

Yet whenever there is a vicious spiral, there is also generally the possibility of a **virtuous spiral** as well. Disease control can raise household and community income, and this higher income can lead to further improvements in health. The result is an upward spiral of health and wealth, with each leading to the other. It is part of the job of public health policy to help break the vicious circle that traps people in a poverty-and-disease trap, and to create a positive spiral of health and development.

Breaking the Vicious Circle of Extreme Poverty and Disease

How best can we intervene to stop the vicious circle of disease and poverty, and turn it into the virtual circle of health and wealth? The first thing to do is to implement what the health ministers called for back in 1978 in Alma-Ata: a primary health system for all. The second step is to help poor communities to achieve better nutrition. Part of that may occur through dietary fortification and supplementation, or through better community knowledge about healthful diets. Part will also come through improvements in the agriculture sector. More productive farmers growing more food will support healthier diets, and the community may generate a surplus that can be used, for example, for school feeding programs. Agricultural interventions can thereby play a role not only in improving agriculture and raising household income, but also in reducing the overall disease burden, once again illustrating the integrated nature of sustainable development.

Local infrastructure is another kind of investment in public health, in areas such as safe drinking water, sanitation, power, roads, and communications. Investments in electricity are needed to run the refrigerators in clinics that keep the vaccines cooled, or to power the instrumentation needed for emergency obstetrical care. (There are of course dozens or hundreds of high-priority uses of reliable electricity.) Investments in water infrastructure help pump the irrigation water that improves agriculture. Roads are vital to be able to reach health facilities. Phones and internet have multiple purposes, ranging from simple text messaging to telemedicine. These are not health interventions per se, but communities that have access to phones and the internet are also very likely to have access to better health.

There is some important progress in expanding access to a rudimentary health system in low-income countries. Figure 9.7 shows the data on the mortality rates of children under the age of five. Back in 1990, 12 million children under the age of five died. By 2010, the number was 7.6 million. As of 2012, it was down to 6.6 million. This decline is a huge victory for public health, but it is still 6.6 million too many, since almost all of these deaths are caused by preventable or treatable diseases.

TABLE 2 Levels and trends in the number of deaths of children under age five, by Millennium Development Goal region, 1990–2010 (thousands)

Region	1990	1995	2000	2005	2009	2010	Decline (percent) 1990–2010	Share of global under-five deaths (percent) 2010
Developed regions	227	151	129	112	102	99	56	1.3
Developing regions	11,782	10,550	9,446	8,355	7,654	7,515	36	98.7
Northern Africa	304	210	153	121	100	95	69	1.2
Sub-Saharan Africa	3,734	3,977	4,006	3,956	3,752	3,709	1	48.7
Latin America and the Caribbean	623	511	397	305	237	249	60	3.3
Caucasus and Central Asia	155	119	86	80	79	78	50	1.0
Eastern Asia	1,308	845	704	423	349	331	75	4.3
Excluding China	29	46	30	16	17	17	41	0.2
Southern Asia	4,521	3,930	3,354	2,829	2,588	2,526	44	33.2
Excluding India	1,443	1,233	1,060	875	837	830	42	10.9
South-eastern Asia	853	696	530	453	368	349	59	4.6
Western Asia	270	247	201	173	167	165	39	2.2
Oceania	14	15	15	14	14	14	0	0.2
World	12,010	10,702	9,575	8,467	7,756	7,614	37	100.0

Figure 9.7. Deaths of Children Under Five (thousands)

In Figure 9.8, those same mortality rates are put in terms of numbers per thousand live births (the under-five mortality rate, or U5MR) rather than aggregate numbers. In 1990, on average 88 per 1,000 children in the world did not live to their fifth birthday. By the year 2010, that rate had declined to around 57 per 1,000 children. It is still a high number that can and should be cut significantly, but the under-five mortality rate is indeed falling sharply.

TABLE 1
Levels and trends in the under-five mortality rate, by Millennium Development Goal region, 1990–2010 (deaths per 1,000 live births)

Region	1990	1995	2000	2005	2009	2010	MDG target 2015	Decline (percent) 1990–2010	Average annual rate of reduction (percent) 1990–2010	Progress towards Millennium Development Goal 4 target 2010
Developed regions	15	11	10	8	7	7	5	53	3.8	On track
Developing regions	97	90	80	71	64	63	32	35	2.2	Insufficient progress
Northern Africa	82	62	47	35	28	27	27	67	5.6	On track
Sub-Saharan Africa	174	168	154	138	124	121	58	30	1.8	Insufficient progress
Latin America and the Caribbean	54	44	35	27	22	23	18	57	4.3	On track
Caucasus and Central Asia	77	71	62	53	47	45	26	42	2.7	Insufficient progress
Eastern Asia	48	42	33	25	19	18	16	63	4.9	On track
Excluding China	28	36	30	19	18	17	9	39	2.5	On track
Southern Asia	117	102	87	75	67	66	39	44	2.9	Insufficient progress
Excluding India	123	107	91	80	73	72	41	41	2.7	Insufficient progress
South-eastern Asia	71	58	48	39	34	32	24	55	4.0	On track
Western Asia	67	57	45	38	33	32	22	52	3.7	On track
Oceania	75	68	63	57	53	52	25	31	1.8	Insufficient progress
World	88	82	73	65	58	57	29	35	2.2	Insufficient progress

a "On track" indicates that under-five mortality is less than 40 deaths per 1,000 live births in 2010 or that the average annual rate of reduction is at least 4 percent over 1990–2010; "insufficient progress" indicates that under-five mortality is at least 40 deaths per 1,000 live births in 2010 and that the average annual rate of reduction is at least 1 percent but less than 4 percent over 1990–2010. These standards may differ from those in other publications by Inter-agency Group for Child Mortality Estimation members.

Figure 9.8. Under-Five Mortality Rate

More than 6 million of the 7.6 million total deaths in 2010 were in just two regions, sub-Saharan Africa and Southern Asia. These are the continuing epicenters not only of overall poverty but also of the disease burden and of preventable and treatable diseases. Where are poor children succumbing, and to what kinds of conditions?

This question is addressed by Figure 9.9, which estimates the worldwide causes of deaths of children under five. The overwhelming message of this chart is that there is still a very high burden of communicable diseases, including diarrheal disease, pneumonia, measles, malaria, and other infectious diseases. Another major category, death at childbirth, includes birth asphyxia, trauma, prematurity, and severe neonatal infections. Many of these causes can be attributed to a lack of sanitary birth conditions or simple equipment to help newborns breathe, and thus could be reduced substantially at low cost.

Major causes in Death for kids under 5

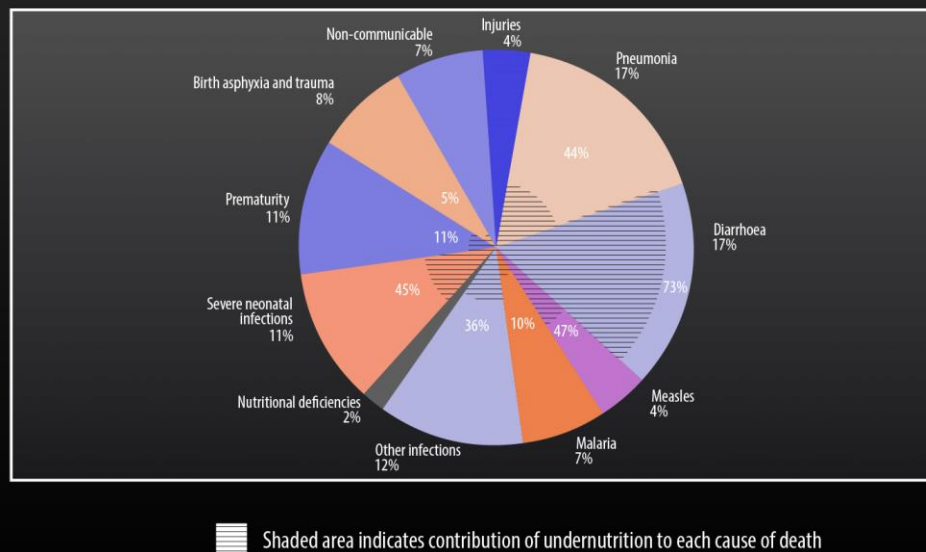


Figure 9.9. Major Causes in Death for Children Under Five

This kind of epidemiology is a good start in terms of understanding what to do. There is a poverty-disease trap, where poverty feeds disease and disease feeds on poverty. This disease burden is heavily concentrated in sub-Saharan Africa and South Asia, and is significantly composed of diseases that are either communicable, birth-related, or nutrition related. Now that we better understand the specific problems, an effective starting point for addressing the continuing health crisis in low-income settings is to build a primary health system that is responsive to these specific challenges.

III. Designing & Financing Primary Health Systems in Low Income Countries

The starting point for designing an appropriate health system is in the science of public health. What is the field of public health? When we think of medicine, we think of doctors and nurses who treat individual patients. Public health can be called population health. It tackles the treatment and health of a population rather than an individual, partly through the work of doctors and nurses but through other tools as well. Attention to safe drinking water, community access to anti-malaria bed nets, and widespread coverage of effective vaccines are examples of critical tools in public health beyond what doctors and nurses provide. The public health solutions differ by location and income level because they depend on the specific disease burden in any location.

Public health is a highly effective specialty and can be very systematic in practice. The public health approach starts with the epidemiology of disease, as we have just done with deaths of children under age of five. The public health specialist must understand the disease burden in a particular population. What is the DALY count for each disease? What is the prevalence of the disease in a population? What is

the incidence (number of new cases) of the disease in a given time period? Epidemiology measures the disease burden in a systematic way and also focuses on the transmission mechanisms. Is the disease transmitted person-to-person? Does an intermediate insect vector pass the infection from one person to another (such as in the case of the mosquito with malaria)? Epidemiologists need to understand the various categories of disease; who the diseases burden; and how the diseases are transmitted.

The second stage of good public health thinking is to examine the feasible and desirable interventions, both within the health sector and in the closely related sectors of nutrition, agriculture, and infrastructure. What exactly can and should be done? We can think of these as the “apps” of public health, though in the field of public health, they are generally called *interventions*. The interventions are systematic packages of diagnosis, treatment and follow-up that address particular problems such as malaria or neonatal resuscitation.

The third step of good public health is “systems design.” Suppose that you have created a list of needed interventions, for example that every child should get immunizations, every household should have bed nets, and every mother should have a specific number of antenatal visits. Then, systems design creates a way for the public health system to deliver these interventions properly and effectively. Who should do the work for each intervention? Who should give immunizations: doctors, nurses, clinical officers, or the Community Health Workers? How should anti-malaria bed nets get distributed to best ensure that households know how to use them? Which organizations or agencies should guarantee the supply chain of medicines? Who should perform and interpret a diagnostic test? Who manages the health workforce for its competence, honesty, and hard work?

These are the kinds of challenge that a business faces in running an organization. Running a public health system is also a quite complicated challenge. Building that system from scratch in a very poor setting is extremely difficult and important work that brings up issues of training, recruitment, job designations, and so forth. This system has to be translated into actual management and implementation. There are many things to do. If you are in charge, you may have to invest in a new operating theater for emergency obstetrical care; build an examination room; design a new clinic; and drill a new borewell for safe drinking water. You may have to train a local public health labor force, usually from a starting point of woefully few health professionals.

The public health system centrally involves the individuals in the community who seek healthcare and have to be connected with the health facilities. There should be trust and confidence in the Community Health Workers. Households should understand health risks and health-seeking behavior when disease strikes. Oversight of key personnel is crucial, as it is in any organization. How do you as the public health official make sure the work is actually getting done, and that budget funds are used properly? How do you make sure the disease burden is as expected and thus your interventions are properly targeted?

Additionally, a good system not only monitors outcomes for management purposes, but also evaluates and assesses the performance of the health system. The health system should use timely information to interrogate its own performance. For example, if the data show that a mother died in childbirth, the key

health personnel should investigate the death, determine if it was in fact preventable, and if so, understand what kinds of adjustments will be needed to prevent a recurrence in the future. This kind of feedback system is absolutely crucial for practical success.

Next comes financing. It is not surprising that money looms large in this issue of healthcare in low-income settings. These are places where the absence of money plays a pervasive role in the continued high prevalence of preventable and treatable diseases. Even if a health system is designed with high efficiency, smart epidemiology, and cost-effective interventions, a poor community will need help to afford the health system to address the disease burden. A finance strategy will be vital.

Some feasible interventions that are based on the local epidemiology include interventions for malaria. A mosquito transmits the single-celled plasmodium pathogen from individual to individual. How does the health system best protect the population? This could be done through medicines that kill the pathogen in an infected individual. It could be done through preventions such as the use of larvicides, which kill the larvae of the anopheles mosquitoes before they mature to become malaria-transmitting mosquitoes. It could also be done through the mass distribution of anti-malaria bed nets that block mosquitos from biting, or spraying the inside walls of houses to kill mosquitos that come inside for blood meals. In fact, an effective control system will deploy several of these strategies together, not just one alone.

There are many examples of how good epidemiology can be connected with a strong set of highly effective and low-cost interventions. The results can be very striking and remarkably positive. In 2013 dollars, the total cost of a basic primary health system that addresses the previously described diseases might be no more than \$60-\$90 per person in the community per year. This is a remarkably low cost to address all of those disease conditions, but the irony is that even \$60 may be too much for a government in a very poor country. This is the part that is hard for those in the rich world to appreciate, because most people in high-income countries assume intuitively that if diseases with low costs of control nonetheless continue in very poor communities, it is perhaps because the host government is not trying very hard to deal with the issue. That inference is simply not correct. (I am not denying that some governments in low-income countries don't try very hard; **I am saying that even exemplary governments in such countries also need external financial assistance.**)

It is often hard to remember the financial plight of the very poor. A country such as Malawi is at around \$400 per capita at current market exchange rates. As I noted earlier, a country like Malawi will typically collect around 20% of its national income in taxes. Twenty percent of \$400 leaves the government's domestic revenue collection at \$80 per person per year – that will be used to finance the government, the national defense, the police, the roads, the power sector, the roads and ports, the water and sanitation, the schools, environmental conservation and yes, the public health system. Budget experts have recommended that governments in low-income settings devote around 15% of the total budget to the health sector, but at \$80 per capita, 15% comes to just \$12 per capita per year devoted to public health! In Europe and the United States, the public health budget is \$3,000 per person, per year and

\$4,000 per person per year. Figure 9.10 illustrates the various levels of GNP per capita, health spending, and health outcomes (through the U5MR) for low-income, middle-income, and high-income countries.

Poverty, Budgets and Health Sector Chart

Country	GNP per Capita	Government Health Spending	Health Spending as Share of % of GNP	Under-5 Mortality
Ethiopia	180	4	2.2	123
Niger	260	5	1.9	253
Mozambique	340	12	3.5	138
Brazil	4730	204	4.3	20
Mexico	7870	217	2.8	35
Thailand	2990	73	2.4	8
Sweden	43580	3143	7.2	4
France	36550	3233	8.8	5
United States	44970	3074	6.8	8

Figure 9.10. Poverty, Budgets and Health Sector

The point is that even trying hard with its own revenues, a poor country cannot reach the necessary \$60-\$90 per person per year on its own. As I emphasized earlier, this is why Official Development Assistance (ODA) is so important for public health. Such ODA should be carefully, scientifically, and professionally targeted towards improving the health and health systems of poor people. I advocated for this kind of development aid when I chaired the Commission on Macroeconomics and Health for the World Health Organization in 2000-2001, and I have championed such aid for more than a dozen years as Special Advisor to UN Secretary General Kofi Annan (2001-2006) and UN Secretary General Ban Ki-moon (2007-present).

A case in point of effective aid implementation is the Global Fund to Fight Aids, Tuberculosis, and Malaria, which I was very honored to help design and launch in 2002. Based on the extra ODA supplied by the Global Fund, the poor countries have achieved huge improvements in the control of all three diseases since the Global Fund's establishment. The Global Alliance for Vaccines and Immunization (GAVI) is another great program that provides international financing for immunization coverage. The United States' President's Emergency Plan for AIDS Relief (PEPFAR) and the President's Malaria Initiative (PMI) have also been quite successful in improving health outcomes in poor, disease-stricken countries.

These kinds of targeted, focused programs backed by ODA have been hugely effective and very successful because the funds have been carefully monitored, assessed, and evaluated at each step of the way. Figure 9.11 is heartening. It charts the takeoff of Official Development Assistance for health,

especially bilateral assistance, from governments to low-income country governments after the year 2000. With this added funding, malaria is coming down, the AIDS burden is coming down, treatment for tuberculosis is expanding, and under-five mortality and maternal mortality rates have come down considerably. These successes demonstrate that ODA for public health works very well. Yet the poorest countries still do not have the full financing they need. The national budget gaps remain significant, perhaps \$20-30 dollars per capita (depending on the country), even though the financing gaps have been partly covered in recent years by the step up in ODA.

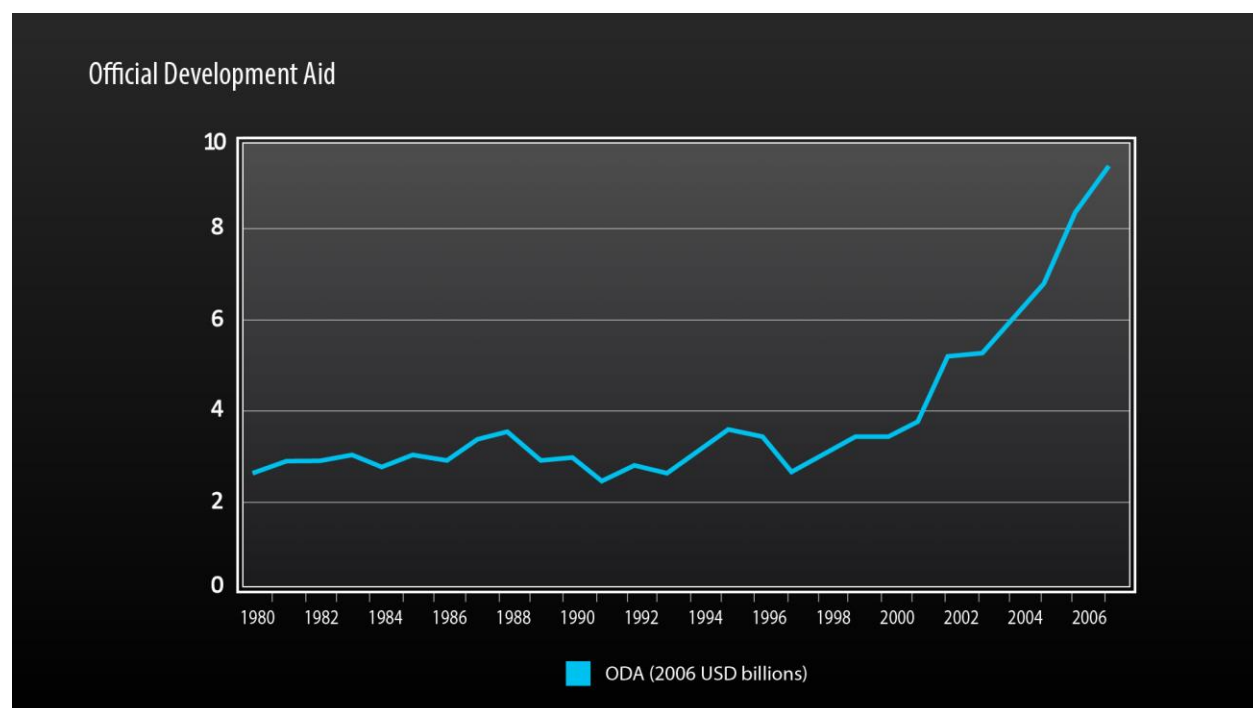


Figure 9.11. Global Official Development Aid for Health and Population

I have recommended over the years that the rich countries should be giving around \$40 per person in the recipient countries for these purposes. We are perhaps at the halfway mark or even a little above half way, and this has made a big difference, but there still is an important financing gap that needs to be closed to achieve our longstanding and crucial objective of health for all.

IV. Ten Recommended Steps to Health for All in the Poorest Countries

The period of the Millennium Development Goals since 2000 has been an exciting one for public health. Malaria is a prime example. Malaria is not only a lethal disease, but it spreads very widely and in many parts of Africa. In many regions it is holoendemic, which means that the whole community is typically infected much of the year unless active control measures are put in place. Controlling malaria is therefore a great feat; and malaria is being controlled right now in sub-Saharan Africa thanks to the focused efforts of organizations like the Global Fund and the US PMI. It is also thanks to great advances in public health and in new technologies, such as insecticide-treated bed nets; CHWs who go into the

communities rather than waiting for sick people to carry their dying ones over many kilometers; and new diagnostic tests, where instead of a microscope that reads the blood to detect the plasmodium pathogen, a prick of the finger allows a CHW on the spot to know within a few minutes whether a child is infected with malaria. New medicines such as artemisinin are replacing medicines like chloroquine that have lost their efficacy to the parasite's drug resistance. All in all, malaria deaths of children under five have declined by around 50% since the year 2000.

By now the poor countries have gotten more than half way to building their primary health systems, and we should take inspiration from the recent health successes and move forward to fulfill the commitment to Health for All that was made back in 1948.

I have 10 basic recommendations of how we could achieve the full breakthrough in the next decade.

The first is financial. This total need for ODA for health is around \$40 billion a year, which is roughly \$40 per person for the 1 billion people who need the help. Since there are also about 1 billion people in the rich world, we need around \$40 from each person per year in the rich world in order to save millions and millions of people each year in the poor countries. \$40 per person in the rich world is the bargain of the planet. It comes out to just 10 cents for every \$100 dollars in the rich world. Current aid flows for health are roughly about half of what is needed.

Recommendation 1. Rich countries should devote 0.1 percent of GNP (\$40 billion per year as of 2009) to health assistance for poor countries in order to close the financing gap of the primary health system.

The second recommendation is to put that money into highly effective organizations. My own recommendation would be to transform the Global Fund to Fight AIDS, TB and Malaria, which has done such an outstanding job, into a more general Global Health Fund; and to channel about \$20 billion per of the \$40 billion per year (that is, half) through the Global Health Fund. This expanded fund would help poor countries to establish their basic health care systems with all of the components discussed earlier.

Recommendation 2. Half of that money should be channeled through the Global Fund to Fight AIDS, TB, and Malaria, which would become the Global Health Fund.

The third recommendation is that the low-income countries contribute around 15% of the total national budget for funding health. (The 15% target is known as the "Abuja Target.")

Recommendation 3. Low-income countries should fulfill the Abuja Commitment of allocating at least 15% of domestic revenues to the health sector. Total spending (domestic and external funding) should be at least \$60 per person per year in order to ensure basic health services.

The fourth recommendation is to finish up the job of comprehensive malaria control. Malaria is a pernicious disease, a killer, and a burden on development; but we are so close to having it under control

that attention must be paid towards it. The world should adopt a plan for comprehensive malaria control. That would cost roughly \$3-\$4 billion a year, which would enable the poor countries to finish up the building of supply chains, and the funding of Community Health Workers, rapid diagnostic tests, medicines, and so forth, to really get the job done.

Recommendation 4. The world should adopt a plan for comprehensive malaria control, with an (near) end of malaria mortality by 2015 (estimated cost \$3-\$4 billion per year).

The fifth recommendation is that the leading donor countries should fulfill their long-standing commitment to providing universal access to antiretroviral medicines (ARVs) for individuals infected with HIV. These medicines work, and the treatment of poor people will save their lives. More treatment would also mean much lower transmission of the disease, because when an HIV-infected individual is treated with antiretroviral medicines, the viral load (the concentration of the virus in the body) diminishes sharply. This makes it much less likely for the virus to be transmitted from the infected individual to another.

Recommendation 5. The G8 should fulfill the commitment to universal access to ARVs.

The sixth recommendation is that the leading donor countries should also fulfill their commitment and partnership with the poor countries in fully funding the Global Plan to Stop Tuberculosis (TB). This too has a financing gap on the order of \$3-\$4 billion a year, roughly \$3-\$4 per person per year in the high-income world. Roughly a cup of coffee once per year at a favorite coffee shop in NYC or London would be what is needed incrementally to build the requisite funding!

Recommendation 6. The world should fulfill the Global Plan to Stop TB, including closing the financing gap of \$3-\$4 billion per year.

The seventh recommendation is that the world, especially the donor countries in their financing and the poor countries in their implementation, should guarantee access to sexual and reproductive health services. This would include emergency obstetrical care for safe childbirth, antenatal care for safe pregnancy, and modern contraceptives, as households would like. Many women around the world do want to use modern contraceptives and have fewer children, but they lack the access or the funds to be able to afford this on a market basis. These women need full funding of family planning services, contraception, emergency obstetrical care, and pregnancy care at a very low budget so that these services can be made universal.

Recommendation 7. The world should fulfill the funding for access to sexual and reproductive health services, including emergency obstetrical care and contraception, by the year 2015, partly through the Global Health Fund and partly through the United Nations Population Fund (UNFPA).

The eighth recommendation is for the Global Health Fund to take up the “neglected tropical diseases.” These neglected tropical diseases are less in the headlines than malaria or AIDS. They include

hookworm; the worm infections ascariasis, trichuriasis, onchocerciasis, and schistosomiasis; and lymphatic filariasis, which is another vector borne tropical disease with terrible consequences, but that can be controllable through bed nets and with ample effort and organization. Another neglected disease is blindness from cataracts, which can now be treated with surgery at remarkably low cost.

Recommendation 8. The Global Health Fund should establish a financing window for seven controllable neglected tropical diseases: hookworm, ascariasis, trichuriasis, onchocerciasis, schistosomiasis, lymphatic filariasis, and trachoma.

Recommendation nine calls on the Global Fund to establish special financing to complete the health systems, for example the training and deployment of Community Health Workers. This would be a crucial part of the transformation from a disease-targeted fund to a general Global Health Fund that provides a broad base of services. My colleagues and I have also called for the United Nations to help African nations to deploy one million CHWs to Africa by 2015, as a major boost for achieving the Millennium Development Goals.

Recommendation 9. The Global Health Fund should establish a window for health systems, including the mass training and deployment of One Million Community Health Workers in Africa by 2015

Finally, the tenth recommendation is to address the number of non-communicable diseases that have been typically overlooked in many of these urgent MDG-related efforts. Dental care, for example, is very basic and important but often not present in poor countries. Eye care, mental health counseling, and mental health interventions are also crucial for the massive burden of depression, which is pervasive around the world. There are many cardiovascular diseases where people have undiagnosed high blood pressure and hypertension that can cause loss of life for adults if untreated, but where the adverse consequences can be controlled. A number of cancers can be addressed at a very low cost. Campaigns against tobacco use are a crucial part for any good public health system, because tobacco remains a massive killer. This is a behavioral challenge, but one that needs to be met because it is one of the most effective ways to save lives.

Recommendation 10. The world should introduce primary healthcare (mass prevention and treatment) of non-communicable diseases, including: oral health, eye care, mental health, cardiovascular disease, and metabolic disorders; including measures on lifestyle (smoking, trans-fats, urban design for a healthy environment), surveillance, and clinical care.

The moral of the story is that the world is close to achieving primary health for all. The Millennium Development Goals have hugely spurred the effort. We can now see a pathway to health for all – the next phase of the global development objectives and the Sustainable Development Goals. Universal health coverage will feature prominently in the next phase of goals, and we will have the opportunity to complete what we have started – to finally achieve health as a basic human right.

V. The Continuing Challenges of Health Coverage in the High-Income Countries

We have analyzed the challenge of health in the very poorest parts of the world. One might assume there is no longer a challenge at the opposite end of the income spectrum in the upper income countries. Life expectancy is high and the healthcare systems are technically very sophisticated. In the high-income countries, annual public spending for healthcare is typically around \$3,000 to \$4,000 per person per year in the public budget. In the United States, the sum of public and private spending for health is \$8,000 per person per year.

What then is the problem? The problem, especially in the United States, is that \$8,000 per person per year is incredibly expensive. It is so expensive that it is a major burden on the economy (around 18% of the total GDP, the largest single sector of the economy!), a major burden on the budget, and a major burden on poor people who are often priced out of the healthcare market entirely, as well as on those in the middle class who may be burdened with crushing healthcare costs. In the United States there is high inequality of income alongside expensive healthcare, and a rather limited social safety net provided by government programs.

The puzzle I want to explore is one that is specific to the United States, in one sense. Why is the US healthcare system so expensive compared with others? Even though the problem is mainly in the US, the lessons of the US case are globally applicable, and therefore important to understand.

One of the main reasons why the US system is so expensive is that it is a privately oriented health delivery system. Yet there is the common insistence in the US debate that the private sector is more efficient, and the public sector is inefficiently bureaucratized and very costly. Nonetheless, in the United States, where the private sector role in healthcare is the largest of any high-income country, the costs per person are also the highest. It is important to understand why this is the case, because it gives further understandings of the proper boundaries between public and private sectors, especially in the health systems. In general, it helps overcome a presumption that the free market is always the best solution. The results of this free-market orientation in US healthcare are peculiar, to say the least.

From the start, it should be understood that health is not a typical market commodity. For one reason, it is a merit good: most of us agree that access to healthcare should be universal. Health is a basic human right. Health therefore starts out in a very specific situation, similar to education. Public provision of these services is important if for no other reason than to help ensure that the poor are able to gain access to these merit goods just like the rich.

But the problem goes even deeper than that. The economist Kenneth Arrow, the great Nobel laureate, in a seminal 1963 article observed that the health sector cannot really operate like a competitive market sector because there is a fundamental problem. Patients generally do not know what is best for them medically. They must rely on their doctors, who presumably do know (or should know!). Arrow noted that such an asymmetry of information violates one of the basic assumptions of the proper functioning of a free-market economy, which is that consumers and suppliers in a transaction have similar information.

What happens when only the suppliers have the information? Your doctor says you need a test and generally you listen to what the doctor says. When there is asymmetric information, and the supplier is the one who has the knowledge, then it is possible that the consumer can end up being overcharged and overbilled if the incentives facing the suppliers are not properly designed. Unfortunately the US system has this problem. Too many healthcare providers have the incentive to overcharge patients, either by fraud, over excessive use of procedures, or use of monopoly power (such as when there is only one hospital in the community).

There are other problems with treating healthcare as if it were a free-market commodity. Healthcare requires insurance because of the possibility of expensive healthcare costs in the event of a serious disease. Yet if individuals know their conditions while the health insurer does not, the insurer will find that the health premium is too low. The health insurer will raise the premium, so that healthy people will not buy insurance and only very sick people (who expect to use the insurance coverage) will do so. The pool of insured individuals will increasingly include only those who are already sick or who have good reason to believe they are likely to become sick. The insurance market will shrink, and even collapse, in what is commonly called an “insurance death spiral.”

The US system is characterized by substantial fraud, excessive care, waste, and monopoly power of local health providers. Insurance markets do not work well, and leave many people outside of the private system. The Affordable Care Act, also known as Obamacare, addresses some of the problems, but does not really get to the crux of the excessive health care costs in the US. The US system therefore remains far more expensive than other systems that rely much more on regulated prices and much less on private, unregulated health providers.

In Figure 9.12, the dotted black line at the top is the cost of spending in the United States per person. It is soaring. Back in 1980, the average spending on health in the United States was about \$1,000 per person. By the year 2009, it was \$8,000 per person. Norway, another rich country, is next, but at a much lower level of around \$5,500 per capita. In general, the rest of the rich countries are clustered around this lower level. Typical spending is around \$4,000 per person per year outside of the US – half of the US level.

Average spending on health
per capita (\$US PPP)

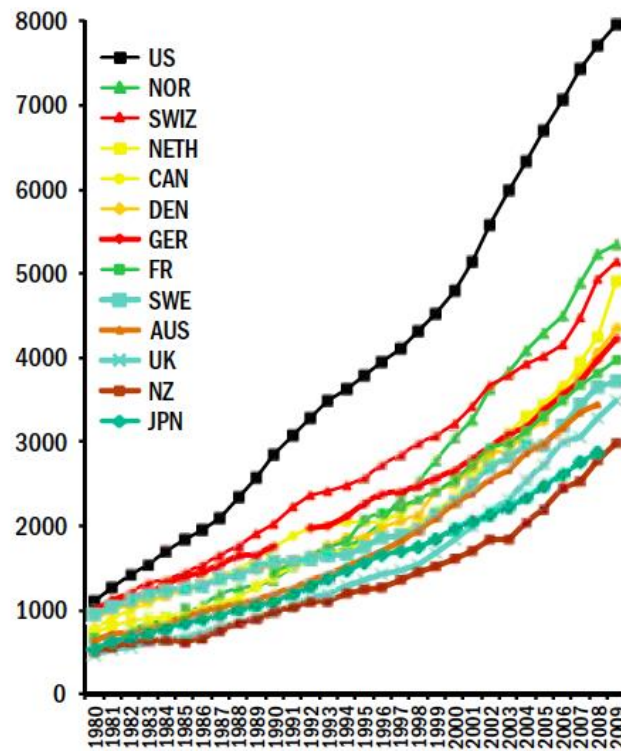


Figure 9.12. Average Spending on Health

Figure 9.13 shows spending divided by national income to get the share of health outlays as a percentage of income. Back in 1980, the United States was spending about 9% of its national income on health. By 2009, that had doubled to 18% of national income. In 1980, all of the countries including the US were rather tightly clustered between 6% and 9% of national income. As of 2009, for most countries the spending is about 10% of gross national product, but the US has separated from the pack and become the most expensive healthcare system in the world. In general, health costs and health outlays as a share of national income have been increasing, yet not at the same pace as the US.

Total expenditures on health as percent of GDP

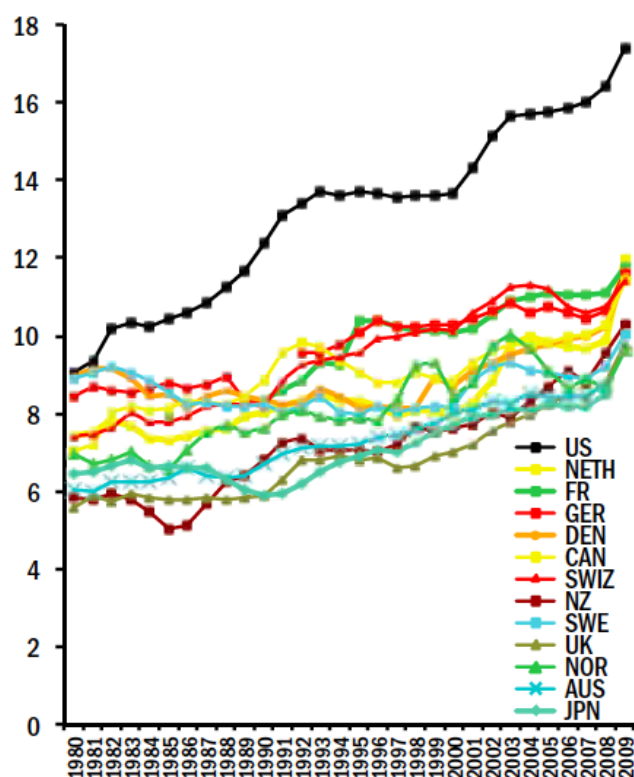


Figure 9.13. Health Outlays as a Percent of GDP

One of the leading scientific organizations in understanding the US health system, the Institute of Medicine of the US National Academies of Science, found something extraordinary in a recent study. The waste, fraud and abuse in the healthcare system amounted to as much as 5% of US national income, about \$750 billion a year. This is from overbilling, waste of resources, repeated tests, outright fraud, and the high management costs. To put it into context, the US is spending 18% of its gross national product in health while only getting 13% of national income in real value.

The distinctiveness of the US system in the size of the private sector is illustrated in Figure 9.14. The figure shows the share of total health spending that comes from private sources (e.g. private payments to an insurance company) as opposed to public (budget) sources. We see that the US is the only country where private payments are more than half of the total outlays. The US is both the most expensive and the most private system. This is not a coincidence. It is the mistaken reliance on the private market system, one that does not satisfy the assumptions of an efficient, competitive marketplace, which explains America's over-priced system.

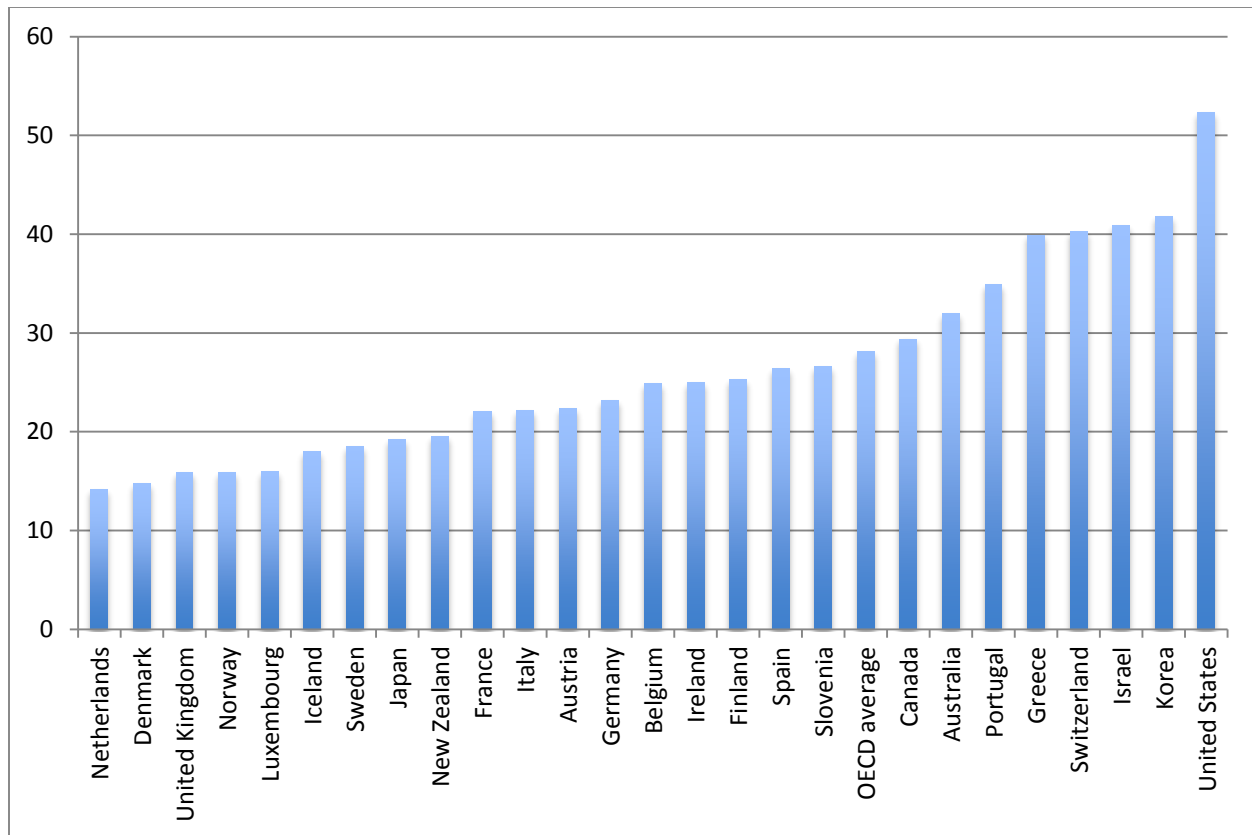


Figure 9.14. Private Health Outlays as Percent of Total Health Outlays

One can see this in Figure 9.15, a systematic comparison of US costs with the costs in other high-income countries for some specific commodities and services. For example, the US cost of the 30 most commonly prescribed medicines is set at an index of one. Then the cost in New Zealand is calculated at .34, which means one-third of the US cost. The cost in Australia is .49, roughly one-half of the US costs of those medicines. The cost in the US of a visit to a physician paid by a public sector program (\$60) is comparable to what is paid in other countries. However, the cost that is paid by a private payer or private insurance company is over twice the amount (\$133) that is paid by the public payer. The US system costs are still simply out of sight.

Drug and Physician Prices

	Prices for 30 most commonly prescribed drugs, 2006-07 (U.S. set at 1.00) ^a			Primary care physician fee for office visits, 2008 ^{b,c}		Orthopedic physician fee for hip replacements, 2008 ^{b,c}	
	Brand name	Generic	Overall	Public payer	Private payer	Public payer	Private payer
Australia	0.40	2.57	0.49	\$34	\$45	\$1,046	\$1,943
Canada	0.64	1.78	0.77	\$59	—	\$652	—
France	0.32	2.85	0.44	\$32	\$34	\$674	\$1,340
Germany	0.43	3.99	0.76	\$46	\$104	\$1,251	—
Netherlands	0.39	1.96	0.45	—	—	—	—
New Zealand	0.33	0.90	0.34	—	—	—	—
Switzerland	0.51	3.11	0.63	—	—	—	—
United Kingdom	0.46	1.75	0.51	\$66	\$129	\$1,181	\$2,160
United states	1.00	1.00	1.00	\$60	\$133	\$1,634	\$3,996
Median (countries shown)	0.43	1.96	0.51	\$53	\$104	\$1,114	\$2,052

^a Source: Analysis by G. Anderson of IMS Health data.

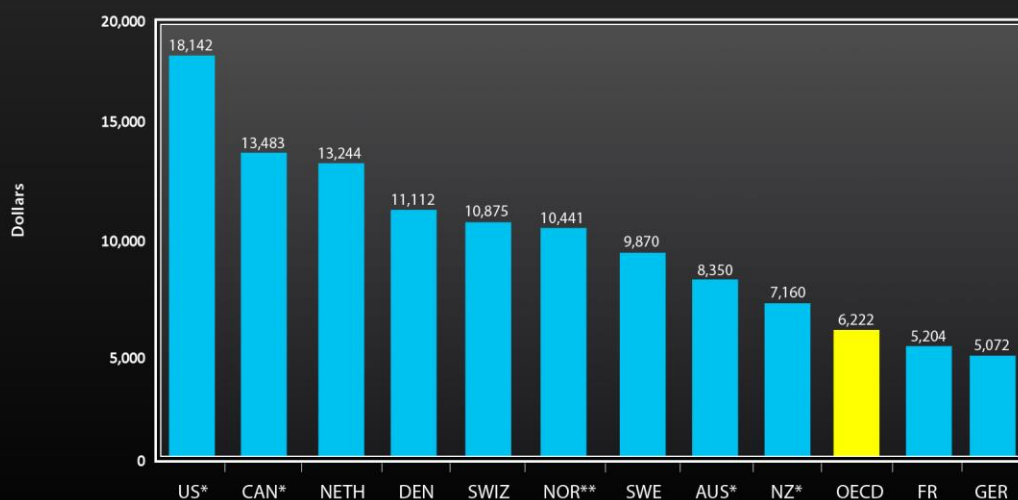
^b Adjusted for differences in cost of living.

^c Source: M.J. Laugesen and S.A. Glied, "Higher Fees Paid to U.S. Physicians Drive Higher Spending for Physician Service Compared to Other Countries," Health Affairs, Sept. 2011 30(9):1647-56.

Figure 9.15. Drug and Physician Prices (2011)

Figure 9.16 shows the spending for each patient discharged from a hospital. How much was spent on a patient in the United States in 2009? Remarkably, the cost per hospital discharge was \$18,000! In France and Germany, it was less than a third of this amount. The average of the OECD, a high-income country group, was one-third of the average discharge cost in the United States.

Hospital Spending Per Discharge



* 2008.

** 2007.

Source: OECD Health Data 2011 (Nov. 2011).

Figure 9.16. Hospital Spending Per Discharge

Another disparity is in salaries. US doctors make far more than doctors in other countries. In 2008 orthopedic physicians in the United States made \$440,000, while those in Germany made less than half of that, \$202,000. America's high salaries are shown in Figure 9.17, which charts physician incomes across selected countries.

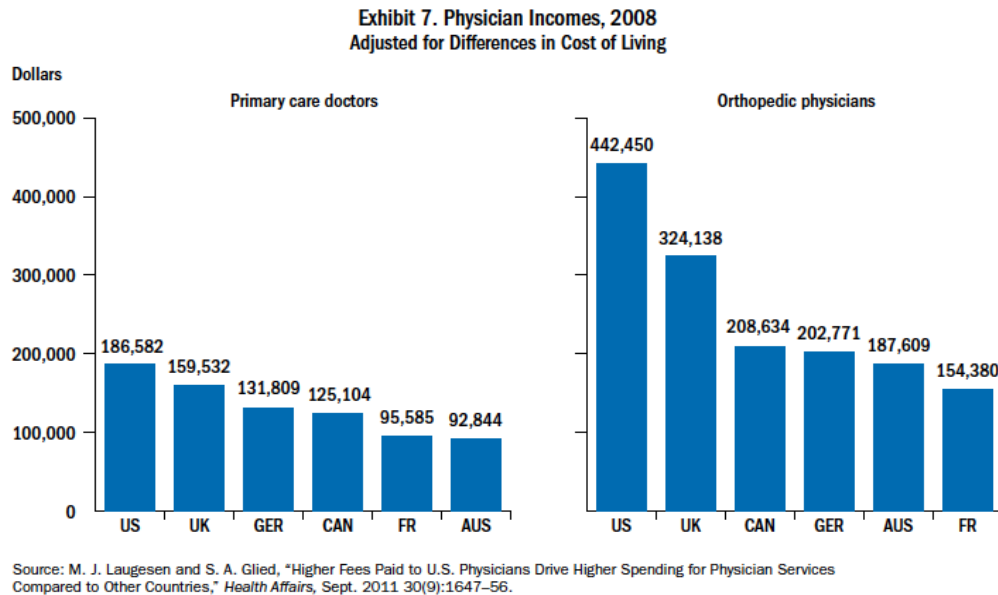


Figure 9.17. Physician Incomes (2008)

The US system is remarkably expensive, not because it is delivering a huge range of services that other countries are not, and not because the outcomes are better, but because the unit costs of the interventions and medicines are much higher than in the other countries.

There is one final dimension to this issue: political economy. The health sector in the United States is politically powerful, so it is able to resist effective regulation or replacement by a public system. Indeed, the private healthcare industry should be considered one of the four most powerful lobbies in the United States, alongside Wall Street, the military-industrial complex, and the oil industry. Indeed, during 1998-2012, the lobbying outlays of the health industry exceeded those of every other industry except "miscellaneous" (which means a grab-bag of several industries), as we see in Figure 9.18. This powerful healthcare lobby has so far prevented any remedial action on the excessive costs.

Lobbying Outlays (1998-2012)

Sector	Total
Misc Business	\$5,427,444,911
Health	\$5,361,291,052
Finance/Insur/RealEst	\$5,361,205,408
Communic/Electronics	\$4,429,325,735
Energy/Nat Resource	\$3,988,390,873
Other	\$2,893,718,743
Transportation	\$2,778,175,457
Ideology/Single-Issue	\$1,787,473,562
Agribusiness	\$1,624,121,348
Defense	\$1,535,483,075
Construction	\$588,490,823
Labor	\$537,827,949
Lawyers&Lobbyists	\$389,454,657

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Figure 9.18. Lobbying Outlays (1998-2012)

The health sector is also a major contributor to campaign financing. The health sector was number five on the list of industries in terms of the size of campaign contributions during the most recent campaign cycle (Figure 9.19). In the complete campaign cycle of 2011 to 2012, management and employees of the health sector contributed approximately \$260 million of campaign contributions. This means politicians are attentive to the interests of this concentrated group, and not necessarily to the interests of the taxpayers or the citizens more generally.

Campaign Financing by Industry, Sector Totals 2011-2012

Rank	Sector	Amount	Dems	Repubs	To DEMS	To REPUBS
1	Finance/Insur/RealEst	\$656,923,622	24.8%	51.9%		
2	Other	\$559,782,061	46.2%	41.9%		
3	Misc Business	\$459,051,032	26.6%	39.6%		
4	Ideology/Single-Issue	\$314,441,938	40.4%	43.1%		
5	Health	\$260,528,381	33.7%	42.3%		
6	Lawyers & Lobbyists	\$247,543,360	61.9%	29.8%		
7	Communic/Electronics	\$202,587,915	46.3%	27.2%		
8	Labor	\$141,187,722	43.1%	4.3%		
9	Energy/Nat Resource	\$138,705,629	15.9%	63.9%		
10	Construction	\$122,934,201	20.2%	50.6%		
11	Agribusiness	\$90,592,526	22.4%	66.0%		
12	Transportation	\$77,048,762	21.7%	69.0%		
13	Defense	\$27,428,125	39.6%	59.6%		

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Figure 9.19. Campaign Financing by Industry (2011-2012)

What are some of the reform options?

The first would be to move to a single-payer system as in Canada. Canada's health system is far lower cost than the United States, and with very high quality. The governments of Canada's provinces cover most costs of health care, so that private outlays are below 30% of the total.

A second possibility is what is called an all-payer system. Health payments would still come from private employers, but regulations would prevent the exercise of monopoly power in pricing. In particular there would be a single, publicly known price for every health service. Hospitals and doctors would not be allowed to "price discriminate," that is, to charge a monopoly price when they can get away with it (as they can do now).

A third possibility is called capitation. Rather than paying service by service, the hospital or doctor would receive a fixed amount of money per patient per year, irrespective of the specific services that need to be provided during the year. The fixed amount would be according to the "expected costs" of providing quality healthcare. If the actual costs are higher, then the hospital would bear the excess. There would be no way to overcharge per patient, and no incentive to call for excessive services. Of course, there might be trouble in the other direction, that the doctor or hospital refuses to carry out a procedure or surgery since there is no added financial incentive to do so. To make such a system work, the healthcare provider would be responsible for quality care and would be subject to review of performance.

Finally, technology can be the friend of lower costs, with information technology, smarter systems, and even patients monitoring their key vital signs at home, that can all be used to bring costs down sharply. In some places, healthcare providers are already using extensive distance monitoring of a patient, in which clinical information is automatically transmitted and read at a distance. With these new technologies it is also possible that low-cost Community Health Workers can provide some of the services currently provided by high-cost doctors and nurses.

There are plenty of paths to reform. Incentives must be partly changed, and new technologies must be deployed. Of course, that kind of reform also depends on politics. If the lobbies get their way, there will continue to be greatly inflated costs. If the US system is run for the public's benefit, then tremendous good can be done to reach more people, and improve health outcomes at considerably lower cost.