

HEALTH STRATEGIES FOR AFRICA[†]

D. A. Henderson*

It is common knowledge that Africa faces serious health problems, especially in the form of malignant diseases including malaria, tuberculosis, leprosy, and a great many other tropical parasitic infections. The burden has been increased in recent years by the arrival of AIDS. In many African countries resources are constrained, economies are stagnant and transportation and communication are difficult. Furthermore, trained health personnel are in short supply. One is forced to wonder, what hope is there?

As bleak as the outlook seems regarding the prospect of a healthy Africa, there is a brighter side. Important new health strategies and technologies have been introduced over recent decades, especially during the last ten years, with surprising (though scantily appreciated) success. Much more may be achieved in the years ahead.

The continued success of these strategies primarily depend on policy decisions made by national governments--policies decided on the availability (or lack) of development assistance funds.

How bad are Africa's health problems? Data regarding mortality and longevity in Africa for the past generation or so allows for some optimism. One of the best overall indicators of health is the proportion of newborns who die before they reach five years of age (Table 1). Child mortality data from four countries in Africa (Mali, etc.), for the years 1960, 1980 and 1993 are shown. The United States is included as a point of reference.

Clearly the rates in the various countries are quite divergent as are the health conditions in each. This serves to remind one that Africa is a very heterogeneous continent. Mali is in western Africa: Kenya is in eastern Africa: and Mauritius is an island off the African coast. Compared to the United States, the mortality rates are very high, but in the thirty-three years between 1960 and 1993, those rates have all fallen dramatically--by one-half to two-thirds. Health conditions have improved remarkably, even during the past decade when the economies of most of these countries were growing slowly, or not at all.

How do the rates in sub-Saharan Africa contrast with those in other parts of the world and at other times? (Table 2) (Again, the United States is included as a point of reference.) The mortality rate for children under five years, in 1900, for the United States, is roughly comparable to the rate in sub-Saharan Africa in 1993. A rate of 179 per thousand children indicates that nearly one in five newborns died before their fifth birthday. This figure is a sobering one for those nostalgic for the genteel era. Also the child mortality rate in East Asia (data which excludes Japan), and in Latin America, from only thirty years ago, is roughly comparable to that in Africa today. Today's technologies now make possible remarkably rapid progress in health. Moreover, biomedical research promises more and better tools to speed that progress.

Finally, data on life expectancy is very optimistic (The United States and certain other regions of the world are again used as reference.) (Table 3). The average longevity at birth in Africa was fifty-one years in 1993, an increase of seven years in only one generation. Africa lags behind East Asia and Latin America, but Africa's 1993 figure is four years **above** that for the United States in 1900. The fact is, that while health conditions in Africa are of great concern, the impact now on life expectancy and child mortality is quite similar to conditions known in our country a century ago. Prospects for improvement are far better today in Africa than they were in the United States at the turn of the century because science has offered a host of important new interventions.

[†] This paper was prepared for presentation at the Hawkins Symposium, Towson State University, Towson, Maryland, in April, 1995.

* D.A. Henderson is University Distinguished Service Professor at the Johns Hopkins University. He is also Science Advisor to the United States Secretary for Health, at the U.S. Department of Health and Human Services.

A number of different policies and programs have impacted health conditions in Africa over recent years, but there is a broad consensus that three programs in particular account for most of the reductions in mortality: immunization, diarrheal disease control and family planning.

The first of the vaccines to be administered in continent-wide campaigns was the smallpox vaccine. An eradication program in Africa commenced in 1967, at a time when smallpox was widespread in most countries, rates were commonly fifteen percent or more and deaths annually numbered in the hundreds of thousands. Ten years later, in 1977, the last recorded case of smallpox occurred. Virtually all the manpower, and most of the resources, to achieve this remarkable success were provided by the African countries themselves. Meanwhile during the course of that campaign, the tuberculosis vaccine (BCG) was administered to all children under five years of age. Later, other vaccines were added, including vaccines for measles, diphtheria, tetanus, whooping cough, poliomyelitis and, in some countries, yellow fever. Protection through immunization with these vaccines was not more than two percent in 1975; by 1990 it had risen to eighty percent. Hundreds of thousands of childhood deaths are now prevented each year, as are countless blindings and crippings from infectious diseases.

In the 1970s, a global program for diarrheal disease control began, after it was discovered that simple balanced solutions of salt and sugar administered by mouth prevented death in all but a small proportion of the most severe cases of diarrhea. The oral rehydration solution (ORS), first used to treat cholera patients, resulted in death rates declining from over thirty percent to less than one percent. Moreover, ORS was found to be equally useful for other types of diarrhea. Thus, during the past decade, throughout Africa and other parts of the world, an educational campaign has been mounted to instruct mothers in the preparation and use of the solution, and also to emphasize the importance of administering it early and throughout the course of diarrheal illness. Deaths due to diarrhea, which are primarily among young children, have rapidly declined everywhere.

Finally, contraceptives have been being used increasingly in the past decade throughout a number of African countries. In some countries, such as Kenya, Zimbabwe and Botswana, fertility rates are now falling annually at a rate of 1.5 to 2.5% (UNICEF, 1995). The result is, of course, smaller families. Infant mortality rates decrease sharply when, with successful family planning, at least two years elapse between births of children, and childbearing takes place between twenty and forty years of age. The result is substantially fewer, but more healthy, children.

So, what of the future? Will progress continue toward a healthier, longer-lived population, or has Africa attained as much as it can? This depends almost entirely on policy decisions to be made by the political leadership. Immunization, diarrheal disease control and family planning have contributed enormously to improve health in Africa over the past ten years. Much more could be done with each of these interventions, and particularly with family planning, which is seriously lacking in much of sub-Saharan Africa. Other initiatives are urgently needed to improve water supply and sanitation, to prevent parasitic infections, to improve nutrition with supplements such as iodine and vitamin A, and to control AIDS. Much could now be affordably done with available technologies.

Paradoxically, the primary thrust of health policy and strategy in most countries is not toward the strengthening of activities, which have contributed the most to improved health, but toward the elaboration of national medical care systems, i.e., a network of hospitals and clinics. Most such systems built in developing countries represent a western model for the delivery of health care. Primary health centers, for example, perform the customary functions of the western physician's office, that is, curative medicine patients are expected to come to the center to seek medical attention, to obtain drugs and to receive trauma care. The concept of outreach into the villages is alien to most centers. Health education, such as instruction in the use of oral rehydration therapy, is lacking, and counseling for family planning is provided reluctantly or simply absent. Most centers do not provide immunization, and those that do frequently offer vaccines which have been improperly stored and thus offer no protection. The relative neglect of preventive services in Africa is reflective of that in other parts of the

world. Even in this country, those who are engaged in providing medical care seldom do well in providing preventive measures, such as immunization or counseling for smoking cessation or weight reduction.

Those programs in Africa which have contributed so significantly to improved health over the past thirty years have depended almost entirely on special programs, and each of these programs has been built on community outreach and involvement. Under the best of circumstances, the health centers and the hospitals have made marginal contributions. However, the medical care system commands more than ninety percent of national health budgets throughout Africa.

A broad-based medical care system is critical to a nation's health and must command absolute priority in national health expenditures. Preventative measures, such as projects to improve water quality, supply and sanitation, as well as immunization, nutrition, smoking cessation, and family planning programs, are often supported from the leftover limited funds. Despite medical care system expenditures, costs, in every country, including the U.S., have escalated.

Few countries have yet had the insight (or perhaps the courage), to critically analyze their investments. For example, two African countries have accepted multi-hundred bed hospitals donated to their capital cities by western countries. These were accepted despite the fact that, in one of the cases, the annual operating costs will require more than half of the donee country's national health budget, that needed staffing will require virtually all of its trained national health staff, and that less than five percent of the population in the country resides within even a day's travel of the hospital. How does one measure the need for organ transplant units, for renal dialysis centers and for cardiac surgery suites? And why do donor countries so often offer such assistance?

Balances need to be struck between providing for treatment and providing the prevention. Many studies have been done to quantify the costs and of all manner of preventive measures. Curiously, little has been done to calculate the benefits and costs for primary health centers, hospitals or for the medical care system in general. In the field of internal medicine, it is well known that four out of five patients do not benefit physically by a visit to a physician, other than for the reassurance the doctor may provide. In pediatrics, the figures are similar, and these observations are made of United States conditions, where there is extensive time to examine the patient, ample diagnostic aids and plentiful supplies of drugs. What then can be said of the value of a visit to a physician in a crowded clinic in a developing country, where the duration of the visit is seldom more than one to two minutes, where there are few or no diagnostic aids and where the limited supplies normally consist of only a few drugs? What might be the outcome if these curative care services could be significantly strengthened and expanded? Suppose that an African country is able to substantially increase the amount of money devoted to curative services, the construction of hospitals, the training of physicians and the purchase of drugs. What might be the effect on longevity, which is, after all, one of the principal indicators of health status?

More than ninety percent of all health care costs are for curative care services for adults, and thus the bulk of additional investments would likely be assigned to this use. How might this effect the expected longevity of a twenty to forty year old African adult, as it compares to the expected longevity of a similarly aged American? Data are presented for two countries, Mauritius and Mali (Table 4). The gross national product (GNP) for Mauritius is one-tenth as high as that in the United States, and health expenditures per capita are similarly only one-tenth as great. Mali's gross national product and level of health expenditures are only one one-hundredth as large as those in the United States. Specifically, Mali has a GNP of \$280 per person and annual health expenditures of \$15 per person.

Expected longevity at birth varies dramatically for the three countries; it is 75 years for the United States, 69 years for Mauritius and only 57 years for Mali. But at ten years of age there is surprisingly little difference--and the differences at twenty, forty and sixty-five years are likewise not dramatically different among the countries. The simple fact is that even if extensive and elaborate health care services comparable to those in the United States were provided, it would not tangibly effect life expectancy for those beyond ten years of age. This

is not to say that improved curative services would be of no benefit. One could expect that the quality of life would, at the least, be marginally improved. But one can expect little benefit regarding life expectancy.

Two years ago, the first detailed and comprehensive examination of priorities for health care systems was completed by the World Bank. World Bank staff and consultants evaluated all manner of health interventions and, from these, evaluated alternative health policies based on proportionate costs and benefits. Their findings are set forth in the *1993 World Development Report of the World Bank* (World Bank, 1993). The Report concludes that the highest priority should be accorded public health measures, immunization, improved nutrition, fertility control, better water supply and sanitation. Recognizing the key role of women in the household and in providing health services to their families, the report also recommends promotion of the rights and status of women and expanded investments in education. Finally, it recommends investment in essential clinical care for the poor. Where might the resources come from? The report suggests that needed resources could readily be found through reduction of expenditures for hospital care and for specialist training, as well from cutting less cost effective clinical care procedures. Because such expenditures are now proportionately so great, even modest reductions would serve to fund many, if not most, preventive interventions.

This solution seems so logical and simple that one may wonder why policies have not already changed. In every country, of course, the political leaders and their families are subject to illness. For them a priority is to assure quality medical care for themselves. This usually means, at least in the capital city, a substantial hospital. Additionally, the person or persons who are principal advisors to the political leadership are often specialist physicians who know their particular area well, and often not much beyond their field. Thus, decisions are made favoring elaborate, often non-functional, cardiac surgery centers, special orthopedic hospitals, ophthalmology clinics and the like, concentrated in capital cities.

The World Bank's Report now proposes that investments in health services be analyzed critically, to ascertain how to achieve the best overall health throughout a population at the lowest cost. It implies a radical reordering of traditional priorities. To ensure Africa's continued progress, a reordering is essential.

TABLE I
UNDER 5 YEARS MORTALITY RATE PER (1000)

	<u>1960</u>	<u>1980</u>	<u>1993</u>
MALI	400	310	217
KENYA	202	112	90
BOTSWANA	170	94	56
MAURITIUS	84	42	22
U. S.	30	15	10

Reference: UNICEF, 1995.

TABLE 2
UNDER 5 YEARS MORTALITY RATE PER (1000)

	<u>1900</u>	<u>1960</u>	<u>1993</u>
U. S.	174	30	10
Sub-Saharan Africa		255	179
East Asia (excluding Japan)		200	56
Latin America		157	48

Reference: Preston, 1985.
UNICEF, 1995.

TABLE 3
LIFE: EXPECTANCY AT BIRTH

	<u>1900</u>	<u>1965</u>	<u>1993</u>
U.S.	47	69	76
Sub-Saharan Africa		44	51
East Asia (excluding Japan)			68
Latin America			68

Reference: Preston, 1985
UNICEF, 1995
World Bank, 1986.

TABLE 4
LONGEVITY AT " X " AGE

	<u>U.S. (1988)</u>	<u>MAURITIUS (1989-1992)</u>	<u>Mali (1987)</u>
Birth	75	69	157
10 years	65	66	65
20 years	56	52	53
40 years	38	33	37
65 years	17	13	17

References: United Nations, 1991.
United Nations, 1992.
World Bank, 1993.