

# The Health and Poverty of Nations: From Theory to Practice?

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# ***The Health and Poverty of Nations: From Theory to Practice***

David E. Bloom and David Canning

## **Introduction: health for all**

The 1978 Declaration of Alma-Ata described health as “a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity.” Health is a “fundamental human right,” with the attainment of the highest possible level of health “a most important world-wide social goal.” By 2000, everyone should enjoy “a level of health that will permit them to lead a socially and economically productive life.” Achieving this goal would require economic and social development, as well as action within the health sector. But primary health care, “based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families”, was believed to be key to attaining the target.

By 2000, there have been significant health improvements, with increases in life expectancy in 163 of 184 countries for which data are available (between 1975 and 1995).<sup>2</sup> Expenditure on health has also risen, with global spending on health accounting for approximately 8 percent of the world’s gross domestic product (GDP).<sup>3</sup> However, there are massive disparities in the health status of rich and poor countries and the goal of “health for all” has clearly not been met. A child born in Japan in 1999 could look forward to 74.5 years of healthy life (measured in disability-adjusted life expectancy or DALE), with children in another 23 countries expecting to enjoy over 70 years of healthy life. In 51 countries, however, children can expect less than 50 years of healthy life, with the 3 least healthy countries – Malawi, Niger and Sierra Leone – having DALE’s of less than 30 years. In addition, standards of health have declined in some countries. In some republics of the former Soviet Union, for example, life

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<sup>2</sup> The 21 countries in which life expectancy declined are: Armenia, Belarus, Botswana, Bulgaria, Burundi, Cote d'Ivoire, Estonia, Kenya, Latvia, Liberia, Lithuania, Malawi, Russian Federation, Rwanda, South Africa, Tanzania, Uganda, Ukraine, Zaire, Zambia, and Zimbabwe. By contrast, rates of infant mortality only increased in 3 countries (Armenia, Belarus, and Iraq).

<sup>3</sup> World Health Organization, *World Health Report 2000*. It is worth noting that low and middle income countries account for only 18% of world income, and only 11% of global health spending.

expectancies have been in long-term decline since the 1950s<sup>4</sup>, while HIV/AIDS is having a devastating effect on health in many countries in sub-Saharan Africa.<sup>5</sup>

Currently, the fact that health indicators are deteriorating in some parts of the world is drawing increased attention to global health. The AIDS 2000 conference received unprecedented media coverage and there is evidence that political leaders are finally waking up to the scale and insidious nature of the AIDS crisis. Renewed attention is also being paid to other infectious diseases, after a period of neglect and stagnation. The importance of the epidemiological transition in developing countries, as chronic and "lifestyle" diseases add to the burden of infectious disease, has also drawn attention. Simultaneously, there are remarkable changes taking place in our understanding of the place of health in the process of social, economic, and political development in general, and the reduction of poverty in particular. It is therefore important to do more than bemoan the fact that the world has not even come close to achieving the Alma-Ata goals. Instead it is necessary to focus on the real signs of promise for the future, as the world's leaders begin to think quite differently about health.

*The Health and Poverty of Nations: from Theory to Practice* presents an overview of health and development, and of the various justifications for attempts to improve global health. It explores in some depth the economic rationale for devoting resources to health, within the context of a view of development as a complex process involving physical, human, and social capital, as well as technological progress and the accumulation of knowledge. It concentrates, in particular, on the relationship between health and poverty and on the possibility of using better health as a tool for poverty alleviation. Finally, it discusses the nature of reforms needed to produce better health outcomes, and explores the contribution that historical neglect of the reform *process* has had for the world's failure to meet the Alma-Ata targets. An understanding of the importance of health should be used to drive the reform process more effectively, to build political commitment, and to help facilitate institutional change. From the public health movement of the 19th century, through the use of antibiotics and other 20th century medicines, to recent campaigns against new or reemerging infectious diseases, health is improved by a potent mixture of knowledge, and new forms of human organization and behavior. It is one thing to invest in research. Deploying that knowledge to create a mandate for change is what really counts.

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<sup>4</sup> See "The Demographic Crisis in the Former Soviet Union", special issue of *World Development*, Charles M. Becker and David E. Bloom, eds., November 1998.

<sup>5</sup> See David E. Bloom, Lakshmi Reddy Bloom, and River Path Associates, 2000, "Business, AIDS, and Africa," in *Africa Competitiveness Report 2000/2001*, New York: Oxford University Press, pp. 26-37.

## *The nature of health*

### **A right to health**

Since the Alma-Ata declaration, there has been an expansion and a corresponding reorientation of the justification for devoting resources to health. The three types of justification mentioned in the declaration – that health is a basic human right, a vital social goal and vital to the development of strong economies – still hold true, but our understanding and appreciation of each of these areas has expanded. The goal of health for all may not have been met, but we have acquired new knowledge for mounting a new attempt.

The concept of international human rights is a relatively recent one, dating from the Nuremberg War Crimes Tribunal and the establishment of the United Nations in the aftermath of World War II. Human rights are commonly defined as rights that are exerted equally by all human beings, as a direct consequence of their humanity. The assertion of their universal nature therefore was intended to weaken the absolute sovereignty of states, with states held responsible for respecting the human rights of their citizens.<sup>6</sup> Some of the rights recognized in the International Bill of Human Rights relate directly to health. The right to life, for example, is recognized in both the Universal Declaration of Human Rights (article 3) and the International Covenant on Civil and Political Rights (article 6). More specifically, the right to health care and social services is recognized in the Universal Declaration (article 25) and the International Covenant on Economic, Social and Cultural Rights (article 12), while article 25 of the Universal Declaration also asserts that “everyone has the right to a standard of living adequate for the health and well-being of himself and of his family.”<sup>7</sup> The Alma-Ata declaration goes further than this, however. By declaring health to be a “fundamental human right,” it asserts that people have an entitlement to a certain level of quality of life, above and beyond their entitlement to receive medical treatment when they are sick. People are entitled to be well, not just to remedies in sickness.<sup>8</sup> Furthermore, the obligation to fulfill this entitlement is primarily that of governments, working with the “world community” as appropriate. Health therefore is something the state owes its citizens.

A rights-based approach to health offers several practical insights. First, it emphasizes the need for ongoing global action on health, as human rights are only enforceable if a

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<sup>6</sup>Tim Dunne and Nicholas J. Wheeler, “Introduction: human rights and the fifty years’ crisis,” in *Human Rights in Global Politics*, Tim Dunne and Nicholas J. Wheeler (eds) Cambridge, Cambridge University Press, 1999.

<sup>7</sup> Jack Donnelly, “The Social Construction of International Human Rights,” in *Human Rights in Global Politics*, Tim Dunne and Nicholas J. Wheeler (eds), Cambridge, Cambridge University Press, 1999.

<sup>8</sup> Jonathan M Mann, Lawrence Gostin, Sofia Gruskin, Troyen Brennan, Zita Lazzarini, and Harvey V. Fineberg, “Health and Human Rights”, in *Health and Human Rights*, vol 1, no 1, Fall 1994. The American Declaration on Rights is less stringent on this issue, but still refers to the right to “those sanitary and social measures necessary to ensure health.”

global framework is in place. Gro Brundtland, Director-General of the World Health Organization (WHO), for example, has recently described the Universal Declaration as no more than a “tantalizing promise for far too many of our fellow humans,” suggesting that a lack of global leadership and advocacy has been the critical ingredient in the failure to meet the Alma-Ata goal.<sup>9</sup> Second, it underlines the need for functioning democracies at the national level, which can be held responsible for any denial of rights to their people. As Amartya Sen has argued, political freedoms are essential to ensuring that people can protect their own quality of life, while social breakdown and “new wars” invariably result in the systematic abuse of human rights on a grand scale.<sup>10</sup> There is also evidence that poor health can facilitate social breakdown. A 1998 study commissioned by the CIA found that the best model for predicting a state’s failure is based on high levels of infant mortality, low openness to trade, and a low level of democracy.<sup>11</sup> Third, it indicates the importance of empowerment at the grass roots. For example, the rapid inroads of HIV/AIDS into many societies have been caused in part by the lack of control young women, in particular, have over sexual relations. Solutions to the epidemic therefore must focus, at least in part, on extending the rights that women have and ensuring that rights are enforced.

## Health and society

The Alma-Ata declaration also views better health as a “most important world-wide social goal.” Health is essential to building strong societies, with improved health leading to social development, improved quality of life, and conditions more conducive to world peace. The importance of a socially-based understanding of health – with health having social determinants, social impacts, and social remedies – is advanced by recent research. Inequality, for example, has emerged as a significant predictor of health outcomes, with some researchers arguing that an egalitarian society may enjoy an average life expectancy 10 years higher than a non-egalitarian one.<sup>12</sup> Health, in other words, has a relationship to *relative* poverty, suggesting that levels of health are related to the social environment within which people live, as well as to how rich or poor a society is. Inequality can affect health through a variety of social factors, such as access to life opportunities, levels of social cohesion and psychosocial explanations, such as hopelessness, lack of control, isolation, and chronic stress.<sup>13</sup> Poor health, in turn,

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<sup>9</sup> World Health Organization, *World Health Report 1999*.

<sup>10</sup> Amartya Sen, *Development as Freedom*, Oxford, Oxford University Press 1999

<sup>11</sup> Daniel C. Esty, Jack Goldstone, Ted Robert Gurr, Barbara Harff, Pamela T. Surko, Alan N. Unger, and Robert Chen. “The State Failure Project: Early Warning Research for US Foreign Policy Planning,” chap. 3 in John L. Davies and Ted Robert Gurr (eds.), *Preventive Measures: Building Risk Assessment and Crisis Early Warning Systems* (Boulder, CO and Totowa, NJ: Rowman and Littlefield, 1998).

<sup>12</sup> G. B. Rodgers, “Income and Inequality as Determinants of Mortality” in *The Society and Population Health Reader Vol. 1 Income, Inequality and Health*, Ichiro Kawachi, Bruce P. Kennedy, and Richard Wilkinson (eds), New York: New Press, 1999.

<sup>13</sup> Ichiro Kawachi, Richard Wilkinson, and Bruce P. Kennedy, “Introduction”, *The Society and Population Health Reader, Vol. 1, Income Inequality and Health*, Ichiro Kawachi, Bruce P. Kennedy, and Richard Wilkinson (eds), New York: New Press, 1999

further contributes to these social factors, draining social capital, and creating conditions where sections of a society become trapped in a cycle of self-reinforcing social exclusion.

Levels of health have great effects on society as a whole, and broad social action is needed to tackle health problems. Amartya Sen has repeatedly emphasized that it is not necessary for a country to be rich for it to be healthy, nor is economic development sufficient to achieve improvements in health status. He discusses two interrelated sets of contrasts between nations: for high economic growth economies, Sen distinguishes between those that have succeeded in significantly improving health (such as South Korea and Taiwan) and those that have not (for example, Brazil); and for economies that have succeeded in improving health, those who have succeeded in achieving high growth (such as South Korea and Taiwan) and those that haven't (such as Sri Lanka or the state of Kerala in India).<sup>14</sup> While richer societies tend to be healthier, the connection is not automatic. A variety of factors, such as how a society *chooses* to organize itself and deploy its resources, what freedoms and opportunities it offers its citizens, and what measure of control it gives them over their lives, determine the strength of the relationship. As the Alma-Ata declaration argues, concerted social action is needed to achieve health improvements, with input from sectors unrelated to the health sector, "in particular agriculture, animal husbandry, food, industry, education, housing, public works, communications and other sectors." In addition, this action must be coordinated across sectors, requiring governments to focus on health outputs, rather than inputs, and develop a strategic view of improving health standards.

The social importance of health may have an impact on the international system.<sup>15</sup> There is evidence of a link between health and political stability (as the CIA study shows).<sup>16</sup> There are also direct links between health and war. Wars damage health, by killing and injuring soldiers and civilians and destroying infrastructure and social structures. In the eastern Democratic Republic of Congo, of the 1.7 million excess deaths between August 1998 and May 2000, only 200,000 were attributable to direct acts of violence; the rest came from ill health which resulted from the conflict.<sup>17</sup> It can also be argued that ill health helps cause war. Combatants in many modern conflicts are drawn from the socially excluded, even if they only act as proxies for more powerful interests. Poor health shortens people's time horizons and makes them more likely to engage in conflict, at least with each other.<sup>18</sup>

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<sup>14</sup> Amartya Sen, *Development as Freedom*, Oxford, Oxford University Press 1999

<sup>15</sup> For a more detailed discussion of the links between health and foreign policy, see *The United States and Global Health*, David E. Bloom, Jordan Kasselov and River Path Associates, unpublished

<sup>16</sup> Daniel Esty et al. State Failure Task Force Report: Phase II Findings. July 1998

<sup>17</sup> Mortality Study, Eastern Democratic Republic of Congo, International Rescue Committee, June 2000, <http://www.theirc.org/mortality.htm>

<sup>18</sup> Michael Doyle, 'Kant, liberal legacies, and foreign affairs: Part 1.' *Philosophy and Public Affairs* 12 (1983), p 213-215. The Clinton administration, in declaring HIV/AIDS to be a threat to America's national security in 2000, recognised that the devastating effects of the virus have the potential to destabilise the hardest hit countries – with war possibly resulting.

## Health=wealth

The third justification the Alma-Ata declaration makes for the importance of health is its relationship with the economy. On a macro level, health is a major cornerstone of economic development, while at the micro level, health is essential to ensuring people can achieve a more "economically productive life." Increasingly, research is showing that a healthy population is an engine for economic growth. This new thinking supplements and, to a certain extent realigns, the traditional justifications of spending on health, which were rooted in humanitarian and equity arguments.

The classical view of the relationship between health and economic development is that wealth leads to health, with health an output of the development process. This view is supported by the broad correlation between average GDP and life expectancy at the national level. However, it is not possible to show that this correlation is fully explained by a causal link running from wealth to health. There is little evidence that periods of rapid health improvement follow periods of high income growth.<sup>19</sup> According to WHO research analyzing data from 1952-1992, income growth is less important to improving health outcomes than other factors, such as access to health technology. In the period studied, average per capita income increased from \$1530 to \$2560 (in 1985 international dollars). If the income-mortality relation had remained as it was in 1952, infant mortality would have dropped from 144 per thousand to 116 per thousand by 1992. In reality, however, it fell much more sharply to 55 per thousand, with factors other than rising wealth affecting the outcome.<sup>20</sup> Similarly, Lant Pritchett and Lawrence Summers find that 40 percent of differential mortality improvements between countries can be accounted for by differences in their income growth rates. Again, a significant proportion of health gains is left unaccounted for.<sup>21</sup> Richard Easterlin, meanwhile, argues that while richer societies are in a better position to improve health, it is not inevitable that they will do so. Health shifts are not prompted by the market; public health is an area of pervasive and ongoing market failures. Like economic growth, health improvements rely to a large extent on new technologies, exploited through new institutions, new investment and new labor requirements. However, "the nature of the new technology and associated requirements is quite different from those for economic growth." Again, it is a matter of choice at a societal level, with strong policies and political commitment having a profound impact on the health of a nation, whatever the size of their budgets.<sup>22</sup> The situation is similar with a number of other quality of life indicators. Economic growth can lead to improvements in these indicators, but sometimes it does not, and sometimes it only does so after a lag.<sup>23</sup>

<sup>19</sup> David Bloom and David Canning (2000) *op cit*.

<sup>20</sup> World Health Organization, *World Health Report 1999*

<sup>21</sup> Pritchett, Lant, and Lawrence H. Summers. "Wealthier is Healthier." 1996 *Journal of Human Resources* 31 (4): 842-68

<sup>22</sup> Richard A. Easterlin, "How beneficent is the market? A look at the modern history of mortality" *European Review of Economic History*, 3, 257-294, 1999

<sup>23</sup> William Easterly, "Life During Growth" *Journal of Economic Growth* 4 (3) September 1999: 239-275

Alongside the link from wealth to health runs a strong causal relationship *from health to wealth*. From this viewpoint, health is seen as a form of human capital and therefore an input into the growth process, as well as an output, with countries with educated, healthy populations in a better position to prosper, especially in a favorable policy environment.<sup>24</sup> The relationship running from health to wealth appears to operate through a number of distinct mechanisms, including:

- *Demography*: improvements in health cause a demographic transition from high to low fertility and mortality. However, the lag between declines in mortality and fertility results in a “baby boom” generation, which can kick-start a period of economic growth as it enters the workforce. This effect is called the demographic dividend and its realization is heavily reliant on policies that allow extra workers to be absorbed into the workforce.

East Asia provides a compelling example of how improvements in public health contributed to economic growth via demographic change. From the late 1940s onwards, largely through improved sanitation, safer water, and the development of broad-spectrum antibiotics and antimicrobials (for example, penicillin, sulfa drugs, streptomycin, bacitracin, chloroquine, and tetracycline were discovered and introduced between 1920 and 1940, and anti-malaria drug DDT was used from 1943), public health in East Asia improved dramatically. From the 1950s onwards, there were significant and sustained declines in infant and child mortality – infant mortality (the number of babies who die before their first birthday) in Asia as a whole dropped from 175 per 1,000 in 1950 to 52 per 1,000 in 1995.<sup>25</sup> A greater number of surviving babies created a disproportionately large cohort of children. As parents realized that they no longer needed so many children in order to attain an ideal family size, fertility subsequently declined, leaving the large cohort of children as a baby boom bubble, which, as it aged, slowly worked its way through the population structure.

When the baby boomers reached working age (the working-age population rose from about 55% of East Asia’s total population in 1965 to 70% in 2001), a beneficial policy environment which focused on education, labor market flexibility and openness to foreign trade enabled the region not only to absorb this swollen demographic group into the workforce, but also to reap the benefits of the increased capacity for economic production which the larger labor supply offered. Between 1965 and 1990, annual per capita income rose by over 6 per cent, and a third of East Asia’s ‘economic miracle’ has been attributed to its capturing of the demographic dividend.<sup>26</sup>

Demography also shows how health factors can act as a drag on economic growth. As the East Asian baby boomers age, the post-boom generation will be left to support an unprecedented number of elderly people. Dependency ratios

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<sup>24</sup> David E. Bloom and David Canning, 2000, “The Health and Wealth of Nations”, *Science*, February 18.

<sup>25</sup> Asian Development Bank (1997): *Emerging Asia: Changes and Challenges*. May 1997: 146

<sup>26</sup> David E Bloom and Jeffrey Williamson, “Demographic Transitions and Economic Miracles in Emerging Asia”, *World Bank Economic Review*, 1998.

(the ratio of non-working to working population) in Japan, which were around 45% in the 1990s, will rise to 86% in 2050,<sup>27</sup> and the OECD has forecast that per capita GDP will fall by 23 per cent in Japan by 2050 as a result of this demographic shift, with the country's share of world GDP falling from 7 per cent to 4 per cent over the same period. With health expenditures on the elderly more than four times greater than on the non-elderly, Japan's government deficits are forecast to increase by 3 per cent of GDP as it is forced to borrow to pay health bills.<sup>28</sup>

- *Education*: as fertility falls, parents are likely to invest more in educating their children to a higher level. Healthy children attend more school and are better able to learn when in school. Nutritional deficiencies, infectious diseases, disabilities, reproductive problems, injury, poisoning and substance abuse all have measurable effects on learning.<sup>29</sup> The benefits of tackling these problems greatly exceed the costs, in educational terms alone.<sup>30</sup> Most importantly, lower mortality provides greater security that investment in a child's education will not go to waste, and rising life expectancies offer a longer horizon over which to recoup the benefits of investments in education, thus acting as a fundamental driver of economic growth and human development.
- *The Labor Market*: healthier workers are physically and mentally more energetic and robust. They are more productive and earn higher wages.<sup>31</sup> They are also less likely to be absent from work due to illness (or illness in their family). Illness and disability reduce hourly wages substantially, with the effect especially strong in developing countries where a higher proportion of the workforce is engaged in manual labor.<sup>32</sup> Although it has been argued that surplus labor markets make sick workers easy to replace, a recent study on the effect of AIDS on nearly a thousand firms in sub-Saharan Africa found that replacing the skilled staff who add value to a company's output and contribute to *improvements* in a country's productivity presented a

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<sup>27</sup> United Nations Population Division: World Population Prospects: The 1998 Revision

<sup>28</sup> Dave Turner, Claude Giorno, Alain de Serres, Ann Vourc'h and Pete Richardson: The Macroeconomic Implications of Ageing in a Global Context. OECD Working Paper 1998 AWP 1.2.

<sup>29</sup> Jennifer Prah Ruger, Dean Jamison, and David E. Bloom, "Health and Development," in Michael Merson, B. Black, and Anne Mills, eds., *International Public Health: Diseases, Programs, Systems and Policies*, Aspen Publishers, forthcoming 2000 (Chap 12).

<sup>30</sup> Dean T. Jamison and J. Leslie, "Health and Nutrition Considerations in Education Planning: The Cost and Effectiveness of School-Based Interventions." *Food and Nutrition Bulletin* vol 12, no 3, 1990

<sup>31</sup> See David E. Bbom, David Canning, and Jaypee Sevilla, 2000, "Labor Force Dynamics, Human Capital, and Economic Growth," paper presented at the Summer Institute of the National Bureau of Economic Research, July.

<sup>32</sup> Ruger *et al.*

significant problem. Firms took an average of 24 weeks to replace professional staff who had died of AIDS, compared to 2 or 3 weeks replacing less skilled staff.<sup>33</sup>

Furthermore, improvements in public health can lead, as we have seen, to lower fertility and smaller families. Women are therefore freer to work and contribute to a country's economic productivity.

- *Investment*: healthy people expect to live longer and are more likely to save for retirement, increasing the amount of investment available to the domestic economy.<sup>34</sup> Particularly in developing countries which are just beginning their demographic transition, these increases in longevity can set off a savings boom; workers save more for retirement but the low life expectancy in the past means there are fewer retirees who are dissaving. Of course this is a temporary phase until the baby boomers have died and left behind a steady age structure, but temporary, in demographic shift terms, may mean fifty years or more and if a healthy banking infrastructure is in place, poorer countries can capitalize. This type of savings boom has already been seen in Taiwan, Japan and South Korea.

Healthy populations are also magnets for foreign direct investment, offering external investors the labor market strengths discussed above. Tourism, the world's biggest industry, is also affected by poor health. Perceptions of a country are vitally important for tourism and if a country's image is tarnished by health problems (as the recent foot and mouth outbreak in the UK has shown), its tourism industry inevitably suffers.

These factors can reinforce each other, creating 'virtuous spirals' that lead to a remarkable boost to development. Indeed, formal analysis suggests that, if two countries are compared, identical in every respect except one has a 5-year advantage in life expectancy, the healthier country will experience growth in income per capita that is 0.3-0.5 percentage points faster than its counterpart.<sup>35</sup> This analysis is backed up by empirical studies (see Appendix 1 for a review of studies). It is estimated that 30 per cent of the estimated per capita growth in Britain between 1780 and 1979 can be attributed to improvements in health and nutritional status.<sup>36</sup> However, there is nothing inevitable about these gains. In 1965, Latin America had a life expectancy of 60 years, compared to 59 years in East Asia. From 1965-1990, the growth rate of its working

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<sup>33</sup> Tyler Biggs and Manju Shah: *The Impact of the AIDS Epidemic on African Firms*. RPED Discussion Paper No. 72, Regional Program on Enterprise Development, The World Bank, January 1997

<sup>34</sup> See David E. Bloom, David Canning, and Bryan Graham, 2000, "Health, Longevity, and Life-Cycle Savings," paper presented at conference on Population and the Macroeconomy, Center for Population and Development Studies, Harvard University, September.

<sup>35</sup> See David Bloom and David Canning "The Health and Wealth of Nations," *Science*, February 18, 2000. See also World Health Organization, *World Health Report*, 1999, Geneva, 1999.

<sup>36</sup> R. W. Fogel, "New findings on secular trends in nutrition and mortality: some implications for population theory" in M. R. Rosenzweig and O. Stark (eds), *Handbook of population and family economics*, Vol 1a, Amsterdam, Elsevier Science, 1997: 433 – 481

age population was 0.5 percent higher than that of the total population; in East Asia, it was 0.7 percent higher. However, despite broadly similar demographic and health conditions, East Asia's economy grew explosively, while economic growth in Latin America was stagnant. However, Latin America's policy environment – with poor labor market policies, a lack of openness to world markets, and an inadequate education system – was quite different from East Asia's and did not offer the same favorable conditions for positive interactions to develop.<sup>37</sup> Latin America, in other words, squandered its chances.

In summary, health has a *potential* impact on wealth, and wealth has a *potential* impact on health. Improvements in either raise the possibility of improvements in the other. The policy environment then determines the success with which potential rewards are converted into actual gains. Policy-makers are therefore challenged by a new rationale for investing in health, but also by the need to produce a benign policy environment, in which the investment will gain most returns.

## Policy and priorities

Health is considered in the Alma -Ata declaration as a right, a social goal, and an economic imperative, with all three justifications providing different insights into the nature of health and its importance to the modern world. As a human right, attention is directed to the individual and especially to the poor, who suffer the bulk of the world's ill-health. As a social goal, the focus turns to the importance of good health for communities as a whole, with health essential to the accumulation of social capital, and broad-based social action the foundation of health improvements. Finally, the bi-directional links between health and wealth act as a reminder that, in the long-term, sustained economic growth is unlikely without sustained health improvements, and vice-versa.

For developing countries, this understanding of health provides challenges.

First, it underlines the centrality of political commitment to health improvements and the importance of implementation. The *process* of achieving health reform is arguably more important to the success of reforms than the *content* of reforms. Improvements in health require systemic change and are reliant on many factors. As Jane Thomason argues, health reformers often make the naive assumption that, when presented with an ostensibly rational reform program, governments will adopt the recommended policies and then have the capacity to achieve results; communities will become enthusiastic consumers of new services; and reforms will not have unintended consequences.<sup>38</sup> In practice, this assumption has not held true and is at the heart of Alma -Ata's failure to meet many of its objectives.

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<sup>37</sup> David E Bloom and Jeffrey Williamson, "Demographic Transitions and Economic Miracles in Emerging Asia", *World Bank Economic Review*, 1998; David E. Bloom, David Canning, and Pia N. Malaney, "Demographic Change and Economic Growth in Asia" *Population and Development Review 2000* (forthcoming)

<sup>38</sup> Jane A. Thomason, "Health Sector Reform in Developing Countries: A Reality Check" 1997. Available at <http://www.acithn.uq.edu.au/conf97/papers97/Thomason.htm>

Second, it asks policy-makers to make crucial decisions about the balance of their objectives in prioritizing health. Health is a critical problem for poor countries, but it is especially critical for the poorest people within these countries. They are most likely to see their human rights denied, in ways that damage their health. They are usually excluded from social services, while their ill health is itself a potent cause of their social exclusion. And their health is disproportionately important to their economic welfare. In a number of ways, therefore, improving the health of the poorest people can make a dramatic difference to their quality of life. However, because the poor have so many other problems and deficiencies, health improvements alone are not sufficient for them to escape poverty, but are just one of many necessary conditions. We will therefore first discuss the nature of the relationship between health and poverty, and then conclude by exploring the issues surrounding the implementation of health reforms, adopting a somewhat pragmatic viewpoint by asking the question "what will work?" rather than "what is best?"

## *Health and poverty*

### The health of the poor

Recent decades have seen development agencies tightening their focus on poverty reduction, with many adopting ambitious poverty reduction targets. The Development Assistance Committee (DAC) of the Organisation for Economic Cooperation and Development (OECD) has established the most widely recognized targets. These aim to halve the proportion of the world's population living in extreme poverty between 1990 and 2015, with extreme poverty defined as living on less than US\$1 per day. Simultaneously, many in the development community have been arguing that income levels provide an unsatisfactory measure of development success, with average GDP per capita criticized for failing to account for distribution of resources and for acting as an inadequate proxy for the wider concept of quality of life.<sup>39</sup> The Human Development Index (HDI), introduced in 1990 by Mahbub ul Haq and colleagues, reflects achievements in "the most basic human capabilities – leading a long life, being knowledgeable, and enjoying a decent standard of living" (UNDP, 1999). According to Sen, the measure was supposed to be "a measure of the same level of vulgarity as GNP – just one number – but a measure that is not as blind to social aspects of human lives as GNP is" (Sen, 2000). DAC has reflected this broader thinking by setting targets for a variety of other Quality of Life (QOL) indicators, as well as income. Its targets for global health, which are more specific and less ambitious than those in the Alma-Ata declaration, include "a reduction by two-thirds in the mortality rates for infants and children under age 5 and a reduction by three-fourths in maternal mortality, all by 2015" and "access through the primary health-care system to reproductive health services for all individuals of appropriate ages as soon as possible and no later than the year 2015."<sup>40</sup>

A heightened concern for the health of the poor is rooted in the knowledge that across the world, within and between countries, ill health disproportionately afflicts poor people. According to the World Health Organization, if those living in absolute poverty (less than 1 dollar a day) are compared to those who are not poor, the poor are estimated to have a five times higher probability of death between birth and 5 years of age, and a 2.5 times higher probability of death between the ages of 15 and 59.<sup>41</sup> Causes of greater ill health among the poor are manifold and inter-related. Poor nutrition, for example, weakens the body's defenses against infection. Infection, in turn, weakens the efficiency of absorption of nutrients. However, many of the illnesses that affect the poor are considered to be "avoidable" – in other words they are infectious diseases for which treatment or successful prevention programs exist. Five childhood conditions - diarrhea, respiratory infections, malaria, measles, and perinatal conditions -

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<sup>39</sup> David E. Bloom, Patricia H. Craig and Pia N. Malaney, *Quality of Life in Rural Asia*, New York: Oxford University Press, 2000 (forthcoming).

<sup>40</sup> Development Cooperation – efforts and policies of the members of the development assistance committee, 1999 Report. Jean Claude Faure, Chair of the Development Assistance Committee, Organization for Economic Co-operation and Development, 2000

<sup>41</sup> World Health Report 1999

are responsible for 21 per cent of all deaths in low and middle-income countries, whereas less than 1 per cent of deaths in high-income countries arise from these causes. In addition, the poor face a series of new health problems. Behaviors such as drinking alcohol, smoking tobacco, and the abuse of drugs are increasingly taking their toll. Health systems are facing increasing occurrences of expensive and difficult to treat illnesses. Accidents and violence are also claiming larger numbers of lives. Road traffic accidents, self-harm, deliberate violence and war are growing in importance and by 2020 could rival infectious diseases worldwide as a source of premature mortality.<sup>42</sup>

The fact that health standards are now declining for many people is beginning to have a political impact. Alan Lopez, Coordinator of WHO's Epidemiology and Burden of Disease Team, comments: "healthy life expectancy in some African countries is dropping back to levels we haven't seen in advanced countries since Medieval times."<sup>43</sup> There is evidence that policy-makers are listening to, and are alarmed, by this message. In January 2000, the UN Security Council held a debate on the impact of AIDS on peace and security in Africa. It was the first time in 50 years that a health issue had been considered a security issue. In July 2000, meanwhile, the Group of Eight (G8) leaders signed up to new disease targets, pledging to cut deaths from tuberculosis (TB) by 50 percent, the burden of disease associated with malaria by 50 percent, and the number of young people with HIV by 25 percent – all by 2010.<sup>44</sup> The final declaration of the UN Millennium Summit contained similar targets, committing Heads of State and governments to reducing maternal mortality by three quarters; under five mortality by two thirds; and reversing the spreads of AIDS, malaria and other major diseases – all by 2015. The complacency of the late twentieth century – where many assumed that diseases like TB would continue retreating, as health standards steadily increased – has been shaken. There is therefore a renewed focus on understanding the importance of health to the poor, the ways in which poor people's health problems can be tackled, and the likely impact of improved health on poverty levels.

## Why health is so important to the poor

Amartya Sen has characterized poverty as "capability deprivation," where a person lacks the "substantive freedoms" he or she needs to lead "the kind of life he or she has reason to value."<sup>45</sup> This freedom has two facets: opportunity and security. Opportunity requires education and a range of political and economic freedoms. In Latin America, for example, a worker with 6 years of education earns an average of 50 per cent more than

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<sup>42</sup> C J L Murray and A D Lopez (eds) *The global burden of disease: A comprehensive assessment of mortality and disability from diseases, injuries and risk factors in 1990 and projected to 2020*. Cambridge, Harvard School of Public Health on behalf of the World Health Organization and the World Bank, 1996 (Global Burden of Disease and Injury Series, Vol. 1)

<sup>43</sup> "WHO Issues New Healthy Life Expectancy Rankings: Japan Number One in New 'Healthy Life' System" Press Release, World Health Organization, 4 June 2000, available at <http://www.who.int/inf-pr-2000/en/pr2000-life.html>

<sup>44</sup> Gillian Tett, "The G8 Summit: G8 leaders sign up to anti-disease targets" *Financial Times*, 24 July 2000, p3

<sup>45</sup> Amartya Sen, *Development as Freedom*, Oxford, Oxford University Press 1999

someone who has not attended school. The gap increases to 120 per cent for those with 12 years of education (i.e. completing secondary school), and exceeds 200 per cent for those with 17 years of education (i.e. completing a university diploma).<sup>46</sup> The ability to take advantage of opportunities, however, is contingent on the degree of risk an individual faces. As Anthony Giddens argues, risk is the mobilizing dynamic of a modern industrial society, but also a negative and uncontrollable force that inhibits action.<sup>47</sup> In other words, where there is insufficient insurance against future ill health or where health services are inadequate, individuals may be less likely to undertake the "positive" risk associated with entrepreneurial activity. Given that differing levels of entrepreneurial activity may account for as much as one third of the variation in economic growth experienced by countries, the security offered by improving health standards may have a significant impact on the opportunities that people enjoy.<sup>48</sup> This is especially the case for the poor, for as the World Bank has noted, "the body is poor people's main asset, but one with no insurance."<sup>49</sup> Ill health therefore imposes a higher level of risk on the poor. When their principal asset is struck down by disease, injury or some other form of ill health, they cannot earn the money needed to provide themselves (and usually others too) with food or medicines. In other words, a health shock is more likely to be catastrophic.

Health also has less visible effects on the well-being of the poor. Ill-health may leave a person able to work, but reduce their productivity, shorten their working lives, and increase the numbers of days lost to illness.<sup>50</sup> In Indonesia, for example, men with anemia (where there is a decreased ability of the red blood cells to provide adequate oxygen supplies to body tissues) were found to be 20 per cent less productive than men without it. When the anemic men were treated with iron their productivity increased nearly to the levels of the non-anemic men.<sup>51</sup> There is also a clear relationship between health and success in education. Healthy children are able to learn better, and become better-educated (and higher earning) adults. In a healthy family, a child's education is less likely to be interrupted due to their ill health or the ill health of their family.

The effects are also felt at a macro level. Econometric estimates of the relationships between health, economic growth, income distribution, and poverty allow one to simulate the consequences of recent and foreseeable improvements in life expectancy on poverty. The simulations cover 31 countries for which sufficient data are available, with a combined population of 3.1 billion as of 1990. They show that if life expectancy had been 10% higher in 1990, this would have had a strong positive effect on income growth, and a modest negative effect on income inequality over the following 25 years.

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<sup>46</sup> Inter-American Development Bank, *Facing up to Inequality in Latin America*, Washington DC, IDB, 1999

<sup>47</sup> Anthony Giddens, The BBC 1999 Reith Lectures  
[[http://news.bbc.co.uk/hi/english/static/events/reith\\_99/default.htm](http://news.bbc.co.uk/hi/english/static/events/reith_99/default.htm)]

<sup>48</sup> Global Entrepreneurship Monitor 1999

<sup>49</sup> "Poverty Trends and Voices of the Poor," The World Bank Group, 1999 p.35.

Available at <http://www.worldbank.org/poverty/data/trends/index.htm>

<sup>50</sup> World Bank, *World Development Report 1993: Investing in Health*. Oxford University Press, 1993

<sup>51</sup> World Health Report, 1999

Both effects serve to reduce poverty, with the estimates suggesting these health improvements alone would lift 30 million people out of absolute poverty by 2015. Two thirds of these would have lived in India and a third in Africa, mirroring the huge importance of health for regions at an early stage of development.<sup>52</sup> This analysis does not provide a guide for achieving this improvement, however, leaving unanswered the crucial issues of whether poverty reduction is best achieved via policies aimed at achieving broad-based health improvements or health improvements directed specifically at the poor.

## Poverty Traps

Ill health not only affects the poor disproportionately, it also causes poverty. A family struggling to survive economically cannot afford to be ill: not only because they cannot afford medicine and health care, but because of the loss of earning power that illness causes. The World Bank reports that in an analysis of case studies of people and households that have become poorer, the single most common reason was illness, injury, or death.<sup>53</sup> A health crisis can quickly reverse any progress the poor have made in moving up from subsistence. In one study from North-West Bangladesh, for example, eight out of twenty-one TB patients had been forced to sell land or livestock to meet the costs of their treatment and compensate for loss of income.<sup>54</sup> In Uganda, meanwhile, eight out of ten TB patients involved in paid work had either lost their job or closed their businesses, while five out of thirty-four had been forced to remove their children from school.<sup>55</sup> Developed societies have generally, through insurance or welfare, devised mechanisms for pooling these risks across communities. Poverty also encourages poor people to make sub-optimal choices that have damaging effects on their health. For example, low income forces people to the bottom of the “energy ladder”, where wood, dung and other biomass are used, rather than, say, liquefied petroleum gas, which requires often substantial deposits for canisters and up-front expenditures for cooking devices. There is a clear association between the use of biomass in traditional ways and respiratory illness and heart failure.<sup>56</sup> Low income and poor health, therefore, combine to form a poverty trap, with the use of biomass correlated with both low income and high fertility rates.<sup>57</sup>

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<sup>52</sup>David Bloom, David Canning, Bryan Graham, and Jaypee Sevilla. “Out of Poverty: Moving Beyond the OECD/DAC Targets,” January 2000.

<sup>53</sup> The Voices of the Poor, available at <http://www.worldbank.org>

<sup>54</sup> R. A. Croft and R. P. Croft, “Expenditure and loss of income incurred by tuberculosis patients before reaching effective treatment in Bangladesh” *International Journal of Tubercular Lung Diseases* 2(3) 1988, pp. 252-254

<sup>55</sup> P. R. Saunderson, “An Economic Evaluation of Alternative Programme Designs for Tuberculosis Control in Rural Uganda” *Soc. Sci. Med.*, Vol. 40, no. 9 1995, pp. 1203-1212

<sup>56</sup> Kirk R. Smith, *Biofuels, Air Pollution, and Health—A Global Review*. New York: Plenum Press 1987

<sup>57</sup> David E. Bloom, Patricia H. Craig, Pia N. Malaney, *The Quality of Life in Rural Asia*, Oxford University Press, forthcoming

Poverty traps happen at a regional as well as a household level. Widespread illness reduces the economic potential of an area. The World Health Organization estimates that the total indirect cost of lost productivity in Thailand as a result of morbidity associated with tuberculosis in 1995 amounted to \$57 million, while John Gallup and Jeffrey Sachs suggest that controlling for factors such as tropical location, colonial history, and geographical isolation, countries with severe malaria had income levels in 1995 of only 33% of countries without malaria, whether or not the countries were in Africa.<sup>58</sup> Africa's geography, as well as inhibiting agricultural productivity, creates a hazardous disease ecology, while ill health may have contributed to Africa's high dependency burden and its high desired family sizes. Between 1965 and 1990, Africa's annual income growth was 4.3 percent lower than East and South-East Asia's. Almost all of this difference is explained by differences in health, age structure, and geography.<sup>59</sup>

Russia, meanwhile, provides a recent example of a downward spiral of ill health pushing a developed country into a poverty trap. The transition to a market economy, starting in the early 1990s, caused economic and political instability, as well as plummeting incomes. This occurred alongside a dramatic fall in life expectancy, accounting for 1.4 to 1.6 million premature deaths during 1990-95. Russian male life expectancy in the mid-1990s was below the average for many *developing* countries, severely affecting the work force. Contributing to this are a further deterioration of an already poor diet, increased alcohol consumption, mental stress, and a related rise in accidents and injuries. Meanwhile, negative income growth bit into public health care spending, bringing chaos to an already overstressed health system.<sup>60</sup> Poor health can thus act as a significant drag on an economy – and its ability to generate the wealth that can mitigate its effects.

## Helping or hindering

The 1993 World Development Report was a pioneering publication, presenting for the first time a complete, coherent, and well-disseminated case for the application of rational decision-making to the allocation of resources within the health sector. It noted the unevenness of health gains in different countries and also considered the importance of disability, as well as premature mortality. It measured the global burden of disease in disability-adjusted life years (DALYs) and detailed the distribution of the loss of DALYs by cause and region. Using this data and data on the quantity and distribution of public health-related expenditure, it concluded that world health spending was misallocated, inefficiently applied, and substantially directed towards the affluent, rather than the poor. Too much government money, it argued, was spent on advanced tertiary health

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<sup>58</sup> "Malaria, Climate, and Poverty" CAER paper 48, available at <http://hiidgate.harvard.edu/projects/caer/pubs.html>

<sup>59</sup> David E. Bloom and Jeffrey D. Sachs, "Geography, Demography, and Economic Growth in Africa," *Brookings Papers on Economic Activity*, 1998 vol 2, 207-295

<sup>60</sup> Charles M. Becker and David E. Bloom, "The Demographic Crisis in the Former Soviet Union: Introduction," *World Development* 26 (11) 1998, pp. 1913-19.

facilities. The report estimated that if half the money spent on advanced facilities was re-allocated, developing countries could reduce their burden of disease by 25 per cent, saving the lives of 9 million infants alone. Five policy areas were identified as being especially important for low income countries: improved primary schooling, especially for girls; investment in public health activities with high cost-effectiveness, such as vitamin A and iodine supplements, or immunization programs; investment in district health care infrastructure to deliver a range of basic clinical services; reduction of waste, especially through the more effective use of pharmaceuticals; and the decentralization of health systems, to allow for greater community control and to migrate financing to the community level.<sup>61</sup>

Simple health interventions still appear highly cost effective. WHO estimates that 8 or 9 of the leading 10 causes of ill-health for under 5 year olds could be successfully tackled for less than \$100 per DALY saved.<sup>62</sup> However, health systems, defined by WHO as “all the activities whose primary purpose is to promote, restore, or maintain health,” seem generally ineffective in delivering health benefits. WHO reports little independent connection in developing countries between health status and health inputs such as doctors or hospital beds, total health care expenditure, or public spending on health. There are widespread disparities in outcomes from different levels of health expenditure. Pakistan and Uganda, for example, spend similar amounts per person on their health systems, and have similar income levels. However, a child born in Pakistan has a disability-adjusted life expectancy (DALE) of 55 years; in Uganda, DALE at birth is only 32.7 years.<sup>63</sup> Meanwhile, anecdotal evidence shows the inadequacy of poor people’s interaction with health systems. The World Bank’s consultation with the poor identifies corruption and rudeness of health staff as two key reasons for not using government health facilities. Travel to the nearest health center is also seen as too expensive and time consuming, creating a disincentive for people to seek out treatment. Waiting times, as well as travel times, are often longer than a family, dependent on one or a few earners, can afford. There are often drug shortages, or drugs that are meant to be free are being charged for, or are too expensive. Costs are prohibitive. Families often sell livestock and property to get healthcare – and even then, they may not have enough money. Poor people complain of discrimination at health care centers, and they have experience of poor quality treatment, and ineffective treatment.<sup>64</sup> In many cases, health services are both ineffective and expensive, draining scarce resources for little result.

Within this context, policy-makers and health professionals must ask piercing questions about priorities for health-related expenditure; about the effective implementation of new programs and health sector reforms; and about the nature of the failings of existing health services. Many primary health care systems appear to have failed because they have been inadequately conceptualized. They have been designed with little understanding of the needs of the population they are supposed to serve, and offer poor

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<sup>61</sup> The World Development Report 1993 – Investing in Health. World Bank, Washington, 1993.

<sup>62</sup> WHR 2000

<sup>63</sup> WHR 2000

<sup>64</sup> *Assessing Aid – What works, what doesn’t, and why.* A World Bank Policy research report, Washington 1998

quality services, because little attention has been paid to judging their effectiveness. So as well as being “results-driven”, the health sector needs to be “customer-focused”. As with any service, a failure to listen to the expressed needs of users is the most common cause for failure. Paul Farmer, for example, has vehemently criticized the argument that it is not cost-effective to cure multidrug resistant tuberculosis in poor countries, when TB is “no more untreatable in urban Peru than in New York.” In achieving high success rates, the right treatments were important, of course, “but a comprehensive, convenient, and user-friendly approach clearly had an impact too.”<sup>65</sup> Health reforms are critically reliant on public trust and there is little reason for the public to trust when it knows it is getting a raw deal.

Potentially, we are entering a period where expenditure on health in developing countries will increase – indeed this is already happening in some regions, such as Asia, where expenditure on health and education increased between 1986 and 1996 at annual rates of almost 6 percent in real terms.<sup>66</sup> Much of this money will come from donors, reacting to a renewed sense that health is the key to many development problems. Amidst considerable political skepticism that extra money will be well spent, policy-makers and practitioners bear an enormous responsibility to start providing coherent but visionary plans for the development of a broad health agenda. They must understand the process of reform and be accountable for delivery, and not just ideas.

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<sup>65</sup> Paul Farmer, *Infections and Inequalities – the Modern Plagues*, University of California Press, 1999

<sup>66</sup> Sanjeev Gupta, Benedict Clements, and Erwin Tiongson, "Public Spending on Human Development" *Finance and Development* 35 (3) 1998, pp. 10-13.

## *From theory to practice*

### Outcomes

Health needs to be judged in terms of outcomes not inputs: judged by the improvement in health delivered by any new program or health reform, rather than by the financial and political resources lavished on launching the program or reform. This causes problems for many of the agencies currently devoted to improving health. Historically, many ministries of health have tended to judge their effectiveness by the number of new facilities they have constructed, the number of health professionals employed, or their success in cutting waiting lists or improving access to services. They have not tended to judge effectiveness through consulting hard data on a population's improving health standards, or by analysis of which inputs have produced which health outputs. Equally, health ministries have tended to operate in isolation from other government departments. Their expertise has lain mostly in service delivery and the provision of facilities, such as hospitals. They generally have less skill in financing issues, regulation, and incentives – and no mandate to consider wider strategies for improving health outcomes. Similarly, many donors have been guilty of seeing health in isolation from other development issues, and of focusing on inputs rather than outputs of development activity. The World Bank, for example, has admitted favoring loan quantity over loan quality and has only recently undertaken reforms aimed at focusing on 'development results'. Finally, donors have had a poor understanding of the fungibility of health spending. In a recent World Bank survey, estimates showed that a dollar of aid spending *reduced* education and health expenditures by 6.5 cents, even though an average of 8.7 cents from the aid dollar had been devoted to education and health spending. In other words, developing country governments have often used donor funds to shield deep cuts in social spending that may even reduce social security budgets.

The World Bank's assessment of the effectiveness of development assistance highlights the importance of broad efforts to develop public services that are responsive to the needs and wishes of a country's population. "The most critical contribution of projects is not to increase funding for particular sectors," it argues, "but to help improve service delivery by strengthening sectoral and local institutions. The knowledge creation supported by aid leads to improvements in particular sectors, whereas the finance part of aid expands public services in general."<sup>67</sup> Improving health provides a vital goal for this broad cross-governmental process. Health will not improve without devoted champions within government and political support at the highest level. It relies on action well beyond the health sector, with gender status, education, income, and nutrition all acting as vital health determinants. Finally, it is an issue at the heart of democracy, with health and education topping the list of priorities of many, if not most, electorates. Delivering sustainable benefits requires a health priority to be embedded in government at all levels. Results are only achievable in the long term, with 5-10 years

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<sup>67</sup> *Assessing aid – what works, what doesn't and why*. A World Bank Policy research report. Washington 1998.

the minimum time frame for meaningful reform. Short-term political initiatives are unlikely to deliver results, as senior politicians move between ministries both between and within electoral cycles. However, champions are still essential, as advocacy at the highest levels is vital.

## Success and failure

A focus on health outcomes requires consideration of why some healthy policies, reforms, and projects do better than others. There are a number of plausible factors. The quality of an idea may be higher, with an initiative distinguished by a clear 'mission' and based on adequate data. An initiative can be properly funded or starved of money, altering its chances of success, whatever the quality of its design, while a well-designed, well-funded initiative can still fail if there is insufficient capacity to deliver results or if it has failed to take account of broader social or economic features. However, perhaps most importantly, change in health systems seldom occurs unless the process of change itself is managed. Measures to counter institutional inertia and to involve stakeholders constructively are necessary. Research from the Harvard Business School, for example, argues that those driving change are usually focused almost exclusively on resources, in terms of people, equipment, and time. However, resource analysis is only a small part of the story. Processes – patterns of interaction, coordination, communication, and decision making – must be reformed (and in some cases revolutionized) if real change is to occur. Values, meanwhile – the standards by which priorities are set and decisions are taken – are vital if change is to ripple through an organization and different ways of operating are to be accepted.<sup>68</sup> Finally, the pace of the reform process is critical. Bold initiatives need realistic timetables, a clear sense of what can be achieved, and a willingness to alternate "radical change with more organic manifestations."<sup>69</sup>

The difficulty in achieving reform requires that implementation be studied with the same analytical intensity as policy design. Improved data collection methods are required to disaggregate the different factors that led to a reform's success or failure, while there must be increased attention to the dissemination of research findings. Currently, there are huge gaps between the availability of data and its use for reform. More effective dissemination would aim to "sell" research findings to relevant audiences, underlining the general importance of data-based decision making and the specific relevance of a particular finding to a health issue. Beyond the use of data, the management and organization of the reform process is currently under-explored. There is a significant body of expertise in the world's business schools in this area and, while there are clear differences between the operation of private, non-profit and public sector organizations, there is clear potential for cross-over of management expertise.<sup>70</sup>

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<sup>68</sup> Clayton M. Christenson and Michael Overdorf, "Meeting the challenge of disruptive change," *Harvard Business Review*, March-April 2000, 66-76

<sup>69</sup> Eric Abrahamson, "Change without pain," *Harvard Business Review*, July-August 2000, 75-79

<sup>70</sup> See, for example, for some work applying business ideas to the educational field, "Does six sigma belong in sixth grade?" in *Strategy + Business*, 19, second quarter 2000

Any broad-based effort to improve health relies on a range of partnerships, between public, private and civil society actors. These are necessary at an international level (for example in vaccine initiatives) , where the sheer scale of the investment of capital, time, and expertise needed is beyond either the public or private sector, and where the involvement of non-profit organizations has been vital to moving health issues up the agenda. Similarly, at the national level, few developing country governments have the capacity to make the necessary improvements to health on their own. Private expenditure on health is typically high in developing countries and is close to or over 50 percent in many countries. Private sector provision is also common. NGOs have a vital role to play, especially in areas where government is weak, either centrally or on the ground, and where new types of services need to be pioneered. In other words, partnerships are likely to be essential in almost all settings.

In April 2000, the Harvard School of Public Health and the Global Health Council met to examine the organizational and ethical challenges of partnerships, especially at international levels.<sup>71</sup> Workshop participant James Austin identifies seven organizational challenges or the “seven c’s of strategic collaboration”: clarity of purpose; congruency of mission, strategy, and values; creation of value; connection with purpose and people; communication between partners; continual learning; and commitment to the partnership.<sup>72</sup> However, few partnerships pass these tests and partners often have such divergent attitudes that cooperation proves impossible to achieve. Techniques to find common ground are therefore needed. Scenario analysis, for example, helps stakeholders to identify a range of “possible futures” and to explore the consequences of successful reform, failed reform, and maintaining the status quo. The technique helps stakeholders establish common ground, develop an understanding of the complexity of the situation, and explore the parameters that define the action of other parties. Above all, scenario analysis is a powerful way of developing an understanding of a health “big picture” at the national level; of breaking deadlock and cooling adversarial situations; and of stimulating the dialogue that is fundamental to successful partnerships.<sup>73</sup>

More detailed work to mobilize stakeholders and understand the policy process requires the use of applied political analysis, which helps define and manage the policy process, in order to achieve more effective implementation. There are now tools available to help with this work, such as the Windows-based software program, PolicyMaker.<sup>74</sup> PolicyMaker uses political mapping to analyze the policy situation, building a political map that shows the power and influence of political actors, and the role of supporters and non-mobilized groups. It then uses political risk analysis to provide a quantitative assessment of political feasibility, and suggests political strategies that alter the probability of an initiative’s acceptance and implementation. PolicyMaker has been used to build consensus on health sector reform in Zambia; to strengthen the Health

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<sup>71</sup> Michael Reich, “Public-private partnerships for public health”, *Nature Medicine* 6: 3-7, June 2000.

<sup>72</sup> Austin J, *The Collaboration Challenge: how non-profits and businesses succeed through strategic alliances*, Jossey-Bass Publishers, San Francisco, 2000

<sup>73</sup> See for example the work of the Global Business Network ([www.gbn.org/public/gbnstory/scenarios/index.htm](http://www.gbn.org/public/gbnstory/scenarios/index.htm))

<sup>74</sup> <http://www.polimap.com/>

Reform Group in the Dominican Republic; and to explore reform of the national health system in Mexico. According to Michael Reich, part of the software's development team, the use of PolicyMaker has highlighted the inherently political nature of achieving health reform; the need for improved political skills and strategies from those charged with managing the input of interest groups, the bureaucracy, technocrats, and donor agencies; the core challenge of ensuring political leadership and carrying leadership through electoral cycles; and, finally, the importance of good timing, to ensure that health issues are dealt with by governments when they have a clear mandate and sufficient political capital to achieve results.<sup>75</sup>

## Knowledge for health

Knowledge is at the heart of improving health, and strategies to enhance the development and deployment of knowledge are therefore vital to effective implementation. Knowledge is important at many levels. Internationally, it is essential to raising awareness of health, after a period when spending on health has been stagnant, with bilateral donors only spending about 2.1 percent of their budget on health and a further 6.6 percent on water and sanitation.<sup>76</sup> It is also vital to the development of new health technologies, especially those that tackle the problems of poor people, an area where the market currently makes exceptionally poor provision. At a national level, it allows for decisions regarding the allocation of resources and the design of reform programs. Without sufficient human capital at a national level, major health reform will prove impossible to achieve. Indeed, resources should be devoted to investment in human capital and to knowledge generation simultaneously with, or even in advance of any reform effort.<sup>77</sup> Finally, knowledge about health is critical to individuals and families. In the Indian state of Kerala, for instance, higher than expected health outcomes coincide with high levels of education and well-coordinated efforts to promote health messages to the population. Some of these efforts are indirect. For example, the state has an unusually highly developed grassroots science communication organization, the Kerala Sastra Sahitya Parishad (Kerala Science Literature Association (KSSP)), which was started in 1957 by a group of science writers and activists, and now has 60,000 members. By promoting awareness of science, it has helped develop an understanding of health and the nature of infectious disease. It has also worked on a series of environmental issues. Half a million homes have installed its high-efficiency wood burning stoves, with consequent impact on indoor air quality and respiratory health, especially of women and children.<sup>78</sup> The experience of Kerala is consistent with

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<sup>75</sup> Applied Political Analysis for Health Policy Reform, Michael Reich, *Current Issues in Public Health 1996*

<sup>76</sup> UK Department for International Development, "International Co-operation in Health", *World Health Opportunity Meeting Report*, London 13 May 1999, available at <http://www.riverpath.com/library/library.html>

<sup>77</sup> A Decade of Health Sector Reform: What Have We Learned? Data for Decision Making Issue Brief, Data for Decision Making, 2000

<sup>78</sup> Somak Raychaudhury, "Priorities and problems in science communication – an Indian perspective" Unpublished paper presented to the Department for International

the experience of Western countries, where a growing awareness of how diseases were transmitted coincided with rapid health improvements, not because treatments immediately became available, but because of changes in people's behavior.<sup>79</sup>

The development of knowledge is not synonymous with the provision of information, however. For example, awareness of AIDS is now high in sub-Saharan Africa, with the vast majority of people having heard of the disease in countries for which data are available. Many people also understand that the disease is sexually transmitted. However, this has little impact on the course of the epidemic, in stark contrast to the experience of developed countries. Gay communities were able to deploy knowledge to great effect, with condom use, in particular, preventing the epidemic from reaching the endemic levels now common across sub-Saharan Africa.<sup>80</sup> This disparity is grounded in the fact that the development and deployment of knowledge is not a passive process. Information about AIDS circulated around gay communities, but this information was translated into knowledge capable of combating the epidemic by an explosion of organizations dedicated to working on AIDS and by a significant shift in culture, whereby certain forms of behavior, that had previously been acceptable, were no longer considered legitimate. This behavioral change was enforced not through formal rules, but through a changing series of informal constraints.

The process by which knowledge is generated, shared and used by organizations is equally complicated, and far-reaching institutional change is therefore needed if organizations are to use knowledge to contribute significant improvements in health status. Douglass North defines institutions as the constraints, devised by people, which define interactions between people. Institutions can be formal, such as rules, or informal, such as conventions or codes of behavior. Institutions are distinguished from organizations, groups of individuals united by a common purpose and pursuing a common objective, with institutions providing the framework within which organizations operate. Institutions are the rules of the game and the way the game is played. Organizations, like individuals, devise strategies within the environment that institutions create.<sup>81</sup>

Knowledge about health brings the production of health under deliberate institutional control, and its impact is both modern and dramatic. Until the turn of the 20<sup>th</sup> century, for example, TB was accepted as a disease common to rich and poor, with an estimated

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Development and British Council, International workshop on science communication, 2000

<sup>79</sup> Richard A. Easterlin, "How beneficent is the market? A look at the modern history of mortality" *European Review of Economic History*, 3, 257-294, 1999. See also: David E Bloom, River Path Associates and Karen Fang (2001): *Social Technology and Human Health*. Concept paper for UNDP Human Development Report 2001: Channeling Technology for Human Development.

<sup>80</sup> David E. Bloom and Sherry Glied, 'Projecting the Number of New AIDS Cases in the United States', *International Journal of Forecasting*, vol. 8, November 3, 1992, 339-366. John C. Caldwell, "Rethinking the African AIDS epidemic," *Population and Development Review* 26 (1): 117-135 (March 2000)

<sup>81</sup> Douglass C. North. "Institutions, Institutional Change and Economic Performance", Cambridge: Cambridge University Press, 1990

10% of all deaths in the United States due to the disease. However, in 1882 Robert Koch identified the tubercle bacillus and, just 11 years later, a report by Dr Hermann Michael Biggs to the New York City Board of Health issued TB recommendations based on the theory that the disease was both communicable and preventable. This knowledge led to rapid formal and informal institutional change. New organizations were created to service new testing and reporting regimes, while the consumptive hospital movement marked a radically new way of tackling disease. Behavioral change was also marked. Hospitals carried signs saying “spit is poison”, while notices in public places warned that spitting on the floor spread disease. NGOs sprung up to further disseminate these messages and support new forms of organizations. In 1904, the National Association for the Study and Prevention of Tuberculosis was founded, later renamed the National Tuberculosis Association and now known as the American Lung Association. Mass fundraising efforts show the broad nature of the campaign. A campaign to sell Christmas seals was so widely promoted that it was reported to have permeated many aspects of American social life, with the National TB Association reporting that “no nationwide program has rested for so many years on so broad a base made up of millions of small gifts.” In 1946, at least 10 million people are thought to have bought Christmas seals. US TB cases fell by a factor of ten from 1900 to 1920, and again between 1920 and 1950.<sup>82</sup>

The importance of institutional innovation, as a precursor to the development of new forms of organization and new norms of behavior, is seen across most, if not all, successful health reforms. When Merck discovered the effectiveness of the drug Ivermectin, previously used as a highly profitable veterinary drug, in the prevention of river blindness, it was faced with a dilemma. While the drug could be expected to have a significant impact on the global disease burden, there was no economically viable market for its distribution. The company decided to donate the drug, but only after it had fought and won internal battles, and faced criticism from the pharmaceutical industry, worried that a precedent was being set. It then had to work with the public sector, in order to create an understanding of the benefits of the donation and then the structures through which the drug could be distributed. Indeed, the early years after the donation proved disappointing and it was only after investing many years in the Mectizan Program, which attempted to create the infrastructure needed to use the drug, that the company was able to ensure that the product was widely used, to the point where the disease is now targeted for eradication. This experience is being repeated with other drug donations and, as is shown by the recent bitter controversy over access to AIDS drugs, there is still considerable institutional uncertainty about the respective rights of intellectual property holders, rich and poor patients, national governments, and multinational organizations.

The public health movement can perhaps best be characterized as an ongoing effort to achieve institutional change, build new types of organizations, and thereby deliver health benefits. As Richard Easterlin observed in his study of health improvements in Victorian England, scientific knowledge provided the impetus to build networks of health boards,

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<sup>82</sup> Dan Ruggiero, “A Glimpse at the Colorful History of TB: Its Toll and Its Effect on the U.S. and the World,” in *TB Notes 2000* U.S. Department of Health and Human Services Centers for Disease Control and Prevention, no 1 2000

give them unprecedented powers, and to gradually change the way that communities acted in order to protect their health. According to public health officer Sir John Simon, by 1890, "on the new foundations of Science, a new political superstructure has taken form."<sup>83</sup> Institutional innovation was the route by which lasting health benefits were delivered.

## Achieving change

Institutional innovation is reliant on the exceptional efforts and personal commitment of a small number of people, who have been termed "social entrepreneurs". Social entrepreneurs are devoted to increasing the value generated outside the private sector. The Grameen Bank, for instance, was founded by Professor Muhammad Yunus, with the belief that "millions of small people with their millions of small pursuits can add up to create the biggest development wonder." Grameen now has 2.3 million borrowers, 94% of whom are women, and is the largest rural financial institution in Bangladesh. Repayment is enforced by local communities and default rates are lower than in the commercial sector. In addition, borrowers commit themselves to "16 decisions", covering the need to improve standards of housing, nutrition, family size, health, education, sanitation and investment. Grameen has also trained 4000 people from 100 countries, as well as establishing 223 replication programs in 58 countries. Yunus's commitment, in other words, has led to widespread change in the way people live – change that goes far beyond access to small amounts of credit.<sup>84</sup>

In Zambia, meanwhile, a new government was elected in 1991 on a reform platform and Dr Katele Kalumba committed the government to a radical overhaul of the health system, described in a new Strategic Health Plan. The heart of the plan was to create "a society in which Zambians create environments conducive to health." Again, the commitment has led to institutional change and organizational renewal. The health care system has become more client focused. Local health centers, for example, are being restructured to meet the patient's perceived needs and encourage fewer to bypass a local center in order to seek care directly from a more distant and expensive hospital. Equally, relationships with donors have changed. Previously, donors made funding decisions at the project level, because of a lack of leadership from national government. Now the government sets clear rules for donors, to which all donors have agreed. Only areas that are included in the strategic plan can be funded.<sup>85</sup> These issues are not specific to Zambia. The WHO, for example, has recently criticized the primary health care movement for its focus on the presumed needs of service users, rather than people's actual demand for care. It heralds a "third generation" of health reforms, that is demand rather than supply led, as governments move away from provision towards

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<sup>83</sup> Richard A. Easterlin, "How beneficent is the market? A look at the modern history of mortality" *European Review of Economic History*, 3, 257-294, 1999

<sup>84</sup> "A short history of Grameen Bank", Grameen Bank, 17 July 2000, <http://www.grameen-info.org/bank/hist.html>

<sup>85</sup> "Turning the Tables for Zambia's Health System," in *Investing in People The World Bank in Action*, The World Bank, February 27, 1996

supervision and financing, and money follows patient needs rather than organizational structures.<sup>86</sup>

Successful social entrepreneurs tend to have a number of characteristics. First, they need to have a clear understanding of the problem and have a vision of potential solutions. They need to express this vision and be able to market solutions to stakeholders. They must have an understanding of what motivates people and be able to structure incentives to be able to achieve results. They are also prepared to take risks, accept political change, and innovate. Perhaps most importantly, they need skills in creating and maintaining new alliances, *de facto* structures to deliver change that can become more concrete as the change process develops.<sup>87</sup> Finally, it is essential not to underestimate the importance of advocacy. As Barry Bloom, Dean of the Harvard School of Public Health recently said: "there is no more heroic person on this planet than a New York City public health worker, or a public health TB worker going into crack dens to provide DOT [directly observed therapy], or people providing vaccines to children in the most remote regions of the world. Yet, there is frighteningly little understanding or appreciation of public health in the public consciousness... The lack of appreciation of the importance of public health is not the fault of societies. Every one of us has to make our case... and we have not done it well." However, leadership and advocacy should not be an excuse for unwarranted certainty. Recently, the director of WHO's Global Programme on Tuberculosis claimed: "we have the tools, strategies and medicines to defeat the epidemic in all parts of the world. And we know the precise path we must take to accomplish this." According to Bloom: "there is no one that I have met in the field of tuberculosis that has confidence that that statement is true."<sup>88</sup>

Innovation is also driven from below. In recent decades, an explosion of non-governmental and community-based organizations have acted as effective advocates for health and have also delivered pioneering programs. In Ceara, in Brazil, for example, the Long Live the Child program reduced the burden of infant mortality by 35 percent. Community members are trained in the basics of infant and childcare. They visit area households monthly, on foot or bicycle, carrying a backpack of basic medical supplies. They promote breastfeeding, monitor children's growth, teach mothers to prevent diarrhea related dehydration, and educate mothers on the importance of cleansing drinking water. In six years (between 1987 and 1993) 7,240 health agents visited the homes of 4 million people at a cost of US\$500,000, and significantly affecting the health outcomes of millions of people. Development NGO, Save the Children, meanwhile, has pioneered the concept of the "positive deviant". Fieldworkers in Thanh Hoa province in Vietnam worked with villagers to understand why children from some families had better nutrition and health indicators than others, even though they had the same resources as their neighbors. They found these families supplemented their diet with sweet-potato greens as well as shrimps and crabs from rice paddies, and fed their children at least three times a day, rather than the twice a day customary in the community. Although these food sources were freely available, they were generally

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<sup>86</sup> WHR 2000

<sup>87</sup> Charles Leadbetter, *Living on Thin Air*, London: Viking, 1999

<sup>88</sup> It is only a matter of implementation. Barry Bloom. The Harvard Web Digest. November 1997. See [www.hsph.harvard.edu/digest/bloom.html](http://www.hsph.harvard.edu/digest/bloom.html)

regarded as unsuitable for young children. These “positive deviants” had an extraordinary effect on the rest of the community once a mechanism was set up to diffuse their knowledge. Within two years, 80 percent of the children participating in the project were no longer malnourished.

## Medical, non-medical, non-health

One of the principal difficulties facing those attempting to drive forward health reform is deciding between a large number of possible interventions. Essentially, there are three different approaches to producing or protecting good health, all of which must be specifically tailored if they are to deliver maximum benefits to the poor. The first delivers medical interventions, such as vaccines and drugs, primary health care centers, or clinics. The second delivers non-medical health interventions, such as strengthening health systems, training medical personnel, building better health information systems, and developing more effective systems for procuring, storing and developing pharmaceuticals and other medical equipment. The third uses non-health interventions to provide health benefits by, for example, providing clean water and improved sanitation, or offering better basic education, communications infrastructure or governance. Relative investment in each of these areas – and interactions between them – must be decided strategically and developed specifically in each country. While choices may be mutually exclusive in the short term, of course, positive interactions between different policy areas are common. The policy-maker is therefore asking the question of where to start, rather than what is important.

The most high-profile and well-supported health interventions have been medical ones, usually involving large scale technical interventions, such as the eradication of smallpox and the attempts to eradicate polio and river blindness. The most successful programs, such as the Democratic Republic of Congo’s “National Immunization Days”, which reached 80 percent of the country’s 10 million children, are simple, cost-effective and achieve wide coverage. These health interventions can help replenish social capital at the same time as challenging health systems to reform. The president of the World Bank, James Wolfensohn, has recently argued that improved access to AIDS drugs will encourage governments to build infrastructure for treating the disease. At the moment, he says, high prices leave developing country governments with little incentive to invest.<sup>89</sup>

The impact of technical solutions is considerably lessened by the paucity of scientific research directed at the key health problems of the developing world. Globally, more than \$56 billion a year is spent on health research, but less than 10% of that sum is directed towards diseases that afflict 90% of the world’s population. And of the 1223 new compounds launched on the market between 1975 and 1997, only 11 of them were designed for tropical diseases.<sup>90</sup> Clearly, the market cannot be left to provide in this situation, but neither can existing public health structures. WHO and UNICEF are

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<sup>89</sup> Michael Waldholz, “Makers of AIDS drugs agree to slash prices in third world”, *The Wall Street Journal*, 11 May 2000

<sup>90</sup> “Balms for the poor”, *Economist*, 14<sup>th</sup> August 1999, available at <http://www.economist.com>

just two organizations that have at times appeared hostile to basic biomedical research.<sup>91</sup> Donor and philanthropic action is therefore needed to build new institutional structures that favor the production of important global public goods. As Ravi Kanbur and Todd Sandler have argued: “at a time when development assistance is on the decline owing to a disillusionment with past results and domestic demands for the associated resources, a public goods rationale can ignite a renewed interest in some kinds of development assistance activities... [providing] a rationale for maintaining or even increasing levels of donor assistance.”<sup>92</sup>

Non-medical interventions focus on the difficulty of designing and rolling-out more effective health delivery systems, defined by the WHO as “all the activities whose primary purpose is to promote, restore, or maintain health”, and taken to include activities such as health promotion, home care, road safety improvement, as well as the health care system or health services. Currently, the design, content and management of health systems vary widely and there is little coherent assessment of different systems to provide guidance. Health systems need to have clear objectives and a focus on responsiveness and fair financing.<sup>93</sup> An emphasis on human capital is also paramount. Good people make infrastructure work, not the other way round. Capacity building efforts should include education and training, but also focus on incentives and the work “culture” of healthcare organizations. Flexible systems require staff who are prepared to be risk-taking and able to circumvent the obstacles that are inevitable in a developing country context. Information technology is beginning to provide a means of connecting health professionals to one another, through services such as HealthNet, which offers inexpensive access to the global “knowledge base” even in countries with little or no telecommunications infrastructure.<sup>94</sup> The importance of higher education is also finally being recognized, for its role in producing vital human capital for health, education and governance within developing countries.<sup>95</sup>

Finally, tackling the problem of corruption is especially important, as this often acts as a significant barrier to access by the poor. A recent World Bank consultation with the poor emphasizes this. Many poor people reported being asked to pay for medicines that were supposed to be free, and corruption was cited as a major factor by those who had decided to avoid formal services altogether.<sup>96</sup>

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<sup>91</sup> William Muraskin (1998) *The Politics of International Health: The Children's Vaccine Initiative and the Struggle to Develop Vaccines for the Third World*. New York: State University of New York.

<sup>92</sup> Ravi Kanbur and Todd Sandler, with Kevin M Morrison, *The Future of Development Assistance: Common Pools and International Public Goods*, Overseas Development Council Policy Essay No. 25. Washington: John Hopkins University Press, 1999.

<sup>93</sup> Christopher J. L. Murray and Julio Frenk, “A WHO Framework for Health System Performance Assessment”, Evidence and Information for Policy. World Health Organization.

<sup>94</sup> See <http://www.healthnet.org/>

<sup>95</sup> The Task Force on Higher Education and Society, *Higher Education in Developing Countries: Peril and Promise*, World Bank 2000 available at <http://www.tfhe.net>

<sup>96</sup> Deepa Narayan with Raj Patel, Kai Schafft, Anne Rademacher and Sarah Koch-Schulte, *Voices of the Poor: Can Anyone Hear Us?* New York, N.Y.: Published for the

Given the strength of the interaction between health and many other areas of government investment, some non-health interventions may offer cost effective ways of tackling health problems. Investment in education, for example, especially for girls, has a significant long-term effect on health outcomes, as educated women tend to exert more control over resources, marry later, have fewer children, and have a major influence on nutritional, health and educational achievements of their families. Investment in other strategies that help the poor protect their health will also have significant effects. Microfinance, for example, offers one way of spreading risk; health insurance is also desirable. Similarly, economic policies that encourage entrepreneurship and provide quick routes into the labor market will likely have positive health consequences. Making choices between different interventions requires a broad focus on the quality of life of the poor and demands compromises between different policy-making areas and between the traditions of various professional and academic priorities. Above all, a quality of life focus requires an active engagement with the perceptions of poor people. In a recent qualitative study in rural Asia, for example, researchers found that poor people were most interested in the construction of new roads: "regardless of whether clinics existed in the villages, better care was associated with larger, often urban, communities, so shorter journey times to larger health care facilities were seen as a great advantage."<sup>97</sup> A focus on non-health interventions also allows attention to the institutional factors that cause health initiatives to fail. There are so many reasons for failure, for example when village elders disapprove of girls traveling to health centers, or when lack of basic infrastructure makes use of health services too costly in terms of time and money, or when capacity to implement programs is so thin that progress is impossible without significant prior investment in human capital.

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World Bank, Oxford University Press, 2000. Available at  
<http://www.worldbank.org/poverty/voices/reports.htm#cananyone>

<sup>97</sup> David E. Bloom, Patricia H. Craig and Pia N. Malaney *Quality of Life in Rural Asia*, New York: Oxford University Press, 2000 (forthcoming)

## ***In conclusion – the perfect is the enemy of the good***

The notion of health-led development is not a new one – it surfaced at Alma-Ata and is also found in the 1993 World Development Report. It remains a compelling concept. Health, seen as a form of human capital and not just an output from the development process, deserves to join education as a key policy instrument for promoting the success of developing countries. Virtuous spirals are possible in countries with young, educated, healthy populations and pro-growth policies. Once moving, they offer the chance of dramatic change in a country or region's prospects. Conversely our awareness of the importance of illness in contributing to poverty traps has also been heightened.

On its own, however, this knowledge can have little impact. It needs to be used to drive and direct real change. This change must occur at the international, national, and local level – and its impact must also be felt by families and individuals. To take HIV/AIDS as an example, efforts to control the epidemic have been impeded by the failure of the global community to marshal adequate resources and to develop structures through which those resources can be used. It is only recently that we have seen world leaders speak regularly about the crisis and this delay left a situation where research into a vaccine was left on the back burner.

The challenges are no less great at the national level, where deep institutional and organizational change is needed if countries where the epidemic is strongest or continuing to gather force are to fight back against the virus. Institutional change is needed to influence patterns of sexual behavior and gender relations, as well as the context within which political, social, and business decisions are made. As has been seen in countries such as Thailand, Senegal, and Uganda, where responses to the epidemic have been partially successful, enlightened leadership is essential, combined with bottom-up support for progressive cultural change. Public, private, and civil society must find more effective ways to work together, with every organization – religious, political, social, or commercial – collaborating to achieve results. And these results are relatively easily demonstrated. Is the prevention campaign slowing or reversing the infection rate? Are treatment protocols helping a growing number of the sick? Clear policy backed by robust needs analysis, excellence in program design, and a dedication to implementation will be needed. Most important, however, will be a focus on the needs of audiences for prevention campaigns and patients for treatment services.

HIV/AIDS, then, encapsulates a number of lessons that are general to efforts to use health to lead development. The importance of political support, institutional change, organizational reform, and an approach that is dictated by end users and results rather than professional providers and inputs – these are lessons that we have learned since Alma-Ata. They may allow us to bring that declaration's still distant goals into reach.



**APPENDIX 1 – SUMMARY OF STUDIES ON EFFECT OF 5-YEAR CHANGE IN LIFE EXPECTANCY ON PER ANNUM GROWTH**

<b>Study</b>	<b>Health measure (all in logs)</b>	<b>Coefficient (standard error)</b>	<b>Effect of 5 year life expectancy change on per annum growth, assuming a life expectancy of 63</b>	<b>Data</b>	<b>Estimator</b>	<b>Other covariates (all papers have the log of initial income per capita or per worker)</b>
Barro and Lee (1994)	Life Expectancy	0.073 (0.013)	0.58	two periods n=85 for 1965-1975 n=95 for 1975-1985	SUR with country random effects	male and female secondary schooling, I/GDP, G/GDP, log(1+black market premium), revolutions
Barro and Sala-i-Martin (1995)	Life Expectancy	0.058(0.013)	0.46	two periods n=87 for 1965-1975, n=97 for 1975-1985.	SUR with country random effects	male and female secondary and higher education, log(GDP)*human capital, public spending on education/GDP, I/GDP, government consumption/GDP, log(1+black market premium), political instability, growth rate in terms of trade
Caselli, Esquivel, and Lefort (1996)	Life Expectancy	- 0.001(0.032)	0.00	25-yr panel at 5 year intervals, 1960-1985, n=91	GMM/Arellano-Bond	Male and female schooling, I/GDP, G/GDP, black market premium, revolutions
Barro (1996)	Life Expectancy	0.042 (0.014)	0.33	3 periods 1965-1975 n=80, 1975-1985 n=87, 1985-1990	3SLS using lagged values of some regressors as instruments. period random effects	male secondary and higher schooling, log(GDP)*male schooling, log fertility rate, government consumption ratio, rule-of-law index, terms of trade change,

				1990 n=84		democracy index, democracy index squared, inflation rate, continental dummies
Sachs and Warner (1997)	Life Expectancy  Life Expectancy squared	0.455 (0.175)  0.054 (0.022)		25-yr cross section	OLS	
Bloom and Sachs (1998)	Life Expectancy	0.037 (0.011)	0.29	25-yr cross- section, 1965- 1990, n=65	OLS	log secondary schooling, openness, institutional quality, central government deficit, percentage area in tropics, log coastal population density,, log inland population density, total population growth rate, working-age population growth rate, africa dummy
Bloom and Williamson (1998)	Life Expectancy	0.040 (0.010)	0.32	25-yr cross- section, 1965- 1990, n=78	OLS	population growth rate, working-age population growth rate, log years of secondary schooling, natural resource abundance, openness, institutional quality, access to port, average government savings rate, tropics dummy, ratio of coastline to land area
Gallup and Sachs (1998)	Life Expectancy	0.030 (0.009)	0.24	25-yr cross section, 1965- 1990, n=75	OLS	years of secondary schooling, openness, quality of public institutions, population within 100km of the coast, malaria index in 1966, change in malaria index from 66-94

Hamoudi and Sachs (1999)	Life Expectancy	0.072 (0.020)	0.57	15-yr cross section, 1980-1995, n=78	OLS	Institutional quality, openness, net government savings, tropics land area, log coastal population density, population growth rate, working-age population growth rate, Africa dummy
Bhargava, et. al. (2000)	ASR ASR*log(GDPC)	0.358(0.114) - 0.048(0.016)		25-yr panel at 5 year intervals, 1965-1990, n=92	Dynamic Random Effects	tropics, openness, log fertility, log (I/GDP)
Bloom, Canning, and Malaney (2000)	Life Expectancy	0.063 (0.016)	0.50	25-yr panel at 5 year intervals, 1965-1990, n=	Pooled OLS	GDP per worker, tropics, landlocked, institutional quality, openness, log of years of secondary schooling, population growth, working-age population growth, log ratio of working age to total population, population density, period dummies
Bloom and Malaney, 1998	Life Expectancy	0.027(0.107)	0.21	25 year cross section, 1965-1990, n=77	OLS	population growth, growth of economically active populations, log years of secondary schooling, natural resource abundance, openness, institutional quality, access to ports, average government savings, tropics, ratio of coastline distance to land area
Bloom et. al. (IADB)	Life expectancy	0.019(0.012)	0.15	25 year cross section, 1965-1990,	2SLS	log of ratio of total population to working age population, tropics, log of years of

				n=80		secondary schooling, openness, institutional quality, population growth rate, working age population growth rate
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63 is the average life expectancy in developing countries in 1990.

NOTES ON STUDIES: The most common strategy used to estimate the effect of health status on economic growth is to run an OLS regression of the growth rate of income from 1965 to 1990 on independent variables from 1965, including a health measure such as the log of life expectancy. Table I summarizes the leading cross-country studies that have adopted this strategy. With but one exception, they all find positive and statistically significant effects of higher life expectancy on growth. The significant coefficients range from 0.019 to 0.073.

These imply that if life expectancy were 5 years higher in 1965, annual per capita GDP growth would be as many as 0.15 to 0.58 percentage points higher. These results, done mainly in cross-section, are robust to the inclusion of controls, and the sample of countries and time periods chosen. Note however, that Caselli et al. find a negative but statistically insignificant effect of life expectancy on growth.

There are two main concerns with this strategy. The first involves the possibility that the estimated relationships between health status and economic growth reflect – in whole or part -- reverse causation from economic growth to health status, and not the effect of health on economic growth. The second concern involves the possible existence of additional determinants of growth omitted from the list of independent variables, and whose effects are therefore confounded with the effects of the included independent variables. These two problems of reverse causation and omitted variables lead to bias and inconsistency in OLS estimates.

Some papers try to address the reverse causality problem using the method of Two-Stage Least Squares or Instrumental Variables (2SLS/IV). This method works by finding an “instrumental variable” that is correlated with the endogenous independent variable, but otherwise uncorrelated with the dependent variable. These two requirements are called the relevance and exclusion restrictions respectively. If such an instrumental variable exists, then variations in the endogenous independent variable that are correlated with variations in the instrumental variable are not affected by reverse causation, and can be used to obtain consistent estimates. There have been a few attempts at using an IV estimator, but thus far little serious work aimed at testing whether the instruments employed satisfy the two conditions required for their validity.

Perhaps the most important potentially omitted variables are country-specific determinants

of growth that are constant over the time period being investigated, but inherently unobservable or poorly measured (usually called unobserved, time-invariant, country-specific heterogeneity or unobserved heterogeneity for short). Such factors may include culture, some aspects of geography or the environment, and the quality of social, political, or economic institutions. If these affect the pace of economic growth, as seems plausible, and are also correlated with life expectancy, then their omission from the model may bias results since the measured effect of the variables included in the analysis will be confounded with the effects of the omitted effects.

Most studies perform their empirical analyses on cross-sections, in which the relevant variables are only observed at a single point in time. It is inherently impossible in such a setting to disentangle the effects of time-invariant unobserved heterogeneity from the time-varying unobserved determinants of growth represented by the usual error term.

To solve this problem requires moving from a cross-section to a panel of repeated observations on a country, in which the existence of multiple observations over time allows one, in principle, to disentangle time-invariant from time-varying unobserved effects. From the point of view of controlling for these time-invariant effects, having long time-series on each of the countries would provide us with more precise information about the nature of these effects, but existing macroeconomic data typically do not extend far back enough in time for this solution to be workable.

In this panel setting, some papers have tried to solve the unobserved heterogeneity problem by introducing random effects, that is, treating these omitted variables as country specific, time-invariant error terms. For example, Barro uses the Seemingly Unrelated Regression model (SUR), in which the multiple observations on a country are represented using a system of equations in which the error term is decomposed into a country-specific time-invariant random effect and a traditional well-behaved error. The 3SLS estimator, also used by Barro, combines instrumental variables and random effects. Using random effects to model unobserved heterogeneity may be unsatisfactory since the random effects are probably correlated with the independent variables, making the usual random effects estimators inconsistent. Two proposed solutions to this problem have been to use a random effects estimator that instruments the independent variables to purge them of their correlation with the random effects (the dynamic random effects technique of Bhargava et al.), and to use a dynamic fixed effects estimator such as GMM-Arellano/Bond which differences out the unobserved heterogeneity.

All papers that do not employ fixed effects estimators find usually significant elasticity estimates of .15 to .58. Within this range of estimates, there does not seem to be a systematic relationship between the size of the elasticity and the estimator used. In particular the use of instrumentation and random effects do not seem to move estimates in any precise way. Differences in estimates within this range seem mainly driven by the number and kind of covariates included in the regression. However, the introduction of fixed effects brings the estimated elasticity to zero (in fact negative) and statistical insignificance.

One may summarize this literature as saying that there is strong and robust cross-sectional evidence of a positive and statistically significant effect of improved life expectancy on growth.

There are two directions in which research may proceed. First is to investigate the extent to which these life expectancy effects are robust to the inclusion of fixed effects. As was already noted in the results of Caselli et. al., the one study to include an explicit fixed effects panel dimension to the analysis found a negative but statistically insignificant effect. It is not yet clear how to interpret this. On the one hand, it may be that the statistically significant effects found in cross-sections are due to omitted variable bias: life expectancy is positively correlated with time-invariant heterogeneity, and failing to control for the latter leads to an upwards bias in the measured effect of the former. On the other hand, it is also well known that life expectancy data may be measured with error (perhaps due to extrapolations used to infer life expectancy between census years, or the use of life tables to update life expectancy in the absence of direct data, or simple classical measurement error). Classical measurement error is well known to bias coefficients towards zero.

It is also well known that panel techniques that rely on differencing or dummy variables to control for unobserved heterogeneity may exacerbate this 'attenuation bias' and push estimated coefficients towards zero and statistical insignificance. Thus work needs to be done to investigate the robustness of the life expectancy effect to the existence of unobserved heterogeneity and measurement error.

Notes:

OLS- Ordinary Least Squares  
SUR- Seemingly Unrelated Regression  
I/GDP- Real Investment Share of GDP  
G/GDP- Real Government Share of GDP  
GMM- Generalized Method of Moments  
2SLS- Two Stage Least Squares  
3SLS- Three Stage Least Squares  
ASR- Adult Survival Rate

Sources:

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