Original article

# Impact of AIDS on the economy and health care services in Ethiopia

Abdulhamid Bedri Kello,

**Background**

Acquired immuno deficiency syndrome (AIDS) has been spreading at an alarming rate in Ethiopia after the first AIDS case in the country was reported in the mid-1980s. At the end of 1993, it was estimated that there were half a million people with AIDS and this number is expected to grow to more than five million by the year 2005 (1). It is obvious that the disease, unless effectively controlled, will result in a large number of illness and death of mostly the young.

Its effect on the health care service system, which is inadequate to handle the traditional health problems, could not be negligible. The health status of Ethiopians, without the complications of AIDS, is very low as indicated by all health status indictors. The most important health status indicator, infant mortality rate, stands at 112 per 1000 live births. Only 27 percent of the people in 1994/95 had access to safe water. Life expectancy at birth stands at only 49 years. Maternal mortality rate per 100000 live births stood at 1525 in the period between 1989 and 1995. Prevalence rate of under-five malnu-trition was 47 percent, which is among the highest even in Africa (2).

Other indicators show the same. Health service coverage is below 46 percent, while disease incidence and prevalence seem to be on the increase. Available statistics indicate that communicable diseases and malnutrition account for the highest morbidity and mortality. Communicable diseases and malnutrition account for the highest morbidity and mortality. Communicable diseases account for 60 to 80 percent of all reported illnesses in the country. Malaria, tuberculosis, leprosy, trachoma, diarrhoeal diseases, vaccine preventable diseases, and venereal diseases dominate (3).

More than half of the population relies on traditional medicine as complementary or substitute to the modern health care system. The government run health care system is based on health stations, health centres and hospital network that provide the vast majority of preventive services. However, this system is in a deep financial crisis. The demand for health care services (given the existing financing structure of the system) is much more than the available supply (4). Private non-profit voluntary agencies provide services in some parts of the country. In addition to these, there is limited but expanding private for-profit health care in the urban areas.

It is with this background that an AIDS epidemic has to be seen in Ethiopia. This paper examines the impact of the disease on the economy and health care service system. Studying the economic impact of the disease is important to determine its effect on production and income; to estimate the financial burden of AIDS patients, and to demonstrate the seriousness of the disease by showing what it could do to the economy and the health care services system, beyond the pain and grief associated with the disease.

*Research Problem*: HIV/AIDS involves several opportunistic infections that have to be treated. This is clearly an additional burden on the health care service system at a time when the nation

From the Institute of Development Research, Addis Ababa University, P.O. Box 1176, Addis Ababa, Ethiopia

has not been able to address its major and long-standing health problems. AIDS is superimposed on the existing problems and complicates them. The capacity of the nation to cope with this new problem is extremely limited. Since even diagnostic capacity is not available for most of the health professionals, most of the patients who develop opportunistic infections are treated without detecting

the major cause. There is a need for determining what the nation expects to pay to treat HIV/AIDS patients.

More serious is its implication for the use of available funds for health care services (both from government and private sources). Unless the rapid rate of growth of HIV/AIDS prevalence is drastically reduced, it seems that the nation may not be able to cope with even the required cost of diagnosis. Furthermore, preventive measures, that are indispensable to bring favourable attitudinal changes in the sexually active age-groups, cost money.

In addition to the financial costs there are implications for the physical utilisation of the existing health care facilities. AIDS patients get treatment within the health care system when opportunistic infections develop, including possible self-treatment, which could involve the physical crowding out of other patients and preventive programmes. The involvement of drugs in the treatment of opportunistic infections crowds out other patients and consumes foreign exchange. Even when such costs are paid for by foreign donors, some of the funds devoted for this could have possibly been used for other purposes.

Health care financing policy has to respond to changing conditions, and the spread of HIV/AIDS is a major change. It is important to investigate whether the policy of providing care for all in need could hold under the HIV/AIDS pressure, since even the existing disease burden is proven to be unmanageable within the environment the health care service system is operating (i.e., financing levels and modalities).

If one leaves out the psychological effects, which are extremely important but not easily measured, the income loss that the disease could bring has to be estimated to enable policy makers take more informed decisions when allocating resources and putting priorities on different activities.

There is no study evaluating the economic and health care system impact of HIV/AIDS in Ethiopia. Therefore, this study is an attempt to fill the gap. Furthermore, the study is expected to contribute to the economic analyses of HIV/AIDS in Africa.

*Economic Costs of HIV/AIDS: Theoretical Issues:* The total cost (TC) of the disease could be captured by

$$TC=DC+IC \qquad (1)$$

where DC and IC are the direct and indirect costs respectively.

$$DC = \sum_{i=1}^{n}\left(\frac{Oa_{1i} + Ia_{2i}}{(1+r)^{i}}\right) \qquad (2)$$

where DC is direct cost; O is total outpatient cost per year, $a_{1i}$ is number of persons seeking outpatient services in year i (i=1, 2, ..., n); I is total inpatient cost per year; total individual cost per year; $a_{2i}$ is number of persons seeking inpatient services in year i. Total outpatient services in year i. Total outpatient cost per year, O, is obtained as the product of average number of episodes per year and average outpatient cost per episodes. Total inpatient cost per year, I, is obtained similarly.

$$IC = \sum_{i=1}^{n}\sum_{j=1}^{m}\left(\frac{(tk)_j + q_{ij}}{(1+r)^n}\right) \quad (3)$$

where IC is indirect cost; t is number of days spent by the individual; k is earning/ wage rate per day; and q is annual earning of those who die (j=1, 2,..., m) in year i (i=1, 2,...., n).

Determining the number of cases requires establishing those who are infected with HIV and those who develop the disease AIDS. This is a complicated affair as the number and characteristic of confirmed AIDS cases reflects the past history of the disease and not the current status of HIV distribution in the population. This has to do with the nature of the disease that remains latent for approximately four and half hears before the first signs of illness appear and may take up to ten years from the time of infection before the development of full blown AIDS. Therefore, determining the number of cases at any point in time involves an informed guess about the average progression of the disease. Most studies adopt a very rough method to calculate the number of cases (5). Thus, the most serious problem in estimating total cost in developing countries is the problem of determining the number of new cases.

Many AIDS cases remain undiagnosed and a high proportion of known AIDS cases do not get treatment in developing countries, which results in severe underestimation of the true case load. "In the USA, it has been estimated that as much as 41% of AIDS cases are not diagnosed or reported. In certain parts of Africa, this is estimated to be as high as 90%" (5, p. 35).

The influence this has on the outcome of the cost calculation has been recognised by all writers who attempted such a calculation. For instance, Hardy et al (6) and Scitovsky and Over (7) mention it in the case of developed countries while Bloom and Glied (8), and Scitovsky and Over (7) recognise it in the context of developing economies and adopt measures to overcome it. Review papers also strongly point out the paucity of this epidemiological information in all countries (9-11).

Direct cost of an illness is defined as the cost of treatment, which is determined by the supply and demand for health care services in the market (that is, the opportunity cost of providing the services). And indirect costs are defined as the labour market price of time lost (9). However, it is possible to sub-divide both into visible and invisible costs as follows.

Direct visible costs are the cost of treating HIV/AIDS patients and preventive service costs. If one concentrates on the treatment cost only, it is seen that it involves determining outpatient and inpatient treatment costs.

Various studies rely on medical history records to generate the cost of treatment mentioned above. The most important advantage in using this approach is that it is based on actual medical expenses. However, the approach has obvious weaknesses because of (a) differences in accessing health care facilities; (b) any set of hospital medical history records could be biased; (c) records could be incomplete or missing; and (d) the possibility of the introduction of new techniques of diagnosis and treatment (for example, the use of Azidothiamidine(AZT) at some point was new). Another problem with this approach is the involvement of either left censoring (where data are not observed for at least some of the subjects prior to recording) or right censoring (where data have not yet been observed for other subjects because they have not yet died or have been lost to follow-up) (12, p. 134).

Under-estimation could also result, as most of the studies use actual charges, for instance, patients may receive treatment from a number of sources and personnel, and may even treat themselves (8, p. 105). This is a serious problem particularly in developing countries.

The second approach to determine treatment costs is the medical decision algorithm approach [e.g., (13) for the US and (9) for Tanzania]. This approach relies on one or more experts, who are asked to review current literature and their own-practice to develop decision tree algorithm for each

AIDS related infection diagnosed and treatment procedure to be followed. The algorithms show the conditional probabilities of progression to subsequent diagnoses or death.

The advantages of the 'medical decision algorithm' approach are the result of its reliance on less direct data collection (therefore, less time, money, and effort required). It could be based on the most up-to-date medical practice that may not be reflected yet in the patient history records. Furthermore, the data is flexible, in that it is easy to modify it to take into account new developments; and, such algorithms can be used to cost out various diseases that may be difficult to observe reliably in medical history databases (13).

The most serious problem of the above approach is the difficulty of validation. Different physicians in different settings could use different drugs or therapeutic regimen, which may be impossible to standardise.

In both approaches there is a further reason why the figures given could be wrong. For instance, the shift towards increased use of out-patient rather than in-patient care (5) could result in major changes in the findings.

Direct invisible costs are costs of services provided by family, friends, and charities. Though unpaid for, these services nevertheless represent real consumption of resources and hence a real cost. These costs are ignored since they are not covered by health service budgets and the limitation of data. However, their omission can lead to sub-optimisation in choosing care strategies.

Costs of health and social care should include both personal and non-personal sources such as blood screening and replacement, health education, staff-training and research (many cost estimates only include some of these). This seemingly straightforward cost component could be intractable. It has been seen that even considering the cost of specific preventive measure could give different results in different places. For instance, distribution of the same type of condoms had different costs (14), though the production cost of the condoms may not vary much from place to place.

As new strategies of coping with AIDS patients increasingly indicate reliance on social support rather than hospitalisation (12), the provision of social support will increasingly come to the forefront. Therefore, using imputed values for such services could be advisable, in order to avoid misleading policy recommendations, with zero value for community support systems.

Some studies in the developed countries, attempt to estimate non-personal medical care costs, but, these, at least, have been regarded as educated guesses. No estimates were available for developing countries before 1991 (5, p. 42). However, few studies, for instance Viravaidya et al (15) include some of these costs.

Indirect visible costs are costs of production lost through morbidity and mortality, including estimation for the value of unmarketed production, such as housekeeping tasks and subsistence agriculture, which have been ignored, though acknowledged as being important.

However, as a fatal disease of the young, AIDS represents a substantial loss of working years. Most economic studies of the problem include some kind of calculation of income loss to HIV/AIDS.

Indirect invisible costs are costs of intangibles and lower quality of life, through factors like pain, incapacity, fear, anxiety, isolation, stigma, depression. These costs are clearly important for AIDS, but are so difficult to evaluate that no study to date has attempted to estimate them. Perhaps a way out is to employ contingent valuation methods.

A very serious issue that was ignored by most writers is the problem of including income losses of workers who may be unemployed or the existence of some level of unemployment. Koopmanschap and Van Ineveld (16) raise it and consider the use of what they call a `friction cost method,' whereby production loses are confined to the period needed to replace a sick worker (that is the actual time it takes to replace the worker and production is lost). This approach implies that the unemployed or the underemployed are not included.

*Effect of HIV/AIDS on demand for health care services*: AIDS potentially displaces patients with other categories of illnesses in accessing health care services. This could be in terms of outpatient

and inpatient service demand. A possible occurrence is the overcrowding of hospitals. This has not been systematically analysed in the available literature. In the developing countries, the limitation of resources makes it mandatory to determine to what extent AIDS could change demand for health services or results in overcrowding faced with demand inelastic health care services. This is more important when one is working under limited budget, fixed prices or no prices for services and shortage of foreign exchange (to finance the heavily import oriented health service system). As was mentioned earlier such consideration has largely been overlooked. However, Bloom and Carliner (27) briefly deal with implication of AIDS to health financing.

*Effect of HIV/AIDS on health staff*: The effect of AIDS on health staff could be due to the pressure of caring for dying patients (which could be demoralising), and risk of contacting the disease. This could lead to abandoning the profession by increasing number of health professionals, particularly at lower levels of the service, as a consequence of which workload on the remaining personnel could increase (18).

*Some Results of Studies on the Cost of AIDS:* There are various studies on the cost of AIDS. The figures for the direct cost of the disease, as could be seen from the sample of studies both from the developed and the developing countries, indicate a very wide variation. This could be explained by, among others the difference in the labour costs and the technology in use in the countries. Detailed reviews of such studies conducted before 1991 are available in Hanson (22) and Broomberg et al (5).

A PANOS study indicated that hospital care was the major cost of treatment. Imported goods utilisation, mainly drugs, depend on the availability of foreign exchange to buy them (11, p. 29). In principle, the costs of drugs and packaging should be more or less the same everywhere. But annual per capita drug consumption in industrialised countries in 1985 was estimated at US $62.00, compared to US $5.40 in the developing countries. Differences in income levels aside, this is most probably a reflection of drug availability and use of non-market price (i.e., subsidised drug distribution). Moreover, a possible additional explanation is the variation of the length of stay of a patient after the onset of the disease. But, care is necessary in interpreting this fact, because, patients in developing countries could be ill with AIDS related infections before being diagnosed as HIV positive. The PANOS study estimated that it takes two years before HIV positive people who fall ill in the developed countries die of HIV related infections and a year for those in developing countries as the average length of life after serious infections begin to attack the HIV/AIDS patients.

If the standard treatment in the developed countries were to be used, for instance, the use of AZT could have resulted in a colossal increase in the funds required for drugs. Treatment with AZT costs approximately $1,200 per life year gained (11). This is five times the per capital product of the working force in Ethiopia. Perhaps the recently introduced set of antiviral drugs could be beyond the reach of even the richest income groups in developing countries. Another serious issue is that, as the life-span of people treated with this drug could possibly increase, and in the terminal phase of the disease, hospitalisation costs would also be there.

Table 1: **A sample of study results on the direct cost of AIDS in US Dollars**

| source | Years of estimate | Mean cost/person | Life span |
|---|---|---|---|
| Zaire | | | |
| Over M. et al (9) | 1986 | 100-1,600 | |
| Tanzania | | | |
| Over M. et al(9) | 1986 | 100-600 | |
| Korea | | | |
| Viravaidya et al . (15) | 1993 | 658-1,016 | 2 years |
| Rwanda | | | |

| | | | |
|---|---|---|---|
| yang B. (19 ) | 1993 | 1,225 | 2 years |
| Rwanda | | | |
| Shepard et al | 1992 | 358 | 1 year |
| Malaysia | | | |
| Lim, D.(21) | 1993 | 2,000 | - |

The results of the lifetime cost per person(i.e., indirect costs) also show wide variations as could be seen from Table 2. Such variations could not be surprising as there are differences in labour productivity or, at least, income levels in different countries.

## Methods

Direct costs are calculated using equation 2 above and the medical history approach, as the treatment of patients with AIDS in Ethiopia is not standardised and variations could exist in the country. Therefore, the medical decision algorithm approach was dropped.

Table 2: **Indirect costs per person of HIV/AIDS: some examples in US dollars**

| Location and author | Year | Amount |
|---|---|---|
| Tanzania | | |
| Over et al (15) | 1986 | 5,093 |
| Thailand | | |
| Viravardiya et al (15) | 1993 | 21,675 |
| Korea | | |
| Yang, B. (19) | 1993 | 241,974 |
| Malaysia | | |
| lim, , , D. (21) | 1993 | 38,279 |
| Tanzania | 1986 | 5,093 |

The non-personal costs are the economic cost of providing preventive services. This is determined by taking the costs of blood screening (assuming free blood donation), health education, staff training costs, research costs, condom distribution costs, screening of pregnant women and related costs, and administration of the services.

Indirect costs are calculated using equation 3 above. The average income level is determined assuming that the dependency ratio is 2:3 and the average family size is five. This is because data on income levels and distribution of income, even crude urban rural income variations, are not available.

Effect on the health care delivery system involved the determination of hospital days, consultation hours, and drugs required to treat AIDS cases, which are obtained as the result of the empirical data collected (as given below).

Responses of health staff to AIDS (including potential attrition due to AIDS) are collected by relying on medical personnel and administrators.

*Data*: Data for this study were collected from five hospitals in different parts of the country in 1994/95. The selection of these hospitals was based on taking at least one each from government, nongovernmental and industrial hospitals. Thus, three government-run, one NGO, and one industrial hospitals were selected. All of the hospitals were chosen in high AIDS prevalence areas of the country. There was no attempt to randomise the hospital to be included. The first hospital to be covered, which was also to be used as a pilot case, was Haile Mariam Mamo Hospital in Nazreth, a 143-bed hospital established in 1935. It was possible to identify that there were 54 patients with HIV/AIDS and with medical records. Out of these, the records of 4 patients were found to be either not available or without diagnosis, so that, these were dropped. The remaining 50 records were all

included to identify tests, drugs prescribed, other services obtained, and number of days spent in the hospital. Information on services received levels at both inpatient and outpatient was obtained. Prices of drugs and other services were also obtained. Personnel were interviewed.

The second hospital was Wonji Sugar Estate Hospital, a 190-bed hospital established in 1960. In this hospital, it was possible to identify 120 patients who were proven to be HIV positive. Out of these 120 patients, thirty patients (or 25 percent of the total) were taken. Samples were taken in every hospital except Nazareth Haile Mariam Mamo Hospital where all cases were included. The sample sizes were determined based on the time available to cover the records.

The third hospital covered was Attat Hospital, a 53-bed hospital established in 1961 and run by Catholic missionaries. In this hospital, as a policy, no patient with HIV positive record is admitted. One hundred patients were identified and 50 percent of them were included in the sample (50 outpatients).

The fourth hospital was Felege Hiwot Hospital in Bahir Dar. This was a hospital opened by German missionaries in 1955 but presently under the Ministry of Health. There were 217 patients identified. Out of these 25 percent were randomly selected, but the records of 10 patients were missing, so that only 44 records were covered.

The fifth and last hospital covered was Zewditu Hospital in Addis Ababa, a 173-bedhospital established by American miss ionaries in 1962. It was possible to identify 120 patients with HIV positive test results. Out of these 120 patients, 25 percent were sampled and all records of these patients were available.

**Results**

Direct costs were obtained in terms of outpatient costs, inpatient costs and preventive services costs. Two scenarios were adopted: high and low cost scenarios. These cost scenarios are based on the actual data gathered from the five hospitals in the sample and private sector establishments in Addis Ababa for bed charges, drugs and laboratory services. The costs are listed for all and then the lowest and the highest figures are taken as the low and high cost scenarios, respectively.

Both drug and test costs were high or low together in the two scenarios. Furthermore, hotel cost for inpatients was also considered to include the labour cost involved. A discussion with health professionals (including physicians and nurses) established that there were no differences between treating AIDS cases and other patients (except in the cleaning of beds used by HIV/AIDS patients). Therefore, the attempt to work out time differential between these two categories of patients was dropped.

To entertain a broad range of conditions, three discount rates were used: 5, 10 and 15 percent discount rates for both the high and the low cost scenarios. Table 3 summarises results of high and low cost scenario calculations. The total cost in the low cost scenario range from US $ 32 million to US $ 49 million whereas in the high cost scenario, the figures went up from US $ 225 million to US $ 368 million.

Table 3: **Summary of results of the high and low cost scenarios, 1997 to 2006 (in millions US $)**

| Discount rate | Low cost scenario | High cost scenario |
|---|---|---|
| 5 percent | 49.4 | 368.0 |
| 10 percent | 39.1 | 284.0 |
| 15 percent | 32.0 | 225.6 |

US $ 1 = 7.25 Birrs

In terms of per capita patient cost, the low scenario gives US $ 12.03 outpatient cost and US $ 22.64 inpatient cost. The figures obtained for the high cost scenario are more alarming. The per capita outpatient visit costs are US $ 41.30 and the per capita inpatient costs are US $ 197.00 (see Table 4).

Table 4: **Per capita outpatient and inpatient cost under high and low cost scenarios (millions of USD)**

| Outpatient costs | High | Low |
|---|---|---|
| Drug cost per visit | 35.96 | 5.54 |
| Cost of tests per visit | 2.14 | 0.99 |
| Cost of consultation per visit | 3.20 | 0.40 |
| Total cost per visit | 41.30 | 12.03 |
| Inpatient costs | | |
| Cost of drugs per episode | 24.31 | 9.87 |
| Cost of tests per episode | 9.00 | 2.94 |
| Cost of bed per episode | 163.72 | 9.82 |
| Total cost per episode | 197.03 | 22.64 |

The total preventive service cost is assumed to be maintained at the 1993 budget level of US $ 5.6 million (obtained by converting the 1993 budget contribution of the Ethiopian government to AIDS Control Programme in Birrs into the new exchange rate of Birr 7.25 to the US dollar). Therefore, the total real cost of the preventive services will amount to $ 56 million in the next ten years. This was taken for both the high and low cost calculations.

Indirect Cost involves the cost of production or income loss through morbidity and mortality, including the imputed value of unmarketed production, for instance peasant production consumed at home or housekeeping labour contributed by peasant household members.

Table 5: **Income loss due to AIDS in Ethiopia, 1997-2006 (in millions of US $)**

| Discount rate | Due to death | Due to illness | Total | Percentage of GNP |
|---|---|---|---|---|
| 5 percent | 1595 | 1124 | 2719 | 42 |
| 10 percent | 1164 | 828 | 1992 | 31 |
| 15 percent | 871 | 625 | 1469 | 23 |

Per capita income was taken as the base for the calculations for the loss in income due to premature deaths. In terms of income loss due to premature deaths over the 10 year period (19972006) stood from US $ 1496 to US $ 2719 million. This is from 23 to 42 percent of the national income depending on the discount rate used.

*Effect on health service delivery system*: In nearly all cases studied, except at Attat Hospital, health personnel have indicated serious concerns and some even expressed a wish to leave the profession, if other opportunities were available. The more trained a person is, the worry of contacting the disease seemed to be higher. People who directly deal with bleeding patients were more afraid of the disease. It was observed, except at Attat and Wonji Hospitals, that means of protection against catching the disease were lacking. In three of the hospitals: (Nazareth Bahir Dar and Zewditu) disposable syringes and gloves were in short supply. This could contribute to the fear of the medical personnel and possible spreading of the disease.

If other patients are to be displaced to meet the demands of HIV/AIDS patients, the required services would have very serious results. Even with the given conservative assumptions, the percentages of beds to be occupied by HIV/AIDS patients could go up to 100 percent of the total by the year 2003. Even with the generous assumption that bed capacity will double within seven years and keep on increasing, the percentage of beds occupied by AIDS patients would go up to 55 percent in 2001 but drop to 44 percent in 2005.

Table 6: **Additional capital cost for AIDS patients in Ethiopia (US $) 1997-2006**

| Capital cost category | Amount |
|---|---|
| Capital cost outpatient services | 461,833.00 |

| | |
|---|---|
| Capital cost of beds | 52,256,582.00 |
| Total capital cost | 52,718,416.00 |

If, on the other hand, new facilities are to be provided, the capital cost alone will be prohibitive. The total inpatient discounted capital cost to provide additional hospital beds in the ten year period comes to US $ 52.3 million and total capital cost of providing additional outpatient services in the same period would amount to US $ 461,833. This would give a total of US $ 52.7, which most probably take a good part of any capital investment in the country (see Table 6).

**Discussion**

A major input of the results obtained is the data on AIDS cases. The figures used here are the projection using medium growth path by Asmerom (1). It is necessary to use the low and high growth condition projections too. Using these figures by weighing them by assumed percentages of those who will receive treatment could also be a source of bias. There is, for instance, all the possibility that AIDS cases could be those who get most of the health services as most would be from or around major urban centres. Therefore, instead of adopting a low percentage getting treatment, more could get treatment. The existing policy of providing free medical services once a patient is identified to be with HIV/AIDS could continue on and enable more patients to seek treatment.

In contrast to this, the policy could change and even be accompanied by other policy measures that change the utilisation pattern. For instance, it is possible that no patient is to be admitted as an inpatient once identified to have HIV/AIDS as is already the case in Attat and Bahir Dar Hospitals (though patients are admitted very rarely at Bahir Dar).

In 1993 around 20,000 HIV/AIDS cases were reported to have received some kind of treatment in hospitals, thus showing that, of the total 551,000 estimated to have HIV/AIDS, only a fraction will be specifically treated as such and reported. The rest of the estimated half million cases either do not get treatment, or are not reported, or the estimate is incorrect. Alternatively one could argue that most of the patients may never go to get any kind of treatment in hospitals or any other health institution.

This directly leads us to a word of caution interpreting and using the figures given in this study, however conservative the estimates and assumptions were. These facts could make results obtained highly sensitive because of the relatively very high numbers of cases involved.

The cost figures per patient compare favourably with other estimates in the developing countries. Even the high scenario costs (US $ 627.50 per patient per year) seem to be lower than most estimates from developing countries (see Table 2 above). However, this is more than five times the US $ 120 per capita income in Ethiopia.

The treatment costs per person are extremely low (US $ 197, using the high cost scenario) as compared to other results (see Table 3) even when compared with Tanzania's figure of US $ 5093 (in 1988 and, if the present value of that figure is taken, it will be definitely higher).

It is very difficult to attribute the dissatisfaction that was reported by health professionals to only the emergence and existence of HIV/AIDS cases. This could have existed even without HIV/AIDS. However, the absence of adequate protective mechanisms in government-run institutions is a reason for concern.

It is most probable that no new facilities or expansion of existing units will take place to specifically accommodate cases of HIV/AIDS. Therefore, it is reasonable to expect displacement of other patients, unless a draconian policy of refusing treating HIV/AIDS is introduced officially or by health personnel without such an official ban. Even if this is to happen, it could result in utilisation of the fast growing private health care system. Thus, devoting of more resources to the disease may prove to be unavoidable.

A very serious issue associated with the above is the increased demand of drugs, which up to now, are imported directly or indirectly. It is estimated that each AIDS patient could require from US $ 5.5 to US$ 36 per year. One could see that even the low scenarios cost demands a huge amount of foreign exchange allocation.

*Policy Issues:* The direct policy implication of this study is the need for stepping up the prevention measures because of the suffering and psychological impact the disease has and also because of the amount of income that could be lost as a result of the disease. Furthermore, even concentrating on the health care service system, it is shown that the amount of money involved in treating diseases associated with HIV/AIDS could prove to be prohibitive to the health sector. It is also clear that the drugs involved could perhaps take up more than what would be available for drugs to treat all conditions. It has also effect on the health professionals who fear the risk of getting the disease.

Another policy issue of concern is with the management of HIV/AIDS cases. The present policy in the government-run health care facilities is based on treating the patients at the hospital level and whether to admit the patients or not is left to the judgement of the medical directors of the institutions. If this practice is left to continue, the health care system will be inundated by the HIV/AIDS cases that are expected to develop in a short period of time. The condition would be exacerbated by the policy of providing `free medical care' to anybody who is identified to have the disease, irrespective of the ability to pay. This is an outstanding issue as the health facilities of the Ministry of Health run do not lose or gain as a result of user charge. But, at a national level its net effect is that the government's ability to raise revenue would be decreased and, instead it has to pay more where there is no need to do so. This practice may have to be stopped and a uniform policy on how to manage HIV/AIDS patients be should adopted.

Managing of AIDS related disease brings about a major change in the use of drugs and this will call for a drug policy in relation to the management of these cases. It is necessary to supply enough drugs. The mechanisms of how the drugs be acquired should also include investigating if the possibility exists to produce at least some of the drugs domestically. This exercise will be based on the number of people who will fall ill with AIDS related diseases and what would be the composition of drugs that could adequately cover their needs. Such an exercise could lead to the estimation of the foreign exchange required to cover the needs of the patients.

Probably another area of concern before going into the above mentioned exercise of planning for drugs is the need for standardising major drug prescriptions that are associated with AIDS related diseases. This is a matter for clinicians and it is possible to arrive at some consensus as to what should be the basic recommended drug in the case of, say, a patient who is HIV positive and with tuberculosis.

It is necessary to make data bases to include costs. For instance, this study faced a major difficulty in getting information on the expenditures of the National AIDS Control Office. It could have been possible for the research section of AIDS Control Programme to keep records of the financial position including what has been spent on what, and what has not been spent, for the past years.

Information gathered by people handling AIDS cases needs to be standardised. At present the only thing that is standardised seems to be the registration of the names, address (though not adequately detailed for instance, in the case of rural people, or deliberately false), age and sex of the individuals. This issue needs a serious attention so that the efforts of thousands of health workers do not remain isolated pieces of information not to be used for a higher level analysis. It may also be important to inform those who keep the records as to why these are kept.

A major training and retraining of health professionals and particularly counsellors, seems to be important. The number of counsellors available in the areas visited seems to be inadequate. If the services associated with AIDS cases are to be shifted out of the hospitals or even to the outpatient care units, other modalities to provide counselling should be designed and people should be trained for the purpose. This would require early preparedness before changing any of the service delivery modalities.

The creation of adequately staffed laboratory facilities or the creation of a more efficient communication network is necessary in order

not to be faced with a unmanageable demand for laboratory services. Laboratory technicians should



be given adequate training on the modes of transmission of the disease and adequate protective materials against inadvertent contact with blood in order to give them a sense of security.

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