The road to health

This article is published as a tribute to Professor Thomas McKeown, the eminent epidemiologist, who died in 1988 aged 75. In it the author urges that the spread of services comprising primary health care be arranged in strict order of priority. Since improvements in nutrition have a particularly profound effect on health they should be the primary aim of developing countries.

With its emphasis on equity, acceptability, self-determination and social justice, the concept of primary health care reflects admirably the spirit of the "health for all" commitment introduced at Alma-Ata in 1978 and reaffirmed at Riga 10 years later. It is a comprehensive approach that includes all the major developments desirable for health under more or less ideal conditions. However, in the foreseeable future many Third World countries will be unable to afford all these developments, and it is therefore necessary to assign priority between them according to their effectiveness.

In a recently published book, The origins of human disease, I discuss against an historical and international background many of the issues that confront international public health in both industrial and Third World countries (1). The present article, however, is limited to developing countries.

In large areas of the world, health today is as it was in developed countries before the eighteenth century; many children die within a few years of birth and a majority are dead before maturity. Moreover, on the basis of present policies it is questionable whether an acceptable minimum standard of health will be achieved everywhere in the foreseeable future. In some countries the difficulties are compounded by extreme poverty, and by the prevalence of tropical diseases that were absent or uncommon in the developed world.

An inspection of the research programmes of developing countries will show that there are no well-recognized priorities. Indeed some administrators reject the idea of goal-directed research; they believe that the best results are obtained by finding able investigators and giving them a free hand. Inevitably such an attitude gives unpredictable results, as subjects for research could equally well be added to or removed from the current programmes.

The failure to establish priorities is also evident in health service policies. In general there is much greater investment in the treatment of disease than in its prevention, but this has resulted from public demands and medical traditions rather than from assessment of the effectiveness, or even the humanity, of different
approaches. Health services are normally considered to comprise the care of the sick and the public services concerned with the promotion of health and prevention of disease — sanitation, communicable disease control, maternal and child health, school health, industrial hygiene, and the like. But they do not touch on the matters that determine the basic conditions of life, which also profoundly affect health — agriculture, housing, education, employment, economic policies. Particularly in developing countries, health standards are determined by government policies as a whole rather than by that more limited range of services administered by health departments.

The World Health Organization has made a commendable attempt to establish requirements for health by promoting the concept of primary health care. With its emphasis on equity, acceptability, self-determination, and social justice this concept reflects admirably the spirit of the “health for all” commitment but a brief examination will show that it is a comprehensive statement of all the major influences on health rather than an assessment of priorities.

**Primary health care: an all-inclusive approach**

The essential elements of primary health care have to be supplemented according to the economic and social values of each country and its communities. It is evident that primary health care, so conceived, covers all the major developments needed for health under more or less ideal conditions. It does not attempt to judge the order in which the developments should be promoted in situations where conditions are far from ideal, as they will be in many countries for a long time to come.

The inevitability of deficiencies, and hence the need for priorities, is well illustrated by two of the most critical factors for health: nutrition and sanitation. Recent data show that malnutrition has decreased in Asia and Central America, has remained stable in South America, and has increased in much of Africa. Since the population of the world is expected to double before it stabilizes, and the population of Africa will increase about six times, on the basis of present policies it seems inevitable that serious food deficiencies will continue well into the next century. Nor are we in sight of the time when clean water and adequate sanitation will be generally available in developing countries, particularly in rural areas.

Let us now consider the services that should be given priority if health is to advance rapidly, in the face of the experience of developed countries during the last two centuries and that of some developing countries that have made rapid progress in health during the past few decades.

**Experience of the developed countries**

In developed countries the improvement in health since the eighteenth century resulted

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mainly — until 1900 almost wholly — from the decline in mortality from infectious diseases. The direct influences that led to the decline of the infections can be classified as follows.

- Increased resistance brought about by:
— improved nutrition, which was responsible for the advance in health in the eighteenth and nineteenth centuries at a time when exposure to infection was increasing because of rapid population growth and defective hygiene;

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— immunization, which accelerated the decline in mortality in the twentieth century, particularly by reducing the pool of infectious people.

- Reduced exposure to infection, mainly through hygienic measures applied progressively from the late nineteenth century, the important developments being clean water, improved sanitation, and, a little later, advances in the handling of food and improvements in housing; to a limited extent exposure was also reduced by treatment.

However, there were other influences that contributed powerfully, although indirectly, to health: control of fertility came at precisely the time needed to safeguard the advances from the effects of rising numbers; improvements in education more or less coincided with the advance in health; and economic growth provided the resources that led to a rising standard of living, including most significantly an improvement in nutrition and hygiene.

If there were no other knowledge to guide us, it would not be unreasonable to apply this experience of industrial countries to the health problems of the Third World. In doing so, however, we would need to recognize certain differences. First, many of the countries are in tropical or subtropical areas where additional problems exist. Second, more is known now about the means of controlling disease, and some measures—particularly immunization—are much more effective than they were at an early stage in industrial countries. Third, for a number of reasons the time available for improvement in health is shorter, measured in decades rather than centuries according to the timetable accepted at Alma-Ata. And fourth, the order of events is unlikely to be the same as in developed countries, where a century and a half of improved nutrition preceded hygienic and other advances, and the decline of the birth-rate occurred at precisely the time needed to limit population growth.

**Experience of the developing countries**

Fortunately additional evidence is now available from a number of Third World countries that have advanced rapidly in health: China, Costa Rica, Cuba, India (Kerala State), Jamaica, Sri Lanka, Thailand, and a few others.

On what may be regarded as the most basic observation and the starting-point for further inquiry, the experience of the recently advancing countries is consistent with the conclusion based on industrial countries: the improvement in health was almost entirely due to a reduction of deaths from infectious diseases. To assess priorities in health policies in the Third World the chief requirement is therefore to come to a conclusion about the reasons for the decline of the infections. Again, it will be important to distinguish between direct and indirect influences, and it will be convenient to examine the direct influences under the same headings as for developed countries.
• **Increased resistance to infection.** All the countries that advanced rapidly achieved a substantial improvement in nutrition, which led to increased resistance. Indeed in some countries this was the only important direct influence. It is perhaps surprising that immunization appears to have contributed relatively little to the advances, not of course because it was ineffective but because the reduction in mortality occurred during a period when vaccine coverage was still low.

• **Reduced exposure.** Improvements in water supply and sanitation were important influences in industrial countries but they do not seem to have been very significant in the rapidly advancing Third World countries. For example, the coverage of the population by provision of clean water and safe sanitary measures was low in China, Kerala (India) and Sri Lanka — lower indeed than in many other developing countries — although their death rates were well below average levels. It is also clear that treatment of established diseases contributed little to the reduction of exposure, for in several countries there was little improvement in personal care services.

As in the developed countries, there are several indirect influences to be considered. In spite of large differences in culture, religion, and economic and social conditions, the rapidly advancing countries all achieved a considerable degree of control of fertility. The limitation of numbers and associated birth spacing undoubtedly contributed largely to the reduction in mortality, particularly in infancy and childhood. Education was also important: there were notable advances in all the countries in both primary and secondary education, particularly in the education of women. Although economic development is an important indirect determinant of health, prosperity as indicated by the gross national product or per caput income is not always essential, since the distribution of wealth and the use of resources may be as significant as their creation. Among the countries that have advanced rapidly, China, Kerala State (India) and Sri Lanka are poor as judged by per caput income, and some others are in the mid-range for developing countries. By contrast there are countries with a high per caput income that have shown little improvement in health.

Equity of access to the determinants of health was an important feature in all the countries that have advanced, as was the political and social will to bring about improvements in health. In some places this will originated from the people themselves, as in Kerala, and was largely the result of education leading to awareness of basic human rights. In other countries, notably China and Cuba, the political will is centrally directed on behalf of the people. In a Third World country seeking rapid progress in health an essential requirement, and in a sense the starting-point, is the political and social will to bring about improvement. The countries also need to achieve some equality of access to the resources that determine health. Economic development is of course desirable, and in

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the long term essential, for sustained improvement. Nevertheless some poor countries have reached higher standards of health than others that are wealthier (or more accurately, less poor), by their
determination to advance and their acceptance of a more even distribution of resources as the necessary means.

The major influences on health: present position

To anyone who has travelled extensively in the rural areas of the Third World, the

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common causes of ill health may seem self-evident. Many children are visibly malnourished, sanitary conditions are primitive, drinking-water is unclean, the food displayed in open markets is contaminated, and the number of people competing for the means of life is clearly excessive. Our conclusions concerning the determinants of health can be epitomized by the simple statement that people must have enough to eat and must not be poisoned. The frequency and causes of food deficiencies and hygienic hazards have been examined in numerous reports by the World Bank, the World Health Organization, and the United Nations, and the conclusions that have been drawn will be summarized in relation to the critical influences: food, immunization, drinking-water and sanitation, and control of population numbers.

Food

A World Bank study (2) of the relation between poverty and hunger quoted an edict by the Emperor Wen in 113 BC: “Why is the food of the people so scarce? ... Where does the blame lie?” The deficiency is ever more remarkable today, because in many countries and in the world as a whole food supplies are believed to be adequate. The World Bank study concluded: “The often predicted Malthusian nightmare of population outrunning food production has never materialized. Instead the world faces a narrower problem; many people do not have enough to eat, despite there being food enough for all. This is not a failure of food production, still less of agricultural technology. It is a failure to provide all people with the opportunity to secure enough food—something that is very hard to do in low-income countries.” Although one would question the statement that population growth has never outrun sufficient food production, it is an accurate assessment of the position in many countries today.

The First report on the world nutrition situation (3) made an appraisal of trends in nutritional indicators from 1960 until the most recent year available, usually 1985. The report concluded that although nutrition has improved over the last 25 years in most parts of the world, in sub-Saharan Africa there has been declining food availability and increased malnutrition, and in South America there has been no significant improvement. Improvements in living conditions recorded during the 1970s have slowed or halted with the severe economic recession of the early 1980s, and this is affecting child nutrition.

The increased food production during the past 35 years has resulted mainly from technological advances: the use of chemical fertilizers and pesticides, increases in the amount of irrigated land, and the introduction of high-yielding disease-resistant seeds. As a result of these advances, grain production more than kept pace with the growth of population, both in the world
at large and in developing countries considered as a whole. However, for a number of reasons the practice of equating food resources with the number of people gives a misleading picture of the effects on nutrition.

First, even by the simple test relating resources to population, many countries do not have enough food. In 1977–80, one-third of the population of the Third World lived in countries where supplies—output, stocks, and imports—were insufficient to provide everyone with an adequate diet, even if distributed according to need. The position is particularly serious in Africa, but there are also countries in Latin America and southern Asia where output per head has fallen.

A second reason for concern is that several countries which produce enough food for their populations have only a small margin and are ill equipped to meet transitory deficiencies due to unstable world prices, variation in domestic production, variation in household purchasing power, and famine. Investigation of some serious famines has shown that a reduction in the food available is not always the primary reason, and attention is increasingly focused on other causes, particularly loss of real income.

The third and most common reason for the inadequacy of food-to-population calculations is that the food available is very unevenly distributed, both between countries and between different areas and population groups in the same country. India, for example, has an overall food surplus, which has more than kept pace with the phenomenal increase in population, yet for several years there has been acute famine in the north among the eight million people who live in the arid region of Rajasthan.

Against this background it is evident that malnutrition and its sinister effects on health are common in developing countries and result mainly from international and national policies that prejudice food production and distribution. The international community can contribute in many ways—with resources, with advice, and not least by refraining from encouraging or requiring Third World countries to absorb food surpluses (the grain and butter mountains) or to adopt agricultural and economic policies that contribute to their poverty. However, the causes of food insecurity and the resultant ill health are determined largely by national policies. The chief requirements are to ensure an adequate food supply through policies that promote domestic production (by shifting resources from industry to agriculture, from large to small farms, from capital-intensive to labour-intensive activities) and to give people at risk of food insecurity the opportunity to earn an adequate income. The problem of food deficiency is determined essentially by poverty.

Immunization

Relying on evidence from the past we are likely to underestimate the contribution that immunization can make to the control of infectious diseases in the future, because it has been estimated that by the year 2000 there are likely to be 60 cities with a combined population of 650 million.

mortality from many infections had declined to quite a low level because of other influences—nutrition and hygiene in industrial countries and nutrition alone in the Third World—before effective immunization was widely applied. It is
therefore essential to reassess the contribution to be expected from immunization in the light of current knowledge of its potential.

In 1987, 50% of the world’s children were protected against tuberculosis, diphtheria, whooping-cough, tetanus, poliomyelitis, and measles; 10 years earlier the proportion had been 5%. Unfortunately, the level of coverage is lowest in developing countries for two diseases that cause many deaths—measles and neonatal tetanus. Nevertheless, recent appraisal suggests that prospects for the future are quite bright: by the year 2000 poliomyelitis should be eradicated, deaths from neonatal tetanus should disappear, and mortality from measles should be reduced by 95%.

Drinking-water and sanitation

We must now consider one of the most common natural hazards, the pathogens that cause the diarrhoeal diseases that kill a considerable proportion of children within a few years of birth. In Latin America in 1978 they were responsible for a quarter of the deaths of children under five years of age, and in 1980 they produced about 4.6 million deaths (under five years) in developing countries. Eighty per cent of the deaths were in children under the age of two.

Because of the seriousness of diarrhoea in children, strenuous efforts are being made to treat the diseases by oral rehydration therapy and to reduce the frequency and severity of infection by breast-feeding, good nutrition, and certain vaccinations. But if health is to improve rapidly it is also necessary to prevent transmission of the pathogens that cause diarrhoea. The measures required are improvements in water supply, in excreta disposal, and in domestic and food hygiene. These are the services that led to the rapid decline of deaths from intestinal infections in industrial countries in the late nineteenth and early twentieth centuries.

Limited progress in provision of water and sanitation in countries was commonly attributed to lack of funds, insufficient personnel, and inadequate operation and maintenance. The relative importance of these constraints varied between regions: shortage of funds was predominantly in Africa and southern Asia; in the eastern Mediterranean it was ranked equally with inadequate water resources; and in the western Pacific it was said to be second to lack of trained staff (skilled artisans and tradesmen). However, all the major constraints are profoundly influenced by the resources available, so that the hazards attributable to inadequate water supplies and sanitation in developing countries are again due to poverty.

Control of numbers

When assessing prospects for health in the Third World, it is important to keep in mind the significance of the timing of the major influences. In industrial countries they became effective in what was, for health and welfare, the ideal sequence. The first and most potent influence on mortality was improvement in nutrition, a consequence of a rising standard of living which preceded hygiene and other measures, in some countries by more than 100 years. These later measures led to a further reduction in mortality, but their effect on population growth was restricted because they coincided with (indeed in France they were preceded by) a decline in the birth-rate brought about by control of fertility. With the expansion of food supplies and the limitation of population growth an essential requirement was met—a balance between food and numbers that did not provoke Malthusian adjustment through increased mortality.
Populations expanded, but at a rate more or less consistent with health needs.

In many developing countries, the chronological sequence of the major influences is quite different; the application of technological measures has preceded the capacity to provide sufficient food or limit numbers. In Africa, for example, before 1950 the rate of population growth was a little over 1% per year and never exceeded 1.5%; today the average rate is 3%. The reasons for this increase are not entirely clear, but it appears to have been due largely to the application of biomedical technology. Many of the endemic plagues of Africa have lost their demographic impact. Smallpox has been wiped out, yellow fever is under control in many countries and, when it flares up, is quickly contained, and malaria can be controlled or limited in its impact. Droughts and famines are not as devastating to human life as they were in the past. Relief services, although poorly organized, do make a difference in development. All these gains could be increased many times with a more extensive application of the already proven intervention technologies. Thus, unlike the historical situation in which economic development led the way to and accompanied population increase, populations in Africa are increasing so fast as to frustrate development efforts.

Many estimates have been made of the possible consequences of the present rates of population growth. The greatest increase in numbers will occur in the poorest countries. Projections by the United Nations suggest that the world population, now about 5 billion, will be 6 billion in the year 2000, 8 billion in 2025 and 10 billion before it stabilizes in about 2100. The rates of increase are very different in different parts of the world. In Europe, North America, Japan, and the USSR, fertility has declined rapidly and is now at or near the level needed to maintain stable populations of about the present size. Fertility has also declined in some developing countries in Latin America and eastern Asia, most notably in China, where there has been a spectacular fall. But elsewhere in the Third World—Africa, western Asia, southern Asia, and parts of Latin America—there has been no significant reduction in fertility, and populations are expected to continue to grow at about the present rates. Before stability is achieved the population of 1980 will have increased nearly six times in Africa, about three-and-a-half times in Latin America, and two times in Asia.

Another consequence of present demographic trends is the movement of people: as migrants from one country to another and, even more seriously from the point of view of health and welfare, from rural to urban areas within the same country. In 1983, there were 26 cities with populations over 5 million and a combined population of 252 million. It has been estimated that by the year 2000 there are likely to be 60 such cities with a combined population of 650 million; 45 of them will be in the developed world. Several of the largest cities, such as Mexico City, São Paulo, and Calcutta will have populations of over 20 million people. Moreover, the migration, formerly confined to capital cities, has begun to affect cities of secondary and tertiary size, and many are now growing at a much faster pace. The urban migrants have already created formidable problems in respect of food, hygiene, education, housing, and health, and it must be remembered that they have moved to the cities not because they could be assured of employment but because conditions in rural areas are very bad. Migrants into towns are at best underemployed and are usually unemployed, creating high crime rates in the shanty towns in which many must live.
In view of these conditions it seems remarkable that there should be doubts in some of the poorest countries about the need to restrain population growth. But the control of numbers is an emotive subject that touches on national, religious, and racial sensibilities, and there are differences of opinion on whether rapid population growth should be treated as a consequence or a cause of underdevelopment. Clearly it is both. Since the nineteenth century it has been evident that birth rates decline as economic conditions improve, and if resources were managed efficiently and distributed equitably between and within nations, the need to restrict numbers probably would not arise, or would not arise yet. But in the world as it exists the limitation of numbers is an essential complement of the measures that need to be taken—particularly to sustain economic growth and the more equitable availability of wealth. The link between health, numbers, and socioeconomic development is widely recognized, and few countries now question the need to reduce rates of population growth. Nevertheless, the setting of population targets is still a sensitive and divisive issue, and the control of numbers is not always given the attention in national planning that on health and other grounds it clearly requires.

References


Road safety measures need money

In both industrialized and developing countries, the amount of money allocated to traffic safety is inadequate, especially in view of the high economic and human cost of road accidents. The availability of only limited resources imposes difficult choices on decision-makers.

It is, however, in developing countries that financial constraints on the implementation of countermeasures are the most severe. Technical solutions to current accident problems that have proved their value in industrialized countries are often found to be too expensive for application in poorer countries. In most cases, the problems then remain unsolved. ... There are in general several possible solutions to each safety problem, and even if one solution has already been frequently applied in other countries, the whole range of possibilities should be explored for more efficient action and better use of available funds.