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**ADULT MORTALITY IN THE ERA OF  
HIV/AIDS: ASIA \***

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## INTRODUCTION

### A. MORTALITY IN THE ASIA REGION

#### *1. Some methodological considerations*

The data on which this paper is based were published by different organizations (UN Population Division, UNESCAP, WHO and UNAIDS), which use different geographic definitions of regions and sub-regions when aggregating national-level data. As far as possible, data available at the level of individual member countries have been presented here according to the UN Population Division geographic groupings. In the case of the regional and sub-regional data produced by the WHO, the original epidemiological sub-regions used by the organization and defined according to their levels of child and adult mortality have been maintained.<sup>1</sup> Discrepancies occasionally arise from the concurrent use of different data sources.

There can be substantial differences in the availability of reliable mortality data, particularly with respect to adult mortality, which can suffer from poor comprehensiveness and uncertain reliability (Lopez and others, 2002; Murray and others, 2002). The estimation of the risk factors underlying mortality also suffers from significant uncertainty.<sup>2</sup> Low levels of interest in the measurement of adult mortality have made reliable information on this indicator difficult to obtain. However, the unfolding of the epidemiological transition, particularly the marked recent decline in child mortality, is now contributing to changing this situation (Lopez, 2003).

The validity of cross-country comparisons within Asia can be impaired by the huge differences in population sizes among the countries of the region (ranging from a few hundred thousand persons to over 1.3 billion for China), as well as differences in the age structure of their populations. The comparative interpretation of absolute and relative figures therefore needs to make allowances for these differences.

The Asia region presents a great deal of variety, with widely contrasting mortality situations and examples of virtually all the stages in levels of development, and stages in demographic and epidemiological transition, all of which influence mortality levels.

#### *2. The current mortality picture*

This section examines commonly used measures of general mortality and age specific mortality: life expectancy at birth and the probability of adult death (between ages 15 and 59), the latter indicator being particularly meaningful in the context of AIDS mortality.

##### *a. Life expectancy at birth*

This indicator essentially reflects population health conditions and levels of health development. It is, however, closely correlated with the CDR and presents a very wide range of values (almost two-fold) among the countries of the region (WHO, 2002). In 2001, three countries had a life expectancy above 78 years for both sexes: Japan, which is both the world's and Asia's leader with 81.4 years, Israel and Singapore. In a few countries (e.g. Republic of Korea, Brunei, Malaysia, China) life expectancy was above 70. Most countries of the region had values comprised between 60 and 70. The four countries with the highest CDR values had a life expectancy below 50, again highlighting the close correlation

between the two indicators. The post-conflict countries of Afghanistan (42+) and East Timor (48) ranked at the bottom with respect to this indicator.

Age patterns of mortality at the sub-regional level show marked differentials favoring women in virtually all age groups. Higher male mortality prevails in all adult age groups, except among the population aged 70 and above in WprA and SeaB (WHO, 2000).

Differences between males and females with respect to life expectancy at birth range widely (WHO, 2002). The female advantage of 7 to 8 years typical of most industrialized countries is found in Sri Lanka, the Republic of Korea, the Philippines and several Central Asian Republics. This advantage narrows to 6-7 years in Japan, Mongolia and Thailand and to less than 3 years in Bhutan, Brunei, China, India, Indonesia, the Lao People's Democratic Republic and Maldives. In two countries (Bangladesh and Nepal) the sex differential actually reverses itself to a slight male advantage. This reflects the combined effects of higher child mortality among girls and high maternal mortality.

#### *b. Adult mortality levels*

This indicator refers to the risk of dying before age 60 among those who have reached age 15 ( $_{45}q_{15}$ ). Premature adult mortality is closely correlated with life expectancy at birth, though exhibiting an even wider range of values in 2000 (from 73 per thousand in Japan to 328 in the Lao People's Democratic Republic, or a four-fold difference). The same two countries that had a life expectancy above 78 had premature adult mortality levels below 100. The same four countries that had a life expectancy above 70, plus Viet Nam, had premature adult mortality levels between 100 and 200. Most countries of the region were in the range 200-300. The highest levels of premature adult mortality (above 300) were found in Cambodia, the Lao People's Democratic Republic, Myanmar and Nepal, which rank among the poorest countries of the region (WHO, 2000).

With respect to adult mortality also, sex differentials range widely.. Differences are widest (more than double for men than for women) in Armenia, Georgia, Israel, Kyrgyzstan and the Republic of Korea. There is virtual parity between the sexes in Bangladesh, Nepal and Pakistan, three countries with extremely high levels of maternal mortality (WHO, 2002).

Table 1 displays the values of  $_{45}q_{15}$  for males and females in 1999 and 2001 for the countries of the Asia region with HIV prevalence of 0.1 and above. Male adult mortality shows little correlation with HIV prevalence rates, although Cambodia has the highest values for both indicators. In all countries, irrespective of HIV prevalence rates,  $_{45}q_{15}$  values are significantly higher for males.

### *3. Recent trends in mortality levels*

On the whole, overall life expectancy has improved moderately in the countries of Asia over the last few years (figure I). This stands in contrast to child mortality levels, which have fallen markedly between 1990 and 2000 in all countries of the region. This should not be surprising, however, as reductions in adult mortality, being much more difficult to achieve, are typically less extreme (Lopez, 2003). Trends in adult mortality show a more varied picture.

#### *a. Trends in life expectancy at birth*

In the last decade of the 20<sup>th</sup> Century, life expectancy at birth has increased in every country of the region (Lopez, 2002). Notable exceptions can be found in the Democratic Republic of Korea (decrease of 4 years for both sexes) and Sri Lanka (decrease of 1 year for males only). The highest gains (6 to 8 years) were achieved in Bangladesh, Bhutan, the Lao People's Democratic Republic, Nepal and Viet

Nam. The smallest gains were made in Thailand and Cambodia, where progress was hindered by slight absolute declines in life expectancy among the male population. This trend reflects the incipient effect of AIDS deaths in these two countries.

*b. Recent trends in  $_{45}q_{15}$*

As shown in table 1 male adult mortality increased in 11 of the 19 countries between 1999 and 2001. This increase was most marked in Myanmar. Female adult mortality increased in 8 of the 19 countries. As a result of these trends, sex differentials in  $_{45}q_{15}$  have been increasing slightly in a majority of the countries. This trend is consistent with the much lower HIV infection rates among women. Women are estimated to make up 23 per cent of the HIV positive adult population in East Asia and the Pacific and 37 per cent in South and South East Asia, as against 58 per cent in Sub-Saharan Africa (UNAIDS, 2002).

*4. Causes of death: patterns and trends*

The epidemiological transition is typically marked by a decline in the relative importance of childhood diseases and infectious diseases preventable by vaccination and by an increase in the relative importance of chronic diseases more common at older ages (WHO, 2002). Just in the short time interval between 2000 and 2001, changes in causes of death discernable from the statistical data for each of the four WHO epidemiological sub-regions appear to have been consistent with the unfolding of the epidemiological transition (WHO, 2001; WHO, 2002).

*a. Leading causes of death*

The top five causes of death in 2001 in SearD (High-child and High-adult mortality countries, including India) included two chronic diseases, ischaemic heart disease and cardio-vascular disease, which together accounted for about one fifth of all deaths. They also included three diseases related to poverty: lower respiratory infections, peri-natal conditions and diarrhoea, which together accounted for about one-quarter of all deaths. HIV/AIDS ranked number 8 as a cause of death in this region (figure II). In SearD, for instance, diarrhoeal diseases have been outranked by cerebro-vascular disease. Chronic obstructive pulmonary disease jumped from 9<sup>th</sup> to 6<sup>th</sup> place. Although AIDS is responsible for an increased number of deaths (from 334,000 to 385,000), it regressed slightly in rank (from 7<sup>th</sup> to 8<sup>th</sup>).

In SearB, which includes Low-child and Low-adult mortality countries and is more advanced in the epidemiological transition, the top five causes of death included ischaemic heart disease, cardio-vascular disease, road traffic accidents and two poverty related diseases: tuberculosis and lower respiratory infections. Road traffic accidents were the fourth cause of death, the highest ranking by far in all four sub-regions. HIV/AIDS ranked tenth as a cause of death (figure III). The top 3 causes of death were unchanged between 2000 and 2002 but AIDS made its appearance as a leading cause of death.

In WprB (Low-child and Low-adult mortality countries, including China), the two major causes of death were cardio-vascular disease and chronic obstructive pulmonary disease, which together accounted for nearly one-third of all deaths. Others among the top five were ischaemic heart disease, lower respiratory infections and stomach cancer. There were no significant changes in major causes of death between the two reference years.

Figure IV displays the relative position of the three diseases targeted by the Global Fund Initiative (Malaria, Tuberculosis and HIV/AIDS). Of those, tuberculosis is by far the leading cause of death in

all four sub-regions of Asia, with AIDS coming in second position, although well behind tuberculosis, except in the SearD sub-region. In SearD, malaria accounts for a relatively higher percentage of all deaths from the three diseases combined than in the other three regions.

*b. AIDS as a comparative cause of death*

Worldwide, HIV/AIDS is the fourth highest cause of mortality (WHO, 2002). In Asia, the contribution of AIDS to overall mortality levels is substantially smaller. According to WHO estimates for 2001, AIDS figured among the top ten causes of death in only two of the four epidemiological sub-regions for Asia. In SearB, it ranked as killer number 10 and accounted for about 2 percent of all deaths (60,000). In SearD, which includes India, it ranked number 8 and was responsible for 3 percent of all deaths (385,000). In the other two WHO sub-regions (WprB and WprA), AIDS ranked 30th and 57th respectively among causes of death, and its impact on overall mortality rates was barely discernible, despite an absolute number of 53,000 deaths attributed to the disease in WprB (which includes China).

While AIDS is making headway as a global killer, it is not at this point a major cause of death in the Asia region, except in SearD, where it accounted for nearly 400,000 deaths, up from none recorded in 1995. As of 2001, the toll it exacts still lags far behind that of deaths by chronic disease. For example, deaths attributable to tobacco overuse reached 800,000 in 2000 and are bound to continue to increase rapidly in view of the more widespread tobacco use of the last few decades. Yet, the exact place of AIDS in adult mortality continues to be surrounded by uncertainty, not only because of frequent misattribution of causes of death, but also because the impact of the disease is only gradually unfolding in Asia.

## B. AIDS MORTALITY IN THE ASIA REGION

### *1. AIDS impact on overall mortality*

As AIDS is nearly always fatal, an HIV/AIDS epidemic will almost inevitably end up affecting mortality levels to some extent. However, the long asymptomatic phase of the disease after initial infection and the lag of one to three years between the appearance of AIDS symptoms and death mean that the impact of AIDS on mortality may not be apparent for quite a few years, even in countries with rapidly rising HIV incidence.

The UNAIDS report for 1997 provides estimates of cumulative numbers of AIDS deaths for adults and children together up to late 1997 (UNAIDS 1998). South and South-East Asia as a whole was estimated to have lost a cumulative total of 730,000 persons to the disease, while East Asia and the Pacific was estimated to have lost 11,000. In absolute terms, the most severely-hit countries of the Asia region at that time were India (350,000 deaths), Thailand (230,000), and Myanmar (86,000).

For the year 1997 alone, the two UNAIDS sub-regions lost 250,000 and 5,000 persons to the disease respectively. The largest national losses for that year were also in India (140,000), Thailand (60,000) and Myanmar (29,000). Four years later, annual death numbers had increased considerably but the geographic distribution of AIDS deaths had probably changed little (UNAIDS, 2002). South and South-East Asia registered some 400,000 deaths and East Asia and the Pacific 35,000. India and Myanmar did not release official estimates for that year. Elsewhere, the largest national losses were in Thailand (55,000 deaths), China (30,000) and Cambodia (12,000).

Table 2 presents estimates of AIDS-related deaths, total population, and crude AIDS mortality rates in Asian countries with adult HIV prevalence rates of 0.1 percent or above. Total AIDS deaths are

somewhat correlated with population size, while AIDS-related death rates are correlated with HIV prevalence rates. In both cases, China is the most notable negative residual.

## *2. Impact on adult mortality*

AIDS has markedly increased the probability of premature death among the young adult males of some countries of the Asia region. Worldwide, HIV/AIDS disproportionately affects young adults and adult mortality is therefore affected more strikingly than overall mortality. But this pattern, which prevails worldwide, is more clearly marked still in the Asia region. In the South and South-East Asia region, 89 percent of the AIDS-related deaths in 2001 were adult deaths. In East Asia and the Pacific, the percentage was 95 per cent (table 3). These figures markedly contrast with those in sub-Saharan Africa (78 per cent) and reflect the relatively small role of mother to child transmission in the region, as well as the lower rate of infections among women compared to men.

The impact of AIDS on mortality is much more noticeable in young adult age groups, especially in the 25 to 34 age groups, than in the population as a whole. HIV prevalence and AIDS deaths are highest in these age groups, which additionally tend to have very low mortality from all causes.

Table 4 presents estimates of AIDS-related adult deaths, adult population and crude AIDS mortality rates among adults in Asian countries with adult HIV prevalence rates of 0.1 percent or above. The correlation of adult HIV prevalence rates with crude death rates among adults, not unexpectedly, is somewhat stronger than that with overall mortality rates.

## *3. Projections of AIDS mortality*

Short- to medium-term mortality from AIDS in Asia has been estimated in two sets of projections. One set was prepared by the United Nations for the 4 countries of Asia with the highest adult prevalence rates (Cambodia, India, Myanmar and Thailand) taken together. Total excess deaths in these countries were estimated to reach nearly 1.5 million for the period 1995-2000, or a 3 percent increase relative to a no-AIDS scenario, and were projected to reach over 2.2 million for the period 2000-2005, or a 5 percent increase (United Nations, 2001).

The second set of projections, by WHO, covered a larger number of countries (table 5). Based on a standard survival time of 9 years from initial infection, it yielded a figure of 784,000 AIDS-related deaths for the year 2005 alone for the region as a whole (WHO, 2001). It suggested that annual deaths in the age groups 15 to 49 could possibly increase by 40 percent in countries such as Cambodia, Myanmar and Thailand. In other countries of the region where adult prevalence rates are still under 1 percent, the increase in annual deaths could be up to 5 percent (WHO, 2001). The two sets of projections from the UN and WHO are broadly compatible.

## *4. Impact on life expectancy*

On the global level, the United Nations has estimated the average relationship between HIV prevalence and life expectancy based on 45 countries for which projections were available. The correlation is very high and an increase of 1 percent in the adult prevalence rate is associated with a decline of almost one year in life expectancy. For the four countries of the Asia region with the highest prevalence rates taken together, the decline in life expectancy at birth attributable to AIDS was estimated at 0.6 years for the period 1995-2000 and at 1.2 years for the period 2010-2015. Life expectancy in individual countries would be affected differently, depending on their HIV prevalence rates. The decline would be about 4 years in Cambodia (from 60 to 56), 3 years in Myanmar (from 59 to 56), 2 years in Thailand (from 73 to 71) and 1 year in India (from 65 to 64) (United Nations, 2001).

## *5. Impact on population size*

In at least some countries of Asia, the increased mortality due to AIDS will eventually have an effect on the population growth rate and, ultimately, on population size. The slowing down of population growth rates caused by AIDS is not due to increased mortality alone, however. Indirectly, it also results from the fact that infected women who die early in their childbearing years bear fewer babies, thereby lowering fertility. But this effect will only be visible in the longer term, when births that did not happen combine with premature deaths to affect population size. Even in African countries with extremely high prevalence rates, AIDS only started having a visible effect on population size in the early 1990s. In Asia, where current prevalence rates are significantly lower than in sub-Saharan Africa, this effect is likely to be less marked and to be delayed even further. For the four countries of the region with the highest prevalence rates, the United Nations has projected a 1 percent difference in population size by 2015 relative to a no-AIDS scenario (some 11 million persons fewer), as against a 10 percent difference in Africa. By the year 2050, the differences would be 2 percent and 15 percent respectively (United Nations, 2001).

## *6. The cases of China and India*

The large population sizes of some Asian countries have raised serious concerns that even relatively low adult HIV prevalence rates could translate into huge unmanageable numbers of infected persons, and ultimately deaths. China (1.3 billion persons) is widely thought to be on the brink of a widespread HIV/AIDS epidemic and in India (1 billion persons) reported numbers of AIDS cases are already substantial. These two countries were recently the objects of a projection exercise whose results can be instructive. For each country, three scenarios based on mild, intermediate and severe epidemics were used to project numbers of AIDS deaths and related changes in life expectancy for 5-year intervals to the horizon 2025 (Eberstadt, 2002).

### *a. China*

In China, the three scenarios were based on prevalence rates rising from 0.17 percent in 2000 to 1.5 percent (mild scenario), 3.5 percent (intermediate scenario) and 5 percent (severe scenario) by 2025. By 2005, for instance, numbers of annual AIDS deaths were projected to range from 150,000 to 190,000, while cumulative AIDS deaths over the first decade of the century would reach 370,000 to 410,000.

### *b. India*

In India, prevalence rates were assumed to increase from 0.57 percent in 2000 to 1.5 percent (mild scenario), 5 percent (intermediate scenario) and 7 percent (severe scenario). Annual AIDS deaths by 2005 would reach between 320,000 and 360,000 and cumulative AIDS deaths could be as high as 980,000 to 1,030,000.

In both countries, the projected yearly death tolls then increase very fast between 2005 and 2010, being multiplied by 3 or 4 in the case of the mild epidemics and by up to 10 in the case of the severe epidemics. Also the gaps between mild and severe scenarios widen as time goes on.<sup>3</sup> In the case of the milder scenarios, the impact of such mortality levels by the year 2025 would be to slow down gains in life expectancy, though not to reverse them. The intermediate scenarios would result in a slight absolute decline in life expectancy in India (from 62 years in 2000 to 61.5 in 2025) and a near stagnation in China (from 70.5 to 71). Only the severe scenarios would bring about an actual reversal

in the gains in life expectancy achieved in the last few decades (down to 69 in China and around 58 in India).

The weakness of this interesting projection exercise stems from its lack of an assessment of the plausibility of the assumptions made with respect to the evolution of prevalence rates, on which everything else obviously depends. Nor are certain arbitrary but crucial choices explained, such as why a “severe” epidemic in China would be defined by an adult prevalence rate of 5 percent, whereas the same “severe” epidemic in India would be defined by a rate of 7 percent

## C. SOME SOCIO-ECONOMIC CONSEQUENCES OF ADULT AIDS MORTALITY

### 1. *Economic Consequences: impact on the labor force*

#### a. *At the macro level*

In contrast to diseases that strike mainly older age groups, AIDS disproportionately increases the probability of death during working ages. Consequently, at the macro-economic level, AIDS mortality alters the age structure of a population and its dependency ratio. By disproportionately reducing the active population, the disease reduces the labor supply and increases the dependency burden. However, this effect has been deemed to remain relatively minor in the short and medium term, especially where adult prevalence rates remain comparatively low, as they do in most of the Asia region. Because of the long incubation period between HIV infection and the onset of full-blown AIDS and subsequent death, the visible consequences of the disease on population structure appear only gradually. More immediate may be the effect of increased morbidity and mortality levels on reducing the levels of available savings and slowing down the growth rate of the Gross National Product.

At the sub-national level the consequences of AIDS deaths for economic productivity are likely to be felt more strongly if the disease disproportionately affects a specific sector of the economy. For example, in countries where a large share of the labor force is employed in the agricultural sector, as in China, the spread of the disease into rural areas could rapidly affect the productivity of this sector of the economy (Desbarats, 2003).

#### b. *At the micro level*

At the micro-level, the effect of the HIV/AIDS epidemic on individual households and communities can be quite severe. Studies in Thailand have shown that, in the short term, AIDS deaths tend to cause greater declines in household consumption than deaths from other causes (Pitayanon and others, 1997). In addition, these deaths, which affect relatively younger persons, cause the loss of a higher number of working years and, hence, greater indirect losses due to the income foregone over a lifetime.

### 2. *Social consequences: the case of AIDS orphans*

Because AIDS disproportionately kills young adults at the time when most of them have started forming families, it has led to a drastic increase in numbers of orphans, defined as children who have lost their mother or both parents to AIDS before age 15 since the start of the epidemic. In 1997, it was estimated that there were some 200,000 AIDS orphans in South and South-East Asia and around 2,000 in East Asia and the Pacific. By 1999, these figures had risen dramatically to 850,000 and 5,600 respectively. And in 2001, the estimates reached 1,800,000 for South and South-East Asia and 85,000



for East Asia and the Pacific. The numerical difference between the 2 regions reflects differences in the timing of their epidemics, as well as in their respective HIV prevalence rates. At the national level, the countries with the largest cumulative numbers of orphans included: Thailand (290,000), China (76,000), Cambodia (55,000), Pakistan (25,000), and Viet Nam (22,000).

As in many other parts of the world, AIDS orphans in Asian countries are commonly taken in by extended families, even if such adoptions result in spreading food resources more thinly in the adoptive families. In some countries of the region, however, the national demographic structure can magnify the plight of AIDS orphans. In Cambodia, for instance, the civil disturbances of the late 1970s skewed the age structure of the population by reducing the numbers of adults through excess deaths and emigration. As a result, many AIDS orphans now do not have living grand-parents to take care of them and are found swelling the population of street children in major Cambodian cities.

#### D. FUTURE PROSPECTS

One question frequently asked in Asian health policy circles concerns the likelihood that AIDS morbidity and mortality in Asia will reach the levels currently observed in much of sub-Saharan Africa. Fears are rising that prevalence rates in Asian countries will soon follow the same evolution that characterized African countries 5 to 10 years ago. Such predictions, which are usually based on trend extrapolation of prevalence rates, need to be assessed in light of the epidemiological and behavioral conditions that influence these trends.

Clearly, future AIDS mortality in Asia will largely depend on the current levels and evolution of HIV prevalence rates in the countries of the region. But these, in turn, will be influenced by a host of interlinked ecological, epidemiological and behavioral factors reflecting the reach of established health systems, the timeliness and effectiveness of the governments' responses, the dominant modes of spread of the epidemic, the frequency of risk behaviors that heighten vulnerability to HIV infection, the size of high-risk behavior groups and the effectiveness of transmission bridges (behavioral overlap) between high- and low-risk groups. Additionally, mortality levels will be affected by the availability of life-extending anti-retroviral therapies, or lack of it.

Many of the factors that fuel the spread of HIV can be directly influenced through preventive activities, including awareness-raising and behavior-change communication. Hence, in the absence of a cure or vaccine, future levels of HIV infections and AIDS deaths will be strongly determined by the willingness of donors and national governments to fund HIV-prevention programs.

##### *1. Epidemiological factors*

###### *a. HIV prevalence*

Epidemiological factors have a strong influence on HIV prevalence levels, patterns and trends. The probability of occurrence of new sexually-transmitted HIV infections depends to some extent on the phase already reached by the epidemic, which determines the level of infections in the pool of potential sex partners. Experience in sub-Saharan Africa suggests that when an HIV epidemic passes a prevalence threshold of about 1 percent in the general population and 5 percent among certain high-risk groups, numbers infected may easily double or treble within a span of 2 or 3 years. The epidemic may then become self-sustaining, deeply entrenched and much more difficult to reverse.

Figure V shows that national adult prevalence levels in Asia are very low, relative to African levels. Likewise, figure VI shows that, among specific high-risk behavior groups, such as female sex workers

or male STI patients, HIV prevalence levels tend to be markedly lower in Asian countries than in African countries. However, on the combined basis of overall prevalence rates and rates in specific groups, three countries of the Asia region have passed the alarm threshold: Cambodia, Thailand and Myanmar. India is on the verge of joining that category

#### *b. STI prevalence*

Untreated STI are known to act as an important epidemiological co-factor facilitating the spread of the HIV. In some cases they can increase the odds of HIV transmission through unprotected sex as much as tenfold. In the late 1990s, STI prevalence was estimated to be around 15 percent in South and South-East Asia and 2 percent in East Asia and the Pacific, as opposed to 25 percent in sub-Saharan Africa (WHO, 2001).

### *2. Behavioral factors*

Irrespective of the epidemiological parameters, the sexual spread of HIV in a given country can be significantly accelerated when a large share of the population frequently engages in risky sexual behaviors.<sup>4</sup> Behavioral indicators can act as an early warning system and indicate vulnerability to HIV infection. Recent survey data show substantial differences in the frequency of such behaviors between Asian and African countries.

#### *a. Age at first sex*

Low age at first sex, for instance, is known to be a factor of heightened vulnerability to HIV, especially among women. This is because young women with immature reproductive tracts are biologically more vulnerable to a variety of reproductive health problems, including STI and HIV. Available survey data show that, on the whole, the median age by which one half of the young people aged 20-24 have had first penetrative sex is significantly higher in most countries of the Asian and Pacific region than it is in the countries of sub-Saharan Africa (UNAIDS, 2002). National median age at first sex for females was below 20 years for 25 out of 26 African countries examined. For about half of them it was below 17 years. In contrast, median age at first sex was above 17 years in all ten Asian countries examined. In three of them, it was above 20 (Figure VII).

#### *b. Multiple sex partners*

Other behaviors strongly associated with HIV infection risk involve multiple sex partnerships and frequent partner changes. In countries such as Thailand and Uganda, for example, declines in the frequency of non-regular partnerships have been shown to be instrumental in slowing down the progress of the epidemic. There are marked differences in between Asian and African countries in the percentage of adults who report having had at least one sex partner other than their regular partner(s) in the 12 months preceding the report (UNAIDS, 2000). For instance, the proportion of adult survey respondents who had sex with a non-marital, non-cohabiting partner in the preceding 12 months in selected Asian and African countries was 15 and 21 percent respectively for men and 1.2 and 12 percent respectively for women (figure VIII).

Finally, the indicator measuring the frequency of high-risk sex in the year preceding the survey also displays substantial differences between Asian and African countries. The proportions of respondents reporting high-risk sexual behavior were 16 and 33 percent respectively for men, and 1.3 and 12 percent respectively for women (UNAIDS, 2002).

### *3. Antiretroviral therapies*

The availability and affordability of ART, which significantly extend the life span of HIV positive persons, will inevitably have a bearing on AIDS-related adult mortality, as well as on its demographic impact on life expectancy, population growth and population size. Out of an estimated total of 5 to 9 million persons living with HIV/AIDS, fewer than 30,000 persons were on ART regimens in Asia in 2001, despite the increased production and availability of lower-priced generic three-drug combinations in the region. In Thailand, for example, access to ART through government subsidies was available to about 3 percent of the 70,000 new AIDS cases estimated to occur each year (UNAIDS, 2000).

### E. CONCLUSIONS

In contrast to the situation in most countries of Africa, the countries of the Asia region have only recently begun to reflect the impact of AIDS mortality. Because of the lag between infection and death, this impact is more visible in countries where the disease reached epidemic proportions relatively early, such as India and Thailand. In most other countries of the region, even where incidence rates are believed to be currently rising rapidly (as in China), the relative impact of the disease on mortality levels is not yet significantly visible in national-level statistics. The situation could be changing rapidly, however, and data on causes of death for 2003 and 2004 should be carefully monitored to keep track of these changes. The impact of AIDS on adult mortality is also visible in Cambodia and Myanmar. While causes of death in the various sub-regions of Asia show an evolution generally consistent with the epidemiological transition, marked by a relative decline in the importance of transmitted infections, AIDS is threatening to go against the grain of this evolution.

In the short term, more widespread availability of ART will surely slow down the increase in AIDS mortality levels in the Asia region. In the long term, however, the surest way to reduce AIDS mortality, and hence adult mortality, is to urgently step up prevention interventions and to ensure that they are closely adapted to the local dynamics of the HIV epidemics in their nascent, emerging and mature phases.

## NOTES

1. The definition of WHO epidemiological sub-regions for Asia is based on the combination of levels of child and adult mortality, as follows. SearB (South-East Asia Region B) includes countries with low child and low adult mortality: Indonesia, Sri Lanka and Thailand. SearD (South-East Asia Region D) includes countries high child and high adult mortality: Bangladesh, Bhutan, Democratic People's Republic of Korea, India, Maldives, Nepal and Pakistan. WprA (Western Pacific Region A) includes countries with very low child and very low adult mortality levels: Australia, Brunei Darussalam, Japan, New Zealand and Singapore. WprB (Western Pacific Region B) includes countries with low child and low adult mortality levels: Cambodia, China, Cook Islands, Fiji, Kiribati, Lao People's Democratic Republic, Malaysia, Marshall Islands, Micronesia (Federated States of), Mongolia, Nauru, Niue, Palau, Papua New Guinea, Philippines, Republic of Korea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu and Viet Nam.
2. For a detailed methodological assessment of mortality data, please see Lopez, 2003.
3. For comparison purposes, China was expected to have 100,000 yearly deaths in 2005 and India 500,000 according to the WHO projections based on behavioral assumptions deemed reasonable at the time about dominant transmission modes and prevalence rates among high-risk groups and bridge populations, (WHO, 2001).
4. Injecting drug use, a significant factor of HIV infection when injecting instruments are shared, as is often the practice, constitutes a widespread risk behavior factor in some Asian countries. An account of this factor can be found in Desbarats, 2003.

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Table 1

Probability of dying between ages 15 and 59 by sex in Asian countries with HIV prevalence of 0.1 percent or above (1999-2001)

Country	HIV prevalence (adult rates),2001	45Q15 Males		45Q15 Females		% women HIV +,2001
		1999	2001	1999	2001	
Cambodia	2.7	394	385	323	268	46
Myanmar*	2.0	253	364	231	258	n.a.
Thailand	1.8	261	272	181	148	34
India	0.8	275	291	217	222	39
Papua New Guinea	0.7	377	308	325	250	26
Nepal	0.5	297	302	274	293	n.a.
Malaysia	0.4	172	194	125	108	27
Viet Nam	0.3	225	201	153	132	27
Bahrain	0.3	137	123	99	89	15
Armenia	0.2	166	216	81	99	20
Singapore	0.2	126	92	67	54	25
China	0.1	170	157	125	106	26
Fiji	0.1	247	212	141	152	30
Indonesia	0.1	240	246	197	213	23
Israel	0.1	101	115	59	55	n.a.
Maldives	0.1	214	276	208	213	n.a.
Oman	0.1	135	182	94	106	15
Pakistan	0.1	194	229	147	203	21
Yemen	0.1	288	289	257	234	15

Sources: HIV adult prevalence rates and proportion of women among infected persons are from UNAIDS, 2001 and  $_{45q15}$  are from WHO, 2000 and 2002,a.

Table 2  
AIDS related deaths, total population and AIDS mortality rates in Asian countries  
with adult HIV prevalence rates of 0.1 percent or above (2001)

	HIV prevalence	AIDS deaths	Total Population (th.)	Crude AIDS Death Rate
Cambodia	2.7	12,000	13,441	0.89
Myanmar*	2.0	48,000	45,064	1.07
Thailand	1.8	55,000	63,584	0.86
India*	0.7	310,000	997,663	0.31
Papua New Guinea	0.7	880	4,920	0.18
Nepal	0.5	2,400	25,593	0.09
Malaysia	0.4	2,500	22,633	0.11
Viet Nam	0.3	6,600	79,175	0.08
Singapore	0.2	140	4,108	0.03
China	0.1	30,000	1,284,972	0.02
Indonesia	0.1	4,600	214,840	0.02
Pakistan	0.1	4,500	144,971	0.03

Source: UNAIDS, 2002

Table 3  
AIDS-related deaths and proportion of adults among HIV-positive persons, 2001

	AIDS-related deaths (adults)	AIDS-related deaths (children)	Percent adult deaths	Adults as % of those living with HIV/AIDS
South and South - East Asia	350,000	42,500	89	96
East Asia and Pacific	34,000	1,700	95	81
Sub-Saharan Africa	1,800,000	515,000	78	90

Source: UNAIDS, 2002

Table 4  
AIDS deaths in adults, adult population and AIDS adult mortality rate in Asian countries with adult HIV prevalence rates of 0.1 percent and above, 2001

	Adult Population (th.)	AIDS Deaths in Adults	Crude Death Rate per 1,000
Cambodia	6,314	10,050	1.59
Myanmar*	25,855	42,000	1.62
Thailand	36,636	63,000	1.72
India*	509,007	250,000	0.49
Papua New Guinea	2,491	800	0.32
Nepal	11,106	2,100	0.19
Malaysia	11,868	2,350	0.20
Viet Nam	43,343	6,150	0.14
Singapore	2,324	130	0.05
China	726,031	32,500	0.04
Indonesia	118,163	4,250	0.04
Pakistan	67,964	4,050	0.06

Source: UNAIDS, 2002



## ADULT MORTALITY IN ASIA IN THE ERA OF AIDS

### SUMMARY

The countries of the Asia region are highly diverse in their levels of economic and health development, sanitary conditions and stages in the demographic and epidemiological transitions.

In the last decade of the twentieth century, mortality levels have continued to decline in most countries of the region. In some of the countries more severely affected by AIDS, however, this decline has not been as fast as it would have been in the absence of AIDS. Life expectancy at birth has increased in virtually all countries of the region, except in Thailand and Cambodia, reflecting the incipient effect of AIDS-related mortality.

AIDS ranks among the top ten causes of death in two of the WHO epidemiological sub-regions of Asia, where it accounts for 2 to 3 per cent of all deaths. In 2001, it was responsible for an estimated 450,000 deaths in the region as a whole. It is projected that by 2015, the increased mortality due to AIDS will have reduced the population size in the four most affected countries by about 1 per cent.

Adult mortality in the countries of Asia has only recently begun to reflect the impact of AIDS. Because of the long lag between initial infection and death, this impact is more visible in countries where the disease reached epidemic proportions early, such as India and Thailand. In most other countries of the region, even where incidence rates are rising rapidly (as in China), the relative impact of the disease on mortality levels is not yet significantly visible in national-level statistics.

Beside their substantially lower adult HIV prevalence rates, the countries of Asia present two other significant differences with the countries of Sub-Saharan Africa: infection rates are markedly lower for women than for men and MTCT is relatively less important as a transmission mode. As a result, a much greater proportion of AIDS-related deaths occur among adults.

While the macro-economic consequences of AIDS are not as dramatic as they are in African countries with much higher prevalence rates, its social consequences are already felt in the substantial rise in the numbers of AIDS orphans.

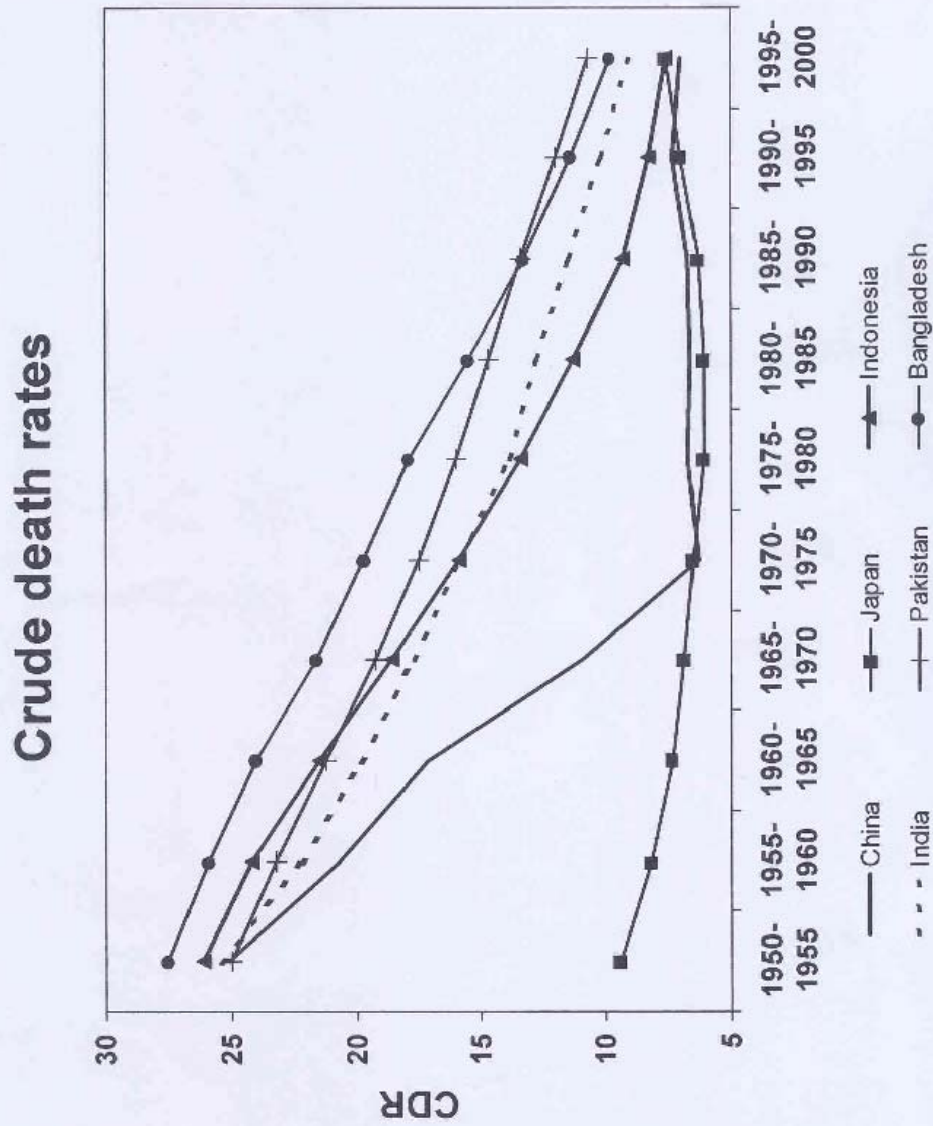
TABLE 1

**Projected AIDS deaths for 2005**  
(selected Asian and the Pacific countries)

India	500,000	Papua New Guinea	2,400
China	100,000	Bangladesh	1,700
Cambodia	24,000	Philippines	1,000
Indonesia	18,000	Sri Lanka	1,000
Pakistan	11,000	Japan	700
Viet Nam	11,000	Republic of Korea	400
Malaysia	6,000	Lao People's Democratic Republic	200
Nepal	6,000	Region total	784,100

Source: World Health Organization (WHO)(2001). *HIV/AIDS in Asia and the Pacific Region*, (New Delhi, WHO).

Figure I



Source: World Population Prospects, the 2002 Revision.

Figure II

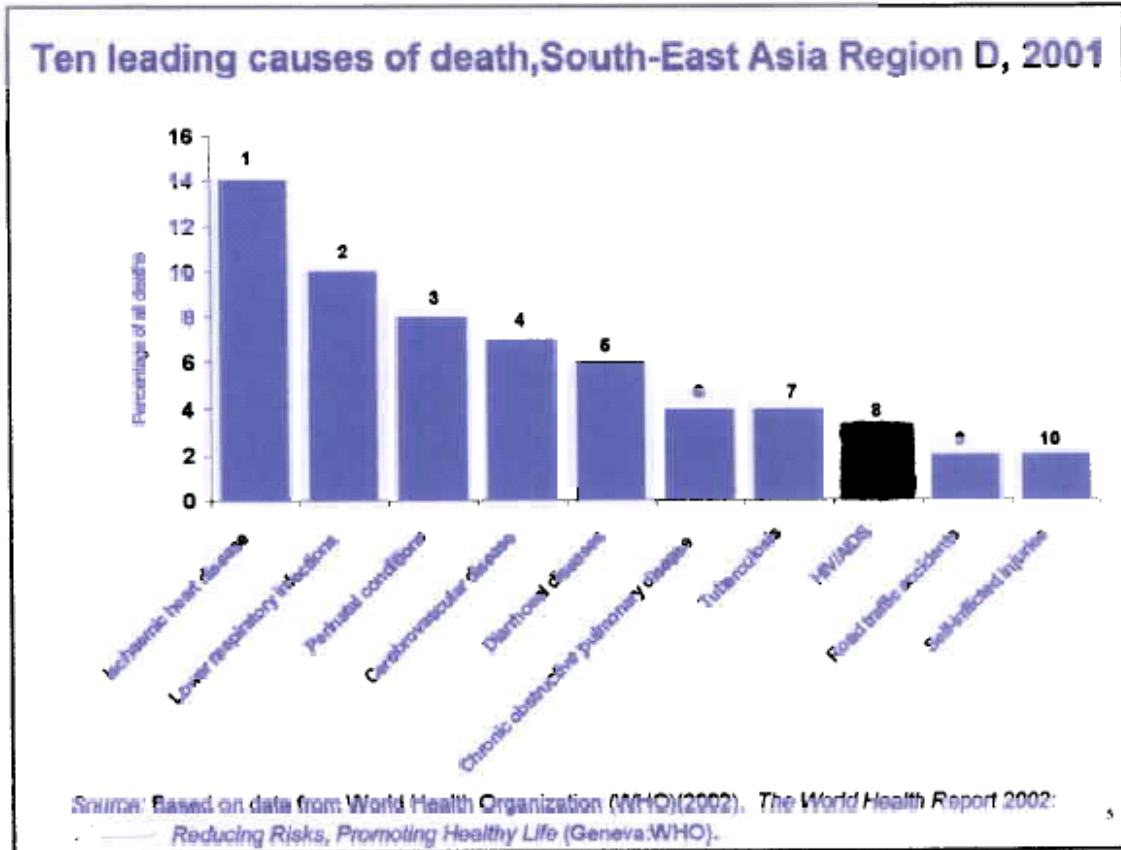


Figure III

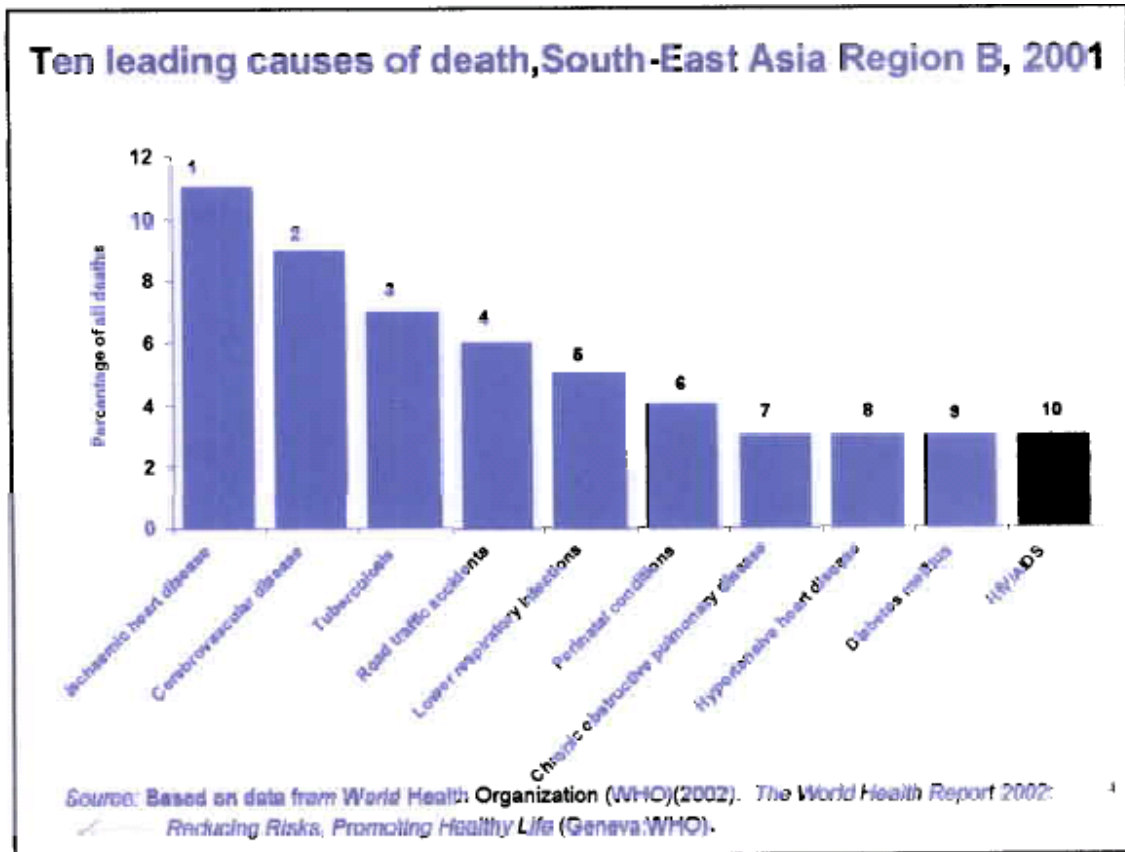


Figure IV

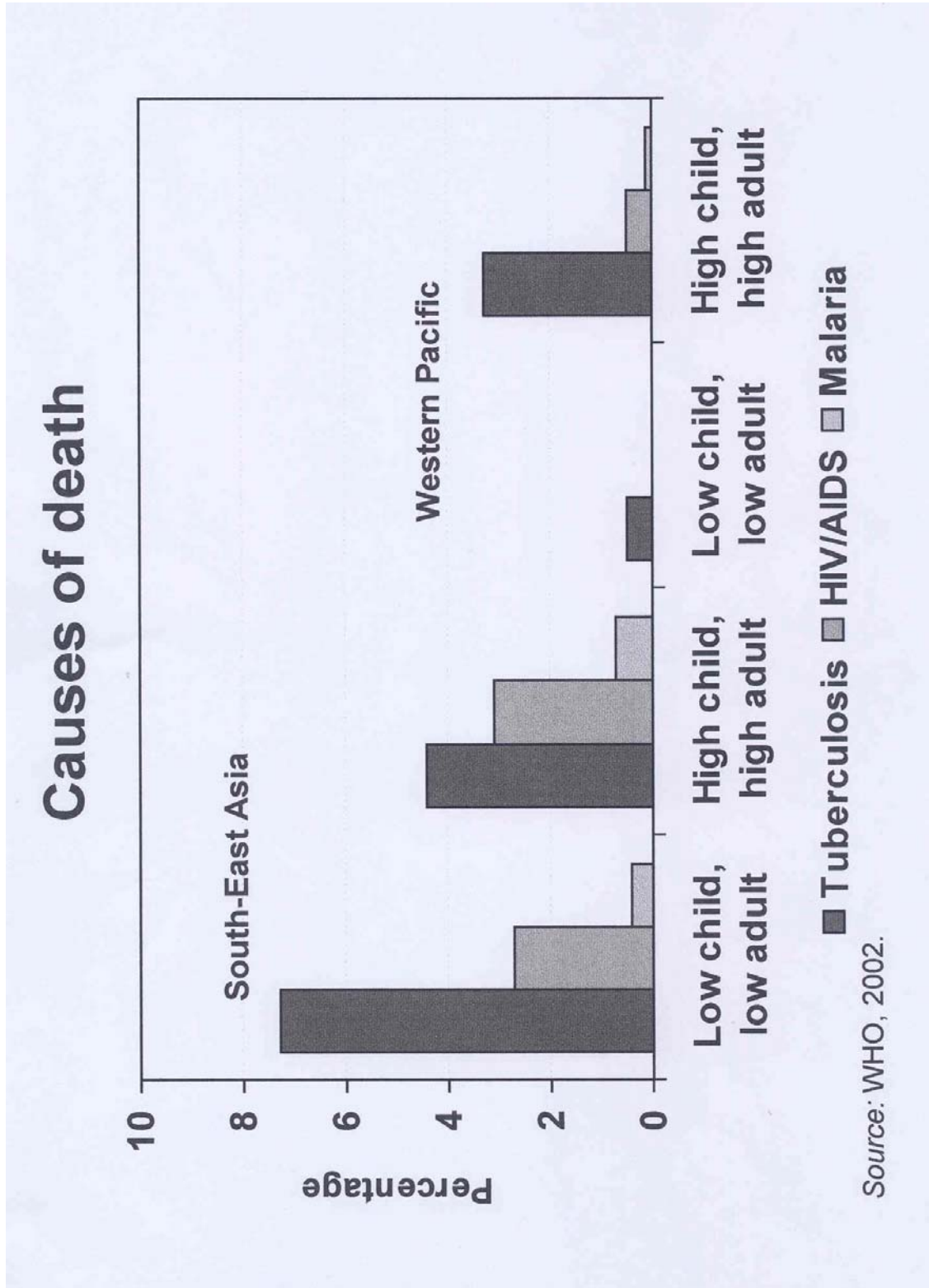




Figure V

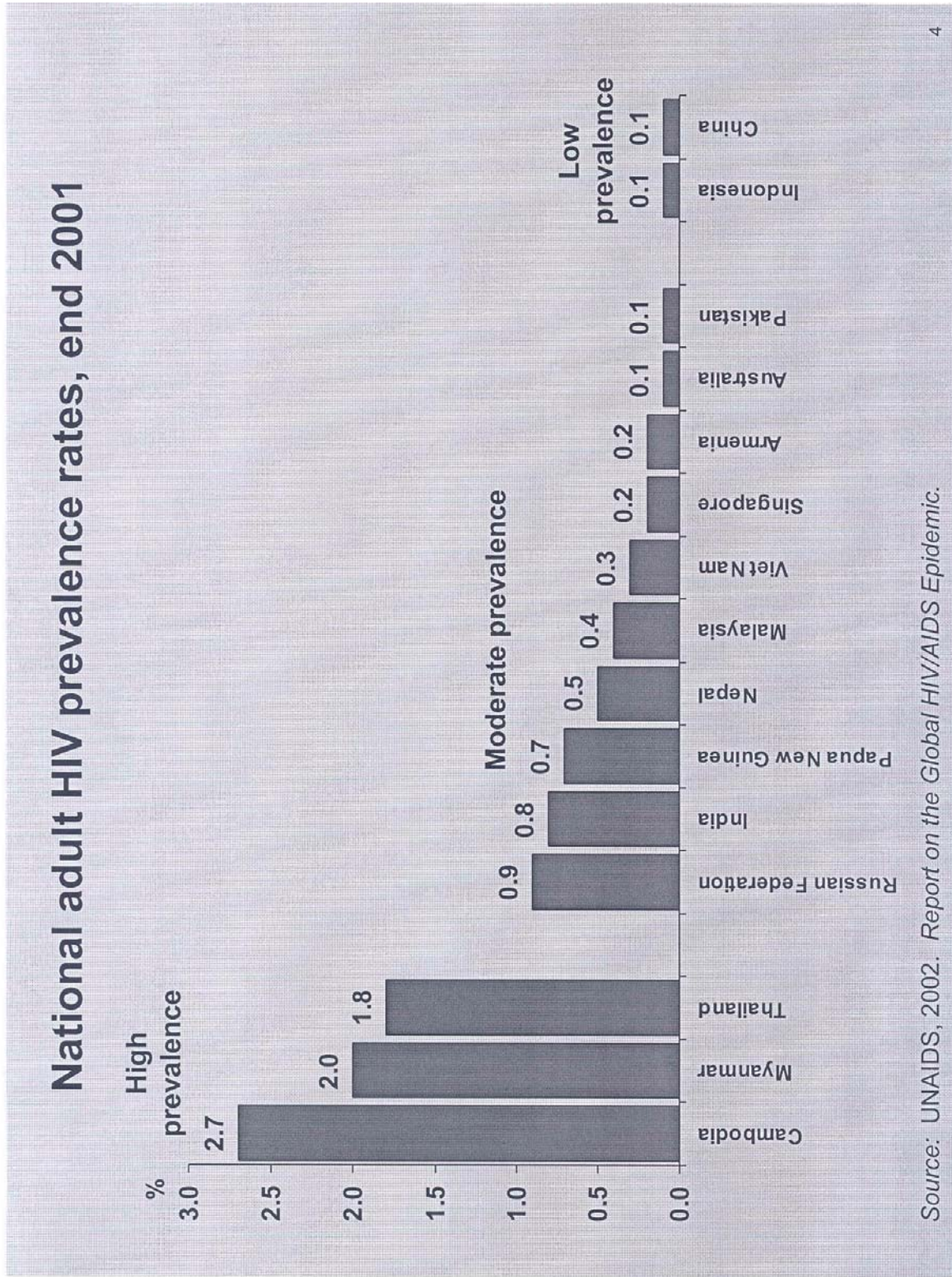




Figure VI

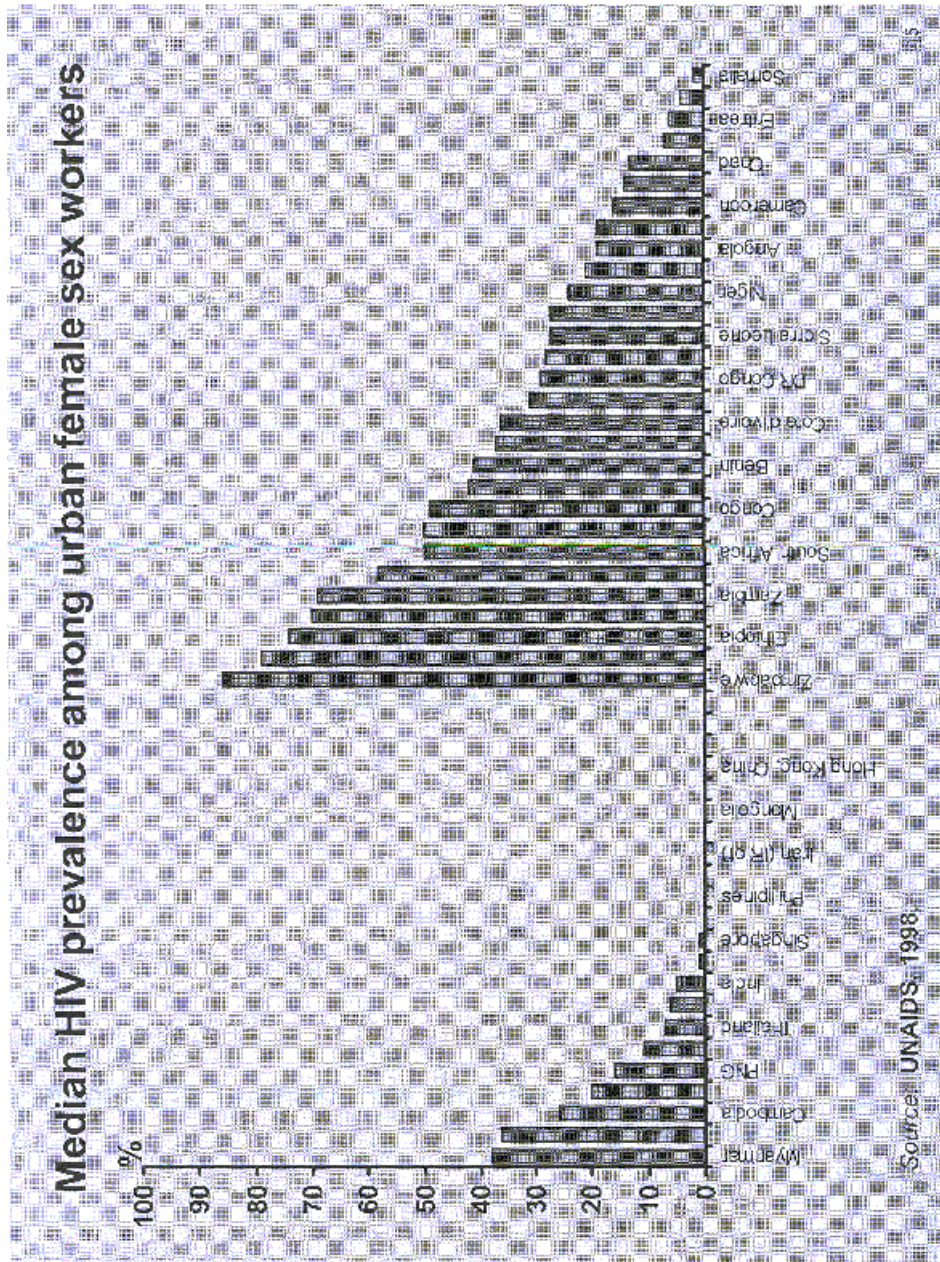




Figure VII

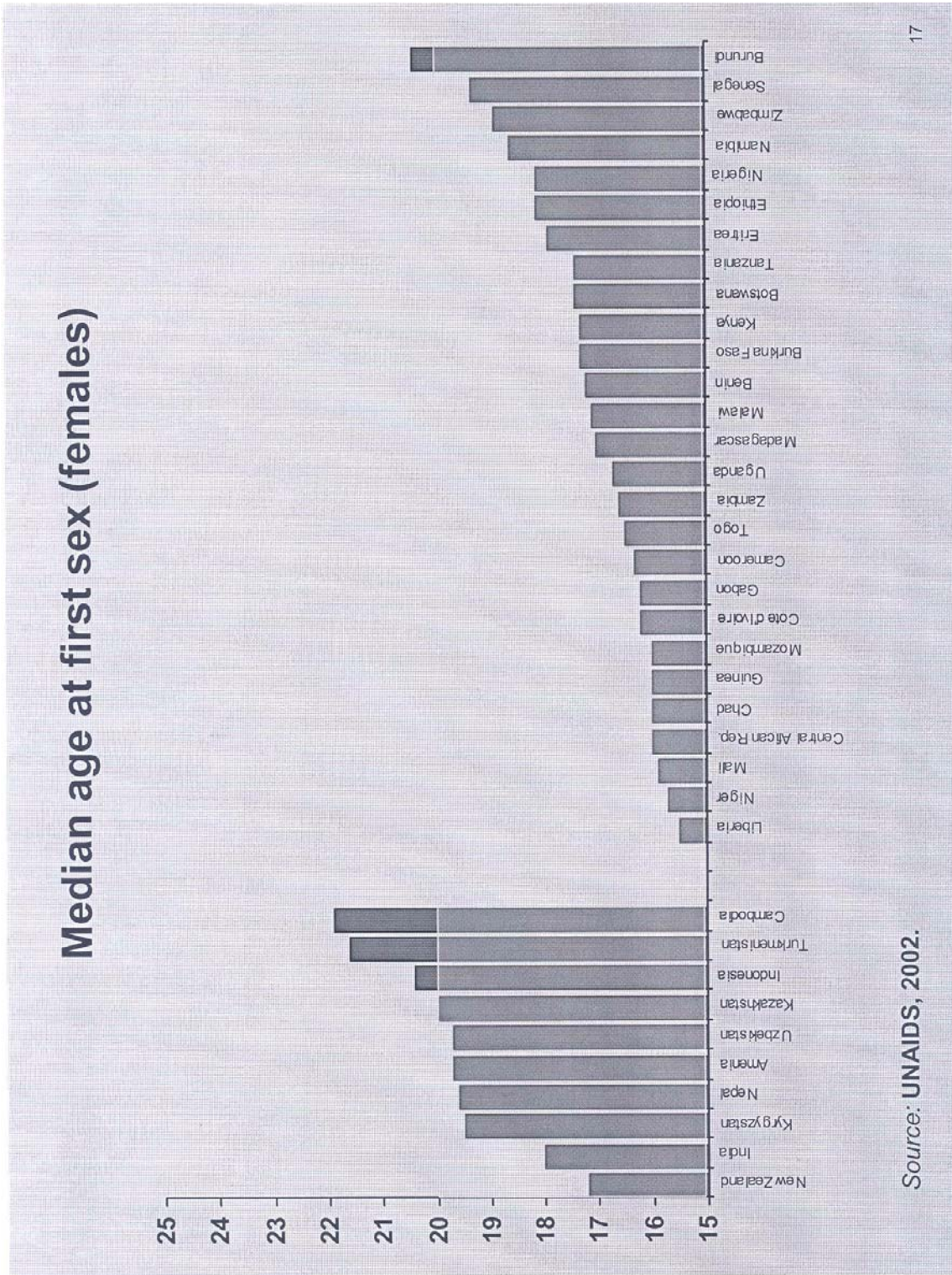




Figure VIII

