# THE UNITED REPUBLIC OF TANZANIA

## *MINISTRY OF HEALTH*

Tanzania Mainland

## *National AIDS Control Programme*

HIV/AIDS/STI Surveillance Report

January - December 2001

**Report Number 16**

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# Abbreviations

| | |
|---|---|
| AIDS | Acquired Immune Deficiency Syndrome |
| ANC | Antenatal Clinics |
| CDC | U.S. Centers for Disease Control and Prevention |
| DBS | Dried blood spot filter paper cards |
| ELISA | Enzyme Linked Immunosorbent Assay |
| EPTB | Extra pulmonary tuberculosis |
| GDS | Genital Discharge Syndrome |
| GUD | Genital Ulcer Disease |
| HIV | Human Immunodeficiency Virus |
| IDC | Infectious Diseases Clinic |
| MOH | Ministry of Health |
| MUCHS | Muhimbili University College of Health Sciences |
| NACP | National AIDS Control Programme |
| NIMR | National Institute for Medical Research |
| PYAR | Person-years at risk |
| QA | Quality Assurance |
| RPR | Rapid Plasma Reagin |
| STD | Sexually Transmitted Disease |
| STI | Sexually Transmitted Infection |
| UNAIDS | Joint United Nations Programme on AIDS |
| UNDP | United Nations Development Programme |
| VDRL | Venereal Disease Research Laboratory |
| WHO | World Health Organisation |

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# EXECUTIVE SUMMARY

This report is a summary of the magnitude and trend of HIV/AIDS/STIs in Mainland Tanzania for the annual year January to December 2001.

A total of 14,112 AIDS cases were reported to the NACP from the 20 regions during the year 2001. This resulted into a cumulative total of 144,498 cases since 1983 when the first cases were reported in the country. Estimating that only 1 in 5 AIDS cases is reported, a total of 71,000 cases are estimated to have occurred in year 2001 alone and a cumulative total of 722,490 AIDS cases since the beginning of the epidemic in the Tanzania. Most cases fall within the age group 20-49 years with highest number of reported cases in the age group 25-34 and 30-39 for females and males respectively. This pattern may change with greater coverage in voluntary counseling and testing (VCT) coupled with the use of antiretroviral therapy. This underscores the need to establish more VCT facilities and strengthen their utilization, coupled with strategies aimed at increasing access to antiretroviral therapy.

The main mode of transmission remained heterosexual, accounting for 78% of all cases, mother to child transmission ranking second at 5% and for the remaining cases the modes of transmission were not stated. Of all cases diagnosed during the year 2001, 48% were married, while 32% were single individuals. The marital status of the remaining cases were; divorced (6%), separated (5%) and cohabiting (2%). In about 7% of cases, the marital status was not stated. The region with the highest case rate was Mbeya – 156/100,000 followed by Dar es Salaam at 112/100,000 and Ruvuma at 84/100,000 population. The region with the lowest case rate was Kigoma at 6.8/100,000 population.

Surveillance of HIV infection among Antenatal Clinic Attendees while assessing behaviour among youths 15 - 24 in the catchment areas of the respective clinics was adopted this year. It is intended to progressively extend this approach to cover the whole country. Starting this year, the ANC data together with behavioural surveillance data are presented in a separate report.

A total of 152,096 persons donated blood during the year 2001, of these 123,749 were males (81.4%) and 28,182 were females (18.5%). In 165 individuals sex was not specified. Over 99% of individuals who donated blood were relatives of patients.

The overall prevalence of HIV infection among blood donors during 2001 was 11.01% (95% CI=10.8-11.2). This is an increase of 1.1% when compared with the year 2000 prevalence (9.9% in 2000 vs 11.01% in 2001 p=0.0001). As in the previous years, females had a significantly higher prevalence as compared to males. Prevalence among females was 13.7% (95% CI=13.3-14.1) and that among males was 10.4 (95% CI=10.2-10.5) p=0.00001. When these sex specific estimates are compared to those of the year 2000, males show a significant increase in prevalence from 9.2% in the year 2000 to 10.4% in the year 2001 p=0.0001. Prevalence among females remained almost the same at 13.3% for the year 2000 compared to 13.7% during the year 2001, p=0.1.

When using the prevalence among blood donors to estimate the year 2001 burden of HIV infection in Tanzania, the following estimates are realized. A total of 2,229,770

individuals (918,113 males and 1,311,657 females) aged 15 years and above were living with HIV in Tanzania during the year 2001. Of these, 1,867,561 (770,468 males and 1,097,093 females) were aged between 15-49 years. When these estimates are compared to those of the year 2000, there is a 3% increase in the number of people living with HIV infection among individuals aged 15 years and above.

Sexually transmitted infections (STIs) are a marker of sexual networking and give a clue to the extent of unprotected sex in a community. STIs also facilitate sexual transmission of HIV infection. During the year 2001, a total of 211,291 STI episodes were reported, of these 90,058 were Genital discharge syndromes, 46,365 were genital ulcer diseases, 43,855 were Pelvic inflammatory diseases, and other syndromes constituted the rest 31,013. Compared to the previous two years – 149,222 for 2000, and 39,385 for 1999, there has been an increase in the number of reported episodes during the year 2001.

In conclusion, more people continue to be infected by HIV as indicated by continued unprotected sex in the community. The situation persists and warrants for concerted innovative multsectoral efforts to combat the disease.

# 1.0 SURVEILLANCE OF AIDS CASES

**Methods**

AIDS cases diagnosed by hospitals in the country are reported to the National AIDS Control Programme (NACP). Reporting is done using forms distributed to all hospitals through the regional medical officers. Information collected include name of reporting hospital, socio-demographic characteristics of the diagnosed case including district of usual residence, case definition criteria used to make the diagnosis, possible source of infection and whether or not an HIV test was done. Hospitals return dully-filled forms to the RMO monthly, for subsequent transmission to the NACP on a quarterly basis.

**Distribution of AIDS cases**

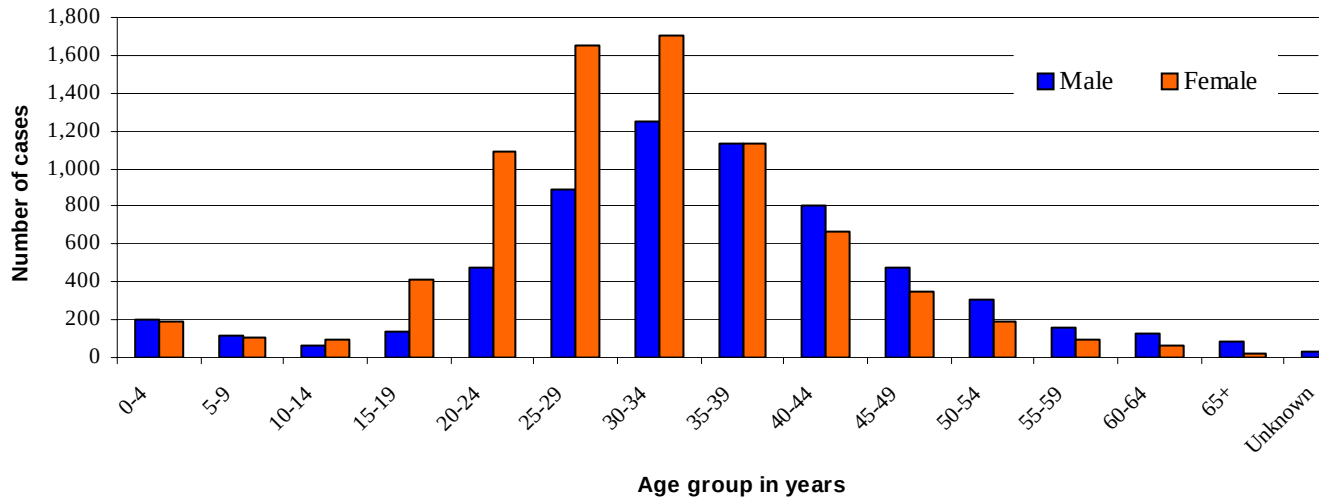
Between 1st January and 31st December 2001, a total of 14,112 cases were reported to the NACP from the 20 regions of Tanzania Mainland. This resulted into a cumulative total of 144,498 cases since 1983 when the first AIDS cases were diagnosed in Tanzania. Table 1 and Figure 1 show the age and sex distribution of the reported AIDS cases for the year 2001. As in previous years, most cases fall within the age group 20-49 years with highest number of reported cases in the age group 25-34 and 30-39 for females and males respectively. As inferred in previous reports, this pattern suggests that most individuals acquire infection during late adolescence, assuming a median incubation period of around ten years. In previous reports, it was speculated that this pattern may change with greater coverage in voluntary counseling and testing (VCT) coupled with the use of antiretroviral therapy. This underscores the need to establish more VCT facilities and strengthen their utilization, and also continue with initiatives intended to enhance antiretroviral access and proper case management.

Figure 2 shows the age and sex specific cumulative case rates from 1987-2001. The figure, as in the previous year, shows that males generally have a higher case rate than females particularly for the age group 30 years and above.

**Table 1: Distribution of Reported AIDS cases by age and sex, Tanzania 2001**

| Age | Male | | Female | | Unknown | | Total | |
|---|---|---|---|---|---|---|---|---|
| group | N | % | N | % | N | % | N | % |
| 0 – 4 | 198 | 3.2 | 186 | 2.4 | 4 | 10.0 | 388 | 2.7 |
| 5 – 9 | 116 | 1.9 | 101 | 1.3 | 6 | 15.0 | 223 | 1.6 |
| 10 - 14 | 66 | 1.1 | 91 | 1.2 | 0 | 0.0 | 157 | 1.1 |
| 15 - 19 | 139 | 2.2 | 418 | 5.4 | 1 | 2.5 | 558 | 4.0 |
| 20 - 24 | 479 | 7.7 | 1095 | 14.0 | 8 | 20.0 | 1582 | 11.2 |
| 25 - 29 | 894 | 14.3 | 1656 | 21.2 | 2 | 5.0 | 2552 | 18.1 |
| 30 - 34 | 1247 | 19.9 | 1710 | 21.9 | 6 | 15.0 | 2963 | 21.0 |
| 35 - 39 | 1131 | 18.1 | 1135 | 14.5 | 4 | 10.0 | 2270 | 16.1 |
| 40 - 44 | 809 | 12.9 | 662 | 8.5 | 3 | 7.5 | 1474 | 10.4 |
| 45 - 49 | 479 | 7.7 | 346 | 4.4 | 2 | 5.0 | 827 | 5.9 |
| 50 - 54 | 306 | 4.9 | 191 | 2.4 | 4 | 10.0 | 501 | 3.6 |
| 55 - 59 | 157 | 2.5 | 91 | 1.2 | 0 | 0.0 | 248 | 1.8 |
| 60 - 64 | 123 | 2.0 | 59 | 0.8 | 0 | 0.0 | 182 | 1.3 |
| 65+ | 85 | 1.4 | 22 | 0.3 | 0 | 0.0 | 107 | 0.8 |
| Unknown | 32 | 0.5 | 48 | 0.6 | 0 | 0.0 | 80 | 0.6 |
| Total | 6261 | 100.0 | 7811 | 100.0 | 40 | 100.0 | 14112 | 100.0 |

**Figure 1: Age and sex distribution of the reported AIDS cases, Tanzania, January - December 2001**



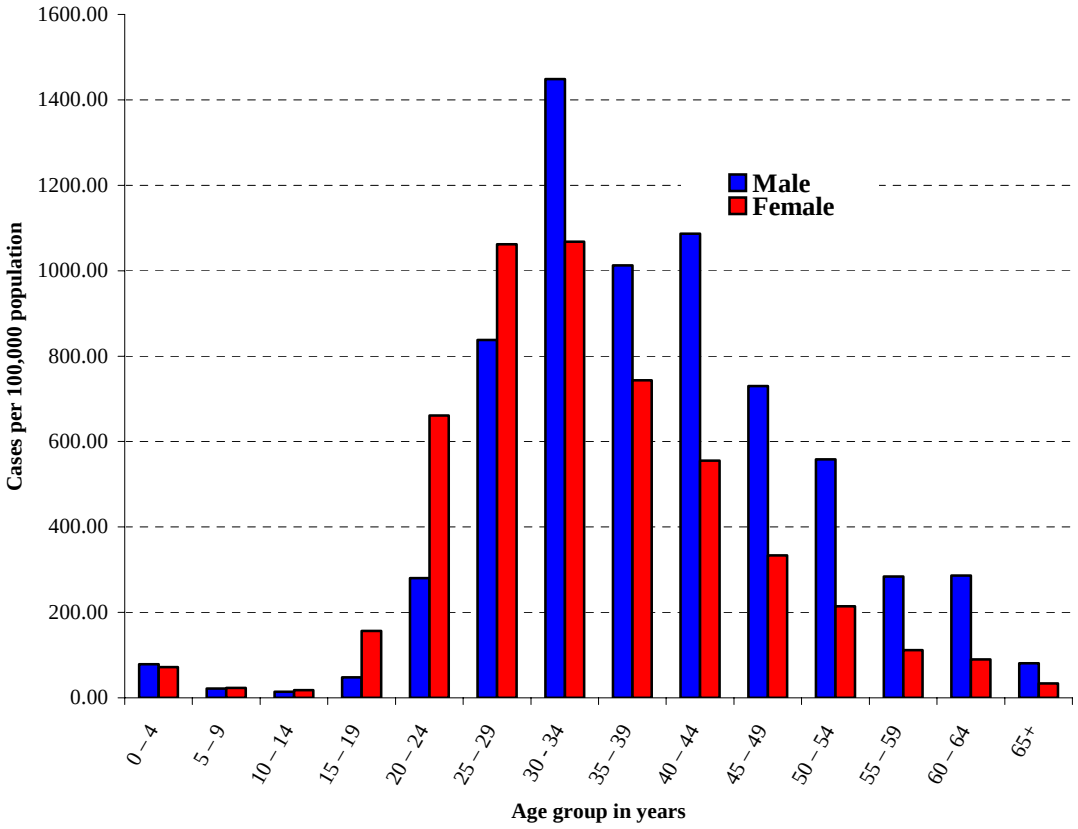




**Figure 2: Age and Sex Specific Cumulative case rate for the period 1987 - 2001**

**Table 2: Age and sex specific case rate of cumulative AIDS cases, Tanzania 1987-2001**

| Age | MALE | | | | FEMALE | | | | | TOTAL | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cases | % | Population Year 2001 estimates | Case rate* | Cases | % | Population Year 2001 estimates | Case rate | Unknown sex cases | Cases | % | Population Year 2001 estimates | Case rate |
| 0 – 4 | 2472 | 4.3% | 3196812 | 77.3 | 2210 | 3.7% | 3137824 | 70.4 | 63 | 4,745 | 4.0% | 6334636 | 74.9 |
| 5 – 9 | 550 | 1.0% | 2519861 | 21.8 | 579 | 1.0% | 2468961 | 23.5 | 37 | 1,166 | 1.0% | 4988822 | 23.4 |
| 10 – 14 | 279 | 0.5% | 1892827 | 14.7 | 370 | 0.6% | 1915824 | 19.3 | 2 | 651 | 0.5% | 3808651 | 17.1 |
| 15 – 19 | 916 | 1.6% | 1863329 | 49.2 | 2903 | 4.9% | 1858719 | 156.2 | 10 | 3,829 | 3.2% | 3722048 | 102.9 |
| 20 – 24 | 4467 | 7.7% | 1579391 | 282.8 | 10360 | 17.3% | 1577446 | 656.8 | 34 | 14,861 | 12.4% | 3156838 | 470.8 |
| 25 – 29 | 10398 | 18.0% | 1247223 | 833.7 | 14083 | 23.5% | 1333886 | 1055.8 | 59 | 24,540 | 20.5% | 2581109 | 950.8 |
| 30 - 34 | 12072 | 20.9% | 831773 | 1451.4 | 11456 | 19.1% | 1068254 | 1072.4 | 67 | 23,595 | 19.7% | 1900028 | 1241.8 |
| 35 – 39 | 9183 | 15.9% | 803155 | 1143.4 | 7188 | 12.0% | 960793 | 748.1 | 46 | 16,417 | 13.7% | 1763948 | 930.7 |
| 40 – 44 | 6199 | 10.7% | 576976 | 1074.4 | 3631 | 6.1% | 652778 | 556.2 | 24 | 9,854 | 8.2% | 1229754 | 801.3 |
| 45 – 49 | 3682 | 6.4% | 506501 | 726.9 | 1872 | 3.1% | 556107 | 336.6 | 26 | 5,580 | 4.7% | 1062608 | 525.1 |
| 50 – 54 | 1958 | 3.4% | 351260 | 557.4 | 916 | 1.5% | 411379 | 222.7 | 9 | 2,883 | 2.4% | 762639 | 378.0 |
| 55 – 59 | 949 | 1.6% | 327284 | 290.0 | 411 | 0.7% | 344207 | 119.4 | 4 | 1,364 | 1.1% | 671492 | 203.1 |
| 60 – 64 | 564 | 1.0% | 248598 | 226.9 | 226 | 0.4% | 300514 | 75.2 | 4 | 794 | 0.7% | 549112 | 144.6 |
| 65+ | 396 | 0.7% | 492522 | 80.4 | 170 | 0.3% | 510060 | 33.3 | 4 | 570 | 0.5% | 1002582 | 56.9 |
| Unknown | 3622 | 6.3% | | | 3477 | 5.8% | | | 1,645 | 8,744 | 7.3% | | |
| Total | 57,707 | 100 | 16,437,513 | 351.1 | 59,852 | 100 | 17,096,752 | 350.1 | 2,034 | 119,593 | 100 | 33,534,266 | 356.6 |

Case rate =cases/100,000 population

Marital status and possible sources of infection for the reported AIDS cases during the year 2001 were analysed. These findings are presented in the following pie charts. As for the year 2000, the predominant mode of HIV transmission has remained heterosexual constituting up to 78% of all infections during 2001. This proportion is similar to that of year 2000, which was 77%. Mother to child transmission constituted 5% and blood transfusion 1%. In about 15% of the cases, the mode of acquisition of infection was not stated. Figures 3a and 3b illustrate these findings. Regarding marital status of the reported AIDS cases, there was a slight increase in the proportions of both single and married individuals when the 2000 data was compared to that of the year 2001, see figure 4a and figure 4b for further details.

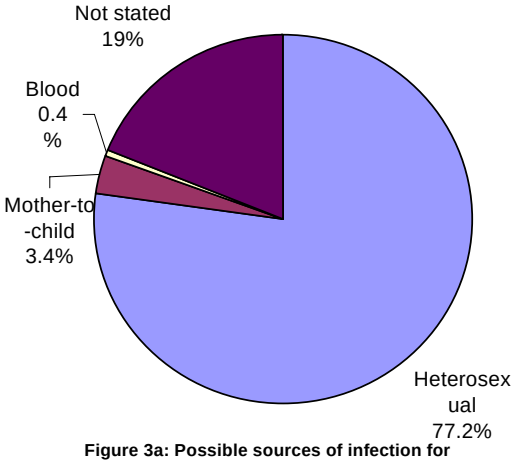



**Figure 3a: Possible sources of infection for the reported AIDS cases for the year 2000.**

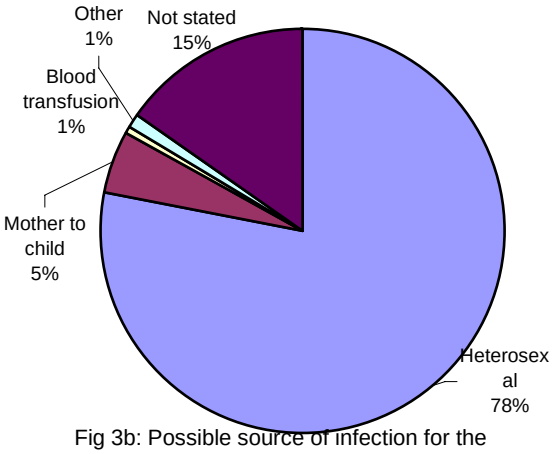



Fig 3b: Possible source of infection for the reported AIDS cases 2001

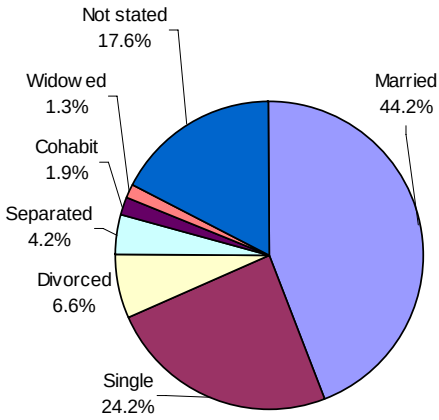



**Figure 4a: Marital status of reported AIDS cases for the year 2000**

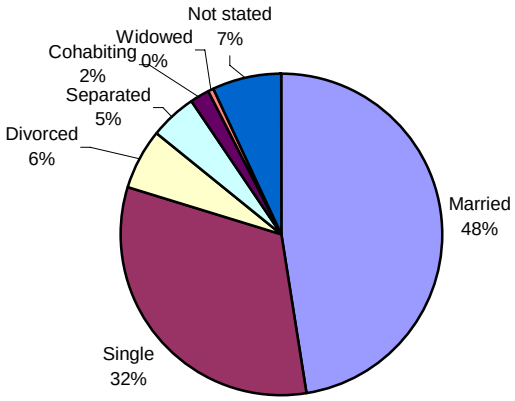



**Fig 4b: Marital status for the reported AIDS cases for the year 2001**

Tables 3a, b and c show the cumulative number of cases and case rate by region for the past 19 years (1983-2001). The total population by region for the year 2001 has been projected from the 1988 population census adjusted for growth rate of 2.8%[1]. The distribution of AIDS cases by region is based on where the diagnosis was made and does not necessarily reflect the place of usual residence of the diagnosed case. The NACP estimates that only 1 out of 5 AIDS cases are reported due to underutilization of health services, under-diagnosis, under-reporting and delays in reporting. Despite these limitations however, the data is believed to reflect the trend of AIDS cases in the country. According to the 2001 data, the region with the highest cumulative case rate was Mbeya followed by Dar es Salaam and Ruvuma in that descending order. The region with the lowest case rate was Kigoma. In contrast to the observed regional distribution of reported AIDS cases, regions showing the highest seroprevalence among blood donors were Kagera (22.0%), Dar es Salaam (18.8%), Iringa (18.7%) and Arusha (17.8%).

[1] National Bureau of Statistics, 1988 Census

**Table 3(a): Cumulative AIDS cases by regions, Tanzania 1983 – 1992.**

| ***Region*** | ***YEARS*** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ***1983*** | ***1984*** | ***1985*** | ***1986*** | ***1987*** | ***1988*** | ***1989*** | ***1990*** | ***1991*** | ***1992*** |
| Arusha | 0 | 0 | 0 | 10 | 47 | 217 | 433 | 647 | 1,117 | 1,637 |
| Coast | 0 | 0 | 1 | 4 | 79 | 224 | 465 | 938 | 1,676 | 2,215 |
| Dar es Salaam | 0 | 0 | 51 | 471 | 1,470 | 3,093 | 5,209 | 7,246 | 8,834 | 9,259 |
| Dodoma | 0 | 0 | 0 | 7 | 47 | 105 | 262 | 310 | 536 | 762 |
| Iringa | 0 | 0 | 1 | 3 | 68 | 305 | 374 | 728 | 2,281 | 3,334 |
| Kagera | 3 | 106 | 322 | 847 | 1,666 | 2,143 | 2,576 | 3,472 | 4,742 | 5,813 |
| Kigoma | 0 | 0 | 0 | 3 | 50 | 109 | 244 | 607 | 930 | 1,556 |
| Kilimanjaro | 0 | 1 | 8 | 36 | 207 | 455 | 571 | 966 | 2,060 | 3,707 |
| Lindi | 0 | 0 | 0 | 1 | 10 | 46 | 113 | 484 | 842 | 1,211 |
| Mara | 0 | 0 | 0 | 3 | 30 | 99 | 141 | 280 | 639 | 980 |
| Mbeya | 0 | 0 | 0 | 16 | 208 | 751 | 1,077 | 3,890 | 6,924 | 9,890 |
| Morogoro | 0 | 0 | 0 | 11 | 88 | 254 | 364 | 637 | 2,398 | 3,598 |
| Mtwara | 0 | 0 | 1 | 5 | 26 | 90 | 199 | 479 | 1,361 | 1,968 |
| Mwanza | 0 | 0 | 15 | 54 | 171 | 448 | 667 | 1,303 | 3,041 | 4,207 |
| Rukwa | 0 | 0 | 0 | 1 | 5 | 98 | 94 | 140 | 261 | 496 |
| Ruvuma | 0 | 0 | 0 | 20 | 46 | 81 | 210 | 571 | 1,197 | 1,807 |
| Shinyanga | 0 | 0 | 0 | 8 | 31 | 144 | 238 | 583 | 1,278 | 496 |
| Singida | 0 | 0 | 0 | 6 | 74 | 197 | 284 | 456 | 763 | 1,807 |
| Tabora | 0 | 2 | 5 | 6 | 59 | 232 | 525 | 927 | 1,400 | 1,972 |
| Tanga | 0 | 0 | 0 | 13 | 80 | 210 | 210 | 838 | 1,914 | 2,636 |
| Unspecified | - | - | - | - | - | - | - | 1 | 1 | 1 |
| TANZANIA | 3 | 109 | 404 | 1,525 | 4,462 | 9,301 | 14,256 | 25,503 | 44,195 | 59,352 |

**Table 3(b): Cumulative AIDS Cases by region, Tanzania 1993 – 2001.**

| ***Region*** | ***YEARS*** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | ***1993*** | ***1994*** | ***1995*** | ***1996*** | ***1997*** | ***1998*** | ***1999*** | ***2000*** | ***2001*** |
| Arusha | 2,185 | 2,368 | 2,615 | 2,787 | 3,244 | 3,567 | 3,948 | 4,196 | 4,688 |
| Coast | 2,740 | 3,023 | 3,268 | 3,559 | 3,796 | 4,266 | 4,375 | 5,348 | 5,580 |
| Dar es Salaam | 10,406 | 11,050 | 11,302 | 12,983 | 13,899 | 14,517 | 14,643 | 16,053 | 18,627 |
| Dodoma | 1,028 | 1,294 | 1,608 | 1,938 | 2,517 | 2,641 | 2,748 | 2,941 | 3,170 |
| Iringa | 4,462 | 4,674 | 4,785 | 4,883 | 5,008 | 5,031 | 5,076 | 5,179 | 5,298 |
| Kagera | 6,646 | 7,064 | 7,223 | 7,426 | 7,671 | 7,881 | 8,310 | 8,529 | 8,976 |
| Kigoma | 1,920 | 2,070 | 2,257 | 2,280 | 2,426 | 2,481 | 2,613 | 2,732 | 2,815 |
| Kilimanjaro | 4,699 | 5,119 | 5,513 | 5,991 | 6,618 | 7,375 | 7,766 | 8,088 | 9,097 |
| Lindi | 1,691 | 1,966 | 2,173 | 2,480 | 2,712 | 3,074 | 3,559 | 4,155 | 4,710 |
| Mara | 1,304 | 1,393 | 1,486 | 1,486 | 1,486 | 1,515 | 1,634 | 2,021 | 2,229 |
| Mbeya | 11,439 | 12,214 | 12,371 | 14,685 | 16,835 | 19,949 | 23,688 | 26,952 | 30,320 |
| Morogoro | 4,328 | 4,575 | 4,903 | 5,189 | 5,438 | 5,534 | 5,863 | 6,388 | 6,820 |
| Mtwara | 2,090 | 2,201 | 2,267 | 2,444 | 2,569 | 2,843 | 3,000 | 3,262 | 3,638 |
| Mwanza | 5,349 | 5,731 | 5,974 | 6,365 | 7,006 | 7,384 | 7,884 | 8,338 | 8,752 |
| Rukwa | 715 | 777 | 801 | 882 | 1,227 | 1,359 | 1,621 | 1,997 | 2,382 |
| Ruvuma | 2,480 | 2,847 | 3,087 | 3,345 | 3,752 | 4,260 | 4,760 | 5,406 | 6,381 |
| Shinyanga | 2,624 | 3,062 | 3,361 | 3,824 | 4,217 | 4,515 | 4,861 | 5,440 | 6,310 |
| Singida | 1,472 | 1,688 | 1,908 | 2,135 | 2,167 | 2,262 | 2,329 | 2,396 | 2,692 |
| Tabora | 2,786 | 3,075 | 3,428 | 3,805 | 4,278 | 4,733 | 5,199 | 5,946 | 6,349 |
| Tanga | 3,207 | 3,475 | 3,793 | 4,062 | 4,278 | 4,632 | 4,792 | 4,975 | 5,620 |
| Unspecified | 1 | 2 | 44 | 44 | 44 | 44 | 44 | 44 | 44 |
| TOTAL | 73,572 | 79,668 | 84,167 | 92,593 | 101,188 | 109,863 | 118,713 | 130,386 | 144,498 |

**Table 3(c): AIDS case rates by regions, Tanzania 1999 – 2001.**

| REGION | Cases for 1999 | Case rate for 1999 | Cases for 2000 | Case rate for 2000 | Cases for 2001 | Case rate for 2001 | Population year 2001 |
|---|---|---|---|---|---|---|---|
| Arusha | 381 | 19.4 | 248 | 12.2 | 492 | 23.6 | 2084659 |
| Coast | 109 | 13.6 | 973 | 117.4 | 232 | 27.2 | 852030 |
| Dar es Salaam | 126 | 5.8 | 1,410 | 63.1 | 2,574 | 112.1 | 2296464 |
| Dodoma | 107 | 6.7 | 193 | 11.7 | 229 | 13.5 | 1694296 |
| Iringa | 45 | 2.8 | 103 | 6.2 | 119 | 7.0 | 1704009 |
| Kagera | 429 | 23.7 | 219 | 11.7 | 447 | 23.3 | 1919860 |
| Kigoma | 132 | 11.5 | 119 | 10.1 | 83 | 6.8 | 1211958 |
| Kilimanjaro | 391 | 20.4 | 322 | 16.3 | 1,009 | 49.7 | 2028807 |
| Lindi | 485 | 60.1 | 596 | 71.6 | 555 | 64.9 | 855693 |
| Mara | 119 | 9.0 | 387 | 28.6 | 208 | 14.9 | 1393437 |
| Mbeya | 3,739 | 183.7 | 3264 | 155.6 | 3,368 | 156.1 | 2157028 |
| Morogoro | 329 | 19.9 | 525 | 30.7 | 432 | 24.6 | 1756001 |
| Mtwara | 157 | 14.9 | 262 | 24.1 | 376 | 33.7 | 1115340 |
| Mwanza | 500 | 20.2 | 454 | 17.8 | 414 | 15.8 | 2624608 |
| Rukwa | 262 | 24.8 | 376 | 34.5 | 385 | 34.3 | 1121179 |
| Ruvuma | 500 | 45.5 | 646 | 57.0 | 975 | 83.7 | 1165390 |
| Shinyanga | 346 | 14.4 | 579 | 23.4 | 870 | 34.2 | 2544284 |
| Singida | 67 | 6.5 | 67 | 6.3 | 296 | 27.0 | 1096181 |
| Tabora | 466 | 34.7 | 747 | 54.0 | 403 | 28.3 | 1421782 |
| Tanga | 160 | 9.7 | 183 | 10.7 | 645 | 36.9 | 1750042 |
| TOTAL | 8,850 | 28.6 | 13,673 | 36.6 | 16,113 | 43.0 | 32795049 |

# 2.0 SURVEILLANCE OF HIV INFECTION

## *2.1 SURVEILLANCE POPULATION I: ANTENATAL CLINIC ATTENDEES*

**Introduction**

Sentinel surveillance of HIV infection utilizing antenatal clinic attendees was established in 1990 when 24 sites were established in 11 out of the 20 regions of Tanzania mainland. This was implemented until 1999, when the NACP undertook a comprehensive review resulting in revised and improved methods. HIV and syphilis surveillance was strengthened by three core activities that were implemented sequentially. A multidisciplinary team examined strengths and weaknesses of the existing surveillance system in June 2000. This effort resulted in the development of the document entitled "Guidelines for Monitoring and Evaluation During Mid-Term Plan III, 2000-2002." These guidelines describe principles used in HIV/AIDS and syphilis surveillance, discuss behavioural surveillance approach for monitoring trends in sexual behaviours among youth, and introduce various criteria for monitoring and evaluating prevention programmes. Using these guidelines, the NACP revised the protocol for ANC surveillance. Consequently, new methods have been introduced, including dried blood spot (DBS) filter paper cards technology, standardization of HIV test approaches and quality assurance. A three-month data collection period has also been adopted.

Between January to April, 2002, a new round of sero-surveillance for HIV and syphilis was conducted at 24 ANC sites located in six regions of the country namely: Dar es Salaam, Dodoma, Kagera, Kilimanjaro, Mbeya and Mtwara. ANC clinics in these regions were selected to represent urban, semi-urban, roadside, rural and where applicable, border clinics.

In addition to sero-surveillance, the NACP conducted behavioral surveillance surveys (BSS) to track trends in HIV/AIDS-related knowledge, attitudes, and behaviours among youth aged 15-24 residing in communities surrounding ANC surveillance sites. Over time, this complementary behavioural information will provide trend data that will help identify behaviour indicators and evaluate interventions and monitor change in HIV/STD risk behaviours.

**Prevalence of HIV among ANC and Youth Behaviour**

Results of the 2001 - 2002 surveillance are presented in a separate report "Surveillance of HIV and syphilis prevalence and Youth behaviour from ANC communities, 2001 - 2002". Data that were collected by the "old" surveillance system, however, will be maintained in this report to serve as reference data for trends in HIV prevalence among antenatal clinic attendees.

**Table 4: Prevalence of HIV infection among antenatal clinic enrollees, Tanzania 1992 -2000**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 95% C.I |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dar es Salaam** | | | | | | | | | | |
| Kasorobo – Temeke | | 15.3 | | 7.3 | | | | 15.3 | 14.3 | 10.5-19.1 |
| Kigamboni – Temeke | | | | | | | | 14.1 | 10.1 | 7.4-13.6 |
| ** Sinza - Kinondoni | | | | | | | | 18.1 | | |
| **Iringa** | | | | | | | | | | |
| Mafinga (roadside) | 25.0 | | | | | | | 20.9 | 16.8 | 13.8-20.1 |
| Ipogoro (Peri-Urban) | | | | | | | | | 32.1 | 24.9-40.1 |
| Iringa Reg Hospital | | | | | | | 24.9 | 40.1 | 4.6 | 1.5-12.1 |
| **Mwanza** | | | | | | | | | | |
| Igekemaja | | | | | | | | | 4.2 | 1.1-12.7 |
| Kiseso | | | | | | | | | 10.8 | 6.9-16.4 |
| Welama-songa | | | | | | | | | 5.0 | 1.6-12.8 |
| Igoma | | | | | | | | | 13.8 | 10.8-13.6 |
| Makongoro | | | | | | | | | 16.4 | 13.6-19.7 |
| **Mbeya Region (All sites)** | 15.4 | 15.9 | 20.3 | 18.6 | 17.4 | 18.2 | 15.4 | 16.8 | 18.6 | 16.9-20.4 |
| Mbeya rural | 11.1 | 12.1 | 20.4 | 14.2 | 14.5 | 15.6 | 12.3 | 13.7 | 15.6 | 12.6-19.0 |
| Isoko (Rural) | | | | | 7.2 | 8.1 | 10.2 | 19.1 | 13.5 | 9.2-19.2 |
| Itete (Rural) | | | | | 5.6 | 14.8 | 11.8 | 11.6 | 23.3 | 16.3-32.1 |
| Mwambani (Rural) | | | | | 16.0 | 13.7 | 14.5 | 11.0 | 13.0 | 8.8-18.6 |
| Chimala (Roadside) | | | | | 17.0 | 15.9 | 12.5 | 12.1 | 15.2 | 10.9-21.4 |
| Mbeya Urban | 19.3 | 17.7 | 19.8 | 20.7 | 18.5 | 19.6 | 17.3 | 18.0 | 20.4 | 17.8-23.2 |
| Kiwanja-Mpaka (U) | | | | | 17.0 | 22.5 | 20.5 | 23.0 | 23.3 | 18.7-28.6 |
| Meta (Urban) | | | | | 14.6 | 17.9 | 12.5 | 13.5 | 17.0 | 13.1-21.9 |
| Ruanda (Urban) | | | | | 24.0 | 18.1 | 18.8 | 17.5 | 20.7 | 16.3-25.8 |
| Kyela (border) | | | | | 25.9 | 25.0 | 24.0 | 29.5 | 21.6 | 16.2-28.1 |
| Mbozi | | | | | 17.0 | 24.0 | | | 19.0 | 13.9-25.3 |
| **Morogoro** | | | | | | | | | | |
| Morogoro Reg.Hosp (Urban) | | | | | | | | 18.4 | | |
| Turiani DDH (Rural) | | | | | | | | 9.8 | | |
| **Rukwa (All sites)** | | | 26.5 | 17.4 | | | | | | |
| Namanyere (Rural) | 11.3 | 8.33 | 19.0 | 11.2 | | 11.2 | | | | |
| Sumbawanga | 12.0 | 23.3 | 31.3 | 22.2 | | 21.0 | | | | |
| **Ruvuma** | | | | | | | | | | |
| Songea (Urban) | 9.7 | 16.1 | 15.7 | 14,2 | | 11.0 | | | | |
| Namtumbo (Rural) | 3.5 | 6.7 | 3.2 | 5.6 | | 4.0 | | | | |
| **Kilimanjaro** | | | | | | | | | | |
| Umbwe (Moshi Rural) | 6.4 | | | | 9.1 | 10.0 | 20.0 | 19.2 | 16.6 | 13.0-20.8 |
| **Kagera** | | | | | | | | | | |
| Bukoba Urban | | 16.1 | | | 13.7 | | | 7.0 | 12.5 | 9.0-17.0 |
| **Tanga** | | | | | | | | | | |
| Mlalo | | | | | | | | | 2.7 | 1.0-6.6 |
| Korogwe | | | | | | | | | 9.3 | 6.1-13.6 |
| Makorora | | | | | | | | | 11.1 | 7.8-15.6 |
| Maramba | | | | | | | | | 6.0 | 3.5-9.9 |

**Table 5: Age specific prevalence of HIV infection among antenatal clinic attendees, Tanzania 1990-2000**

| | Age group | 1990 | | 1991 | | 1992 | | 1993 | | 1994 | | 1995 | | 1996 | | 1997 | | 1998 | | 1999 | | 2000 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % |
| Mbeya Urban | 14 - 24 | 298 | 17.1 | 473 | 17.3 | 838 | 19.9 | 804 | 18.8 | 327 | 20.5 | 385 | 20.5 | 359 | 17.8 | 350 | 18.9 | 374 | 17.6 | 349 | 16.3 | 494 | 18.4 |
| | 25 - 34 | 243 | 16.0 | 240 | 14.6 | 465 | 14.2 | 454 | 18.3 | 236 | 20.8 | 253 | 21.7 | 211 | 19.9 | 187 | 23.5 | 232 | 17.2 | 225 | 22.2 | 358 | 24.3 |
| | 35 - 49 | 41 | 12.2 | 41 | 7.3 | 68 | 13.2 | 67 | 6.0 | 39 | 7.7 | 42 | 16.7 | 29 | 17.2 | 35 | 5.7 | 17 | 11.8 | 26 | 3.8 | 47 | 10.6 |
| | Total | 582 | 16.3 | 754 | 15.9 | 1371 | 17.7 | 1325 | 18.0 | 602 | 19.8 | 680 | 20.7 | 599 | 18.5 | 572 | 19.6 | 623 | 17.3 | 600 | 18.0 | 899 | 20.4 |
| Mbeya Rural | 14 - 24 | 169 | 9.5 | 337 | 11.3 | 532 | 8.8 | 608 | 9.7 | 294 | 15.6 | 367 | 13.6 | 214 | 13.6 | 274 | 10.6 | 296 | 12.8 | 286 | 14.3 | 291 | 11.7 |
| | 25 - 34 | 120 | 12.5 | 172 | 11.6 | 331 | 11.5 | 303 | 9.6 | 186 | 16.7 | 175 | 21.7 | 152 | 8.6 | 140 | 15 | 179 | 12.3 | 166 | 13.9 | 178 | 23.6 |
| | 35 - 49 | 38 | 5.3 | 34 | 0.0 | 57 | 12.3 | 59 | 6.8 | 42 | 21.4 | 32 | 3.1 | 27 | 11.1 | 27 | 0.0 | 42 | 9.5 | 65 | 10.8 | 51 | 9.8 |
| | Total | 327 | 10.1 | 543 | 10.7 | 911 | 10 | 970 | 9.5 | 522 | 16.5 | 574 | 15.5 | 393 | 11.5 | 441 | 11.3 | 517 | 12.4 | 517 | 13.7 | 520 | 15.6 |
| Mbeya Roadside | 14 - 24 | 122 | 17.2 | 139 | 19.4 | 455 | 11.9 | 474 | 13.5 | 227 | 27.8 | 242 | 14 | 239 | 16.7 | 223 | 19.7 | 247 | 10.9 | 229 | 10.9 | 208 | 12.5 |
| | 25 - 34 | 93 | 16.1 | 92 | 9.8 | 239 | 11.3 | 242 | 12.4 | 110 | 29.1 | 134 | 11.9 | 131 | 21.4 | 130 | 22.3 | 124 | 16.9 | 146 | 14.4 | 172 | 23.8 |
| | 35 - 49 | 18 | 16.7 | 20 | 5.0 | 49 | 4.1 | 57 | 15.8 | 25 | 20 | 27 | 3.7 | 30 | 6.7 | 21 | 23.8 | 28 | 3.9 | 24 | 16.7 | 20 | 10 |
| | Total | 223 | 16.7 | 251 | 14.7 | 743 | 11.2 | 773 | 13.3 | 362 | 27.6 | 403 | 12.7 | 400 | 17.5 | 374 | 20.9 | 399 | 12.3 | 399 | 12.5 | 400 | 17.3 |
| Mbeya Boarder | 14 - 24 | 77 | 23.4 | 25 | 36 | 169 | 20.1 | 205 | 30.7 | 117 | 20.5 | 132 | 36.4 | 135 | 26.7 | 143 | 24.5 | 149 | 22.8 | 141 | 27.0 | 134 | 20.2 |
| | 25 - 34 | 57 | 26.3 | 17 | 29.4 | 80 | 36.3 | 125 | 28.8 | 44 | 22.7 | 49 | 30.6 | 50 | 26 | 49 | 28.6 | 45 | 28.9 | 56 | 35.7 | 59 | 25.4 |
| | 35 - 49 | 6.0 | 33.3 | 2.0 | 50 | 26 | 26.9 | 22 | 13.6 | 5.0 | 40 | 11 | 27.3 | 8.0 | 12.5 | 8.0 | 12.5 | 6.0 | 16.7 | 3.0 | 33.3 | 6 | 16.7 |
| | Total | 140 | 25.0 | 44 | 34.1 | 275 | 25.5 | 352 | 29 | 166 | 21.7 | 192 | 34.4 | 193 | 25.9 | 200 | 25.0 | 200 | 24.0 | 200 | 29.5 | 199 | 21.6 |
| Bukoba Urban | 14 - 24 | 665 | 21.8 | | | | | 1560 | 16.1 | | | | | 1696 | 9.4 | | | | | 261 | 6.9 | 262 | 11.1 |
| | 25 - 34 | 518 | 25.1 | | | | | 1022 | 20.6 | | | | | 997 | 19.2 | | | | | 26 | 7.7 | 26 | 26.9 |
| | 35 - 49 | 109 | 18.4 | | | | | 234 | 10.7 | | | | | 200 | 13 | | | | | | | | |
| | Total | 1292 | 22.2 | | | | | 2816 | 16.1 | | | | | 2893 | 13.7 | | | | | 287 | 7.0 | 288 | 12.5 |
| Umbwe Moshi Rural | 14 – 24 | | | | | | | | | | | | | | | 90 | 4.4 | 131 | 19.8 | 94 | 19.1 | 172 | 17.4 |
| | 25 – 34 | | | | | | | | | | | | | | | 75 | 16 | 125 | 20 | 106 | 19.8 | 159 | 16.4 |
| | 35 – 49 | | | | | | | | | | | | | | | 11 | 9.1 | 44 | 18.2 | 23 | 17.4 | 37 | 13.5 |
| | Total | | | | | | | | | | | | | | | 176 | 9.7 | 301 | 19.9 | 223 | 19.2 | 368 | 16.6 |

## *2.2 SURVEILLANCE POPULATION II: BLOOD DONORS*

**Methods**

Screening of blood donors for HIV infection was initiated in the country in 1987. This service which was originally limited to regional and referral hospitals only, was extended to cover all health care facilities providing blood transfusion services so as to ensure provision of safe blood. Screening is done by using either simple/rapid tests in peripheral hospitals or the ELISA testing strategy in regional, referral and some missionary hospitals. Test results are filled in blood donor HIV register forms made available to the health care facilities from the Ministry of Health through the regional medical offices. Dully filled forms are returned to the NACP for processing.

**Prevalence of HIV infection**

A total of 152,103 persons donated blood during the year 2001, individuals aged less than 15 years were excluded from the analysis resulting into a total of 152,096 persons as the subsequent denominator. Males formed the majority of donors constituting up to 81.4%, while females constituted 18.5%. In 0.1% of individuals the sex was not stated.

The overall prevalence of HIV infection among blood donors during 2001 was 11.01% (95% CI=10.8-11.2). This is an increase of 1.1% when compared with the year 2000 prevalence (9.9% in 2000 vs 11.01% in 2001 p=0.0001).

As in the previous years, prevalence varied by sex, females having a significantly higher prevalence as compared to males. Prevalence among females was 13.7% (95% CI=13.3-14.1) and that among males was 10.4 (95% CI=10.2-10.5) p=0.00001. When these sex specific estimates are compared to those of the year 2000, males show a significant increase in prevalence from 9.2% in the year 2000 to 10.4% in the year 2001 p=0.0001. Prevalence among females remained almost the same at 13.3% for the year 2000 compared to 13.7% during the year 2001 p=0.1.

When using the prevalence among blood donors to estimate the year 2001 burden of HIV infection in Tanzania, the following estimates are realized. A total of 2,229,770 individuals (918,113 males and 1,311,657 females) aged 15 years and above were living with HIV in Tanzania during the year 2001. Of these, 1,867,561 (770,468 males and 1,097,093 females) were aged between 15-49 years. When these estimates are compared to those of the year 2000, there is a 3% increase in the number of people living with HIV infection who are in the age group 15 years and above.

Ninety nine percent of donors were relatives of patients while the remaining 1% were institutional or paid blood donors. The donor category was not stated in 3 persons donating blood. Due to the huge category of relative donors, prevalence among these was almost similar to the overall prevalence among all donors i.e. 11.04%. Prevalence among paid donors was 5.9% (N=369) while that among institutional donors was 8.6% (N=928). Differences between these categories of donors were statistically significant (p=0.005). Institutional donors include individuals from places like schools, colleges, factories etc.

HIV infection prevalence as observed among female blood donors is higher than that observed among antenatal clinic attendees or even from population based surveys indicating that individuals donating blood for their sick relatives (who are the majority of the donors) are at a higher risk of HIV infection than the rest of the population even after their prevalence

estimates are age adjusted. This is conceivable as for example, a spouse donating blood to his/her partner who is seropositive is also likely to be seropositive.

To evaluate whether there have been any changes in the prevalence of HIV infection in various age groups among males and females, the blood donor data was broken down by age and sex.

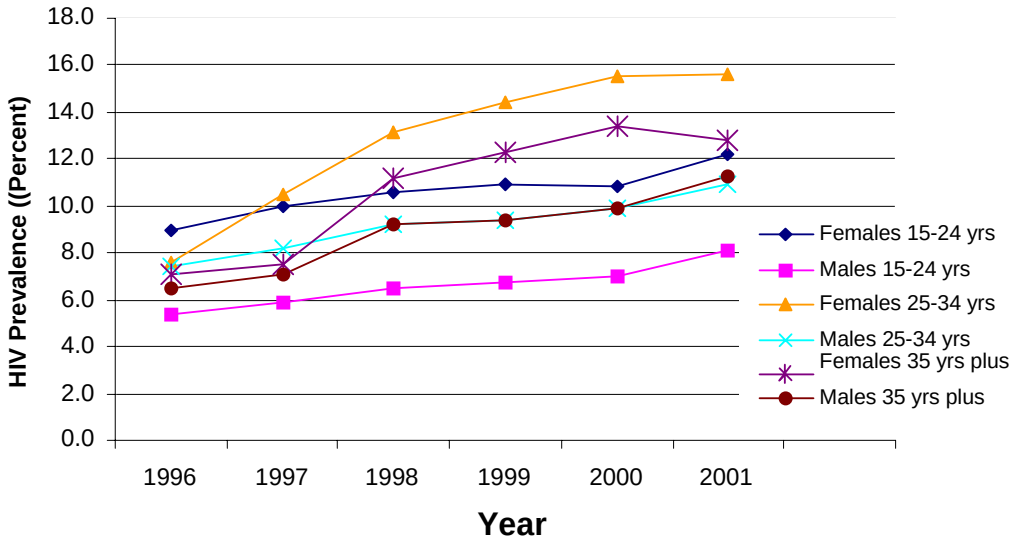



**Figure 5: Age and sex specific prevalence trends among blood donors, 1996-2001**

All age groups in both sexes exhibited an upward trend compared to the year 2000 except females aged 25-34 years and those aged 35 years and above. In these two age groups, prevalence seemed to level off among females aged 25-34 years and had a tendency of decreasing among females aged 35 years and above. Its worth noting that females aged 15-24 years who up to 2000 seem to have a prevalence which had leveled off, had an increase in prevalence during the year 2001. In general females aged 25-34 years continued to be at the highest risk of infection while males aged 15-24 years continued to be at the lowest risk of infection. These observations are summarized in Figure 5.

***Table: 6 Prevalence of HIV infection among blood donors by region and district, Tanzania 1999-2001***

| ***Region*** | ***Year 1999*** | | ***Year 2000*** | | ***Year 2001*** | |
|---|---|---|---|---|---|---|
| ***District*** | ***Total donors*** | ***% prevalence*** | ***Total donors*** | ***% prevalence*** | ***Total donors*** | ***% prevalence*** |
| Arusha | 3030 | 22.0 | 7223 | 13.8 | 6827 | 17.8 |
| Arumeru | - | - | - | - | 72 | 0.0 |
| Arusha municipality | - | - | 1372 | 9.1 | 1825 | 11.2 |
| Babati | 2095 | 30.4 | 4132 | 19.1 | 2428 | 33.9 |
| Hanang | - | - | - | - | 223 | 18.0 |
| Kiteto | | | 64 | 10.9 | 266 | 11.7 |
| Mbulu | 809 | 3.6 | 1503 | 3.7 | 1892 | 7.5 |
| Monduli | 112 | 0.0 | 152 | 11.8 | 119 | 10.1 |
| Coast | 3510 | 8.9 | 3160 | 12.5 | 3240 | 10.4 |
| Bagamoyo | 320 | 5.9 | 463 | 7.8 | 236 | 13.6 |
| Kibaha | 1730 | 10.6 | 664 | 11.9 | 1147 | 9.1 |
| Kisarawe | 112 | 9.8 | 452 | 19.0 | 281 | 8.2 |
| Mafia | 256 | 8.2 | 249 | 8.0 | 292 | 5.8 |
| Rufiji | 1092 | 7.1 | 1318 | 13.1 | 1284 | 12.5 |
| DSM | 694 | 33.1 | 1739 | 8.6 | 1956 | 18.8 |
| Ilala | 428 | 45.1 | 1005 | 9.7 | 1351 | 14.7 |
| Kinondoni | 162 | 12.4 | 658 | 5.5 | 153 | 33.3 |
| Temeke | - | - | - | - | 452 | 25.9 |
| Dodoma | 2269 | 5.1 | 3001 | 3.9 | 8984 | 7.9 |
| Dodoma municipality | 1364 | 4.8 | 1129 | 5.6 | 4249 | 13.2 |
| Kondoa | - | - | 797 | 4.9 | 1122 | 4.4 |
| Kongwa | - | - | - | - | 441 | 7.3 |
| Mpwapwa | 905 | 5.4 | 1075 | 1.5 | 3172 | 2.3 |
| Iringa | 4258 | 14.7 | 2393 | 14.6 | 5104 | 18.7 |
| Iringa municipality | 2643 | 14.3 | 1008 | 14.7 | 3057 | 21.4 |
| Ludewa | 280 | 22.1 | 415 | 15.2 | 534 | 18.4 |
| Mafinga | - | - | - | - | 96 | 10.4 |
| Mufindi | 297 | 8.1 | 301 | 8.9 | 62 | 3.2 |
| Njombe | 1038 | 15.7 | 669 | 16.6 | 1355 | 13.9 |
| Kagera | 4572 | 17.7 | 3827 | 19.5 | 5753 | 22.0 |
| Biharamulo | 428 | 19.6 | 413 | 8.5 | 350 | 10.6 |
| Bukoba | 1615 | 20.7 | 650 | 12.2 | 1577 | 12.7 |
| Karagwe | 638 | 20.8 | 998 | 19.5 | 1183 | 17.4 |
| Muleba | 1159 | 15.5 | 1472 | 24.6 | 1843 | 33.7 |
| Ngara | 732 | 10.4 | 294 | 25.8 | 800 | 25.4 |
| Kigoma | 6860 | 6.4 | 6772 | 3.8 | 7412 | 4.9 |
| Kasulu | 4935 | 6.8 | 3503 | 3.5 | 3918 | 3.7 |
| Kibondo | 752 | 4.5 | 530 | 6.2 | 543 | 4.6 |
| Kigoma | 1173 | 5.7 | 2739 | 3.8 | 2951 | 6.5 |
| Kilimanjaro | 5218 | 4.8 | 4435 | 6.7 | 4823 | 5.9 |
| Hai | - | | 416 | 10.1 | 310 | 1.6 |
| Moshi | 3233 | 5.4 | 2221 | 6.4 | 2948 | 5.6 |
| Mwanga | 277 | 3.6 | 115 | 7.0 | 162 | 10.5 |
| Rombo | 305 | 2.9 | 222 | 3.3 | 302 | 2.6 |
| Same | 1369 | 4.2 | 1461 | 6.8 | 1101 | 8.0 |
| Lindi | 7083 | 3.4 | 5092 | 4.2 | 6046 | 3.8 |
| Kilwa | 879 | 5.6 | 478 | 3.1 | 656 | 5.0 |
| Lindi | 2788 | 5.1 | 2175 | 4.5 | 2159 | 4.0 |
| Liwale | 986 | 1.3 | 931 | 3.6 | 837 | 3.9 |

***… Table 6 Continues***

| ***Region*** / ***District*** | ***Year 1999*** | | ***Year 2000*** | | ***Year 2001*** | |
|---|---|---|---|---|---|---|
| | ***Total donors*** | ***% prevalence*** | ***Total donors*** | ***% prevalence*** | ***Total donors*** | ***% prevalence*** |
| Nachingwea | 2430 | 1.6 | 1508 | 4.4 | 2394 | 3.3 |
| Mara | 5151 | 9.2 | 10676 | 9.4 | 9277 | 9.0 |
| Bunda | 262 | 9.9 | 2416 | 10.7 | 2495 | 9.0 |
| Musoma | 2835 | 8.0 | 4230 | 7.6 | 4670 | 7.5 |
| Serengeti | 988 | 6.3 | 1335 | 2.9 | 1042 | 2.1 |
| Tarime | 1066 | 14.7 | 2695 | 14.3 | 1070 | 22.2 |
| Mbeya | 6691 | 15.2 | 7338 | 17.0 | 10618 | 16.4 |
| Chunya | 865 | 17.8 | 868 | 19.9 | 1938 | 20.0 |
| Ileje | 218 | 13.8 | 211 | 11.9 | 190 | 11.6 |
| Kyela | 750 | 13.6 | 1110 | 16.4 | 1671 | 15.7 |
| Mbarali | 1470 | 18.3 | 1683 | 25.4 | 1868 | 20.3 |
| Mbeya | 1254 | 16.3 | 1153 | 18.3 | 1390 | 13.3 |
| Mbozi | 635 | 16.4 | 566 | 11.1 | 934 | 11.7 |
| Rungwe | 1499 | 10.5 | 1747 | 9.6 | 2627 | 15.1 |
| Morogoro | 12389 | 11.3 | 7606 | 16.6 | 12755 | 17.2 |
| Kilombero | 2697 | 18.1 | 1671 | 35.3 | 3334 | 34.6 |
| Kilosa | 4435 | 11.7 | 1309 | 6.9 | 3581 | 8.7 |
| Morogoro | 4440 | 8.2 | 4072 | 12.1 | 4964 | 13.5 |
| Ulanga | 805 | 3.7 | 540 | 15.4 | 876 | 6.4 |
| Mtwara | 3030 | 7.8 | 8665 | 8.2 | 5767 | 7.5 |
| Mtwara urban | 739 | 4.5 | 139 | 7.2 | 1994 | 4.6 |
| Masasi | 2291 | 8.9 | 3725 | 10.1 | 2955 | 9.8 |
| Mtwara rural | - | - | 3182 | 7.2 | | |
| Newala | - | - | 1619 | 5.7 | 818 | 6.2 |
| Mwanza | 10373 | 7.0 | 9858 | 7.6 | 12526 | 8.0 |
| Geita | 832 | 8.8 | 1173 | 7 | 1942 | 6.2 |
| Kwimba | 1977 | 4.9 | 1171 | 4.4 | 1293 | 7.8 |
| Magu | 1436 | 9.5 | 1243 | 12.6 | 1539 | 13.0 |
| Misungwi | 372 | 3.2 | 444 | 5.6 | 491 | 6.3 |
| Mwanza | 2561 | 5.8 | 2377 | 8.2 | 3061 | 7.6 |
| Sengerema | 2518 | 7.5 | 2868 | 6.5 | 3406 | 7.2 |
| Ukerewe | 677 | 10.6 | 558 | 10.0 | 772 | 10.0 |
| Rukwa | - | - | 3277 | 11.8 | 531 | 10.7 |
| Mpanda | - | - | 565 | 12.2 | 341 | 8.8 |
| Nkasi | - | - | 652 | 15.6 | | |
| Sumbawanga | - | - | 2045 | 10.6 | 190 | 14.2 |
| Ruvuma | 8301 | 9.8 | 9813 | 10.2 | 12187 | 11.2 |
| Mbinga | 3502 | 7.5 | 3618 | 9.4 | 3646 | 11.4 |
| Songea | 3460 | 13.8 | 4605 | 12.4 | 5678 | 14.3 |
| Tunduru | 1339 | 5.3 | 1590 | 6.0 | 2863 | 4.8 |
| Shinyanga | 8654 | 8.2 | 9332 | 9.4 | 12316 | 8.4 |
| Bariadi | 2676 | 4.2 | 1580 | 4.8 | 2569 | 6.2 |
| Kahama | 2534 | 10.2 | 2344 | 9.6 | 3754 | 8.6 |
| Maswa | 690 | 9.3 | 908 | 9.0 | 1239 | 10.1 |
| Meatu | 426 | 10.3 | 307 | 10.1 | 569 | 12.0 |
| Shinyanga | 2328 | 9.9 | 4185 | 11.1 | 4185 | 8.6 |
| Singida | 4187 | 8.1 | 5326 | 8.0 | 6785 | 11.8 |
| Iramba | 181 | 5.5 | 1095 | 12 | 710 | 5.2 |
| Kiomboi | - | - | | | 14 | 7.1 |
| Manyoni | 877 | 7.1 | 1864 | 7.4 | 2024 | 8.3 |
| Singida urban | 3129 | 8.6 | 2367 | 6.8 | 3557 | 13.0 |
| Singida rural | - | - | - | - | 480 | 27.5 |
| Tabora | 11335 | 7.1 | 9084 | 7.2 | 9628 | 7.6 |

***… Table 6 Continues***

| ***Region*** / ***District*** | ***Year 1999*** | | ***Year 2000*** | | ***Year 2001*** | |
|---|---|---|---|---|---|---|
| | ***Total donors*** | ***% prevalence*** | ***Total donors*** | ***% prevalence*** | ***Total donors*** | ***% prevalence*** |
| Igunga | 4120 | 7.0 | 2359 | 7.6 | 2427 | 8.2 |
| Nzega | 1812 | 6.4 | 1604 | 5.4 | 3156 | 5.7 |
| Sikonge | 892 | 5.7 | 875 | 5.0 | 1043 | 6.7 |
| Tabora | 2918 | 7.8 | 2445 | 7.8 | 1487 | 8.1 |
| Urambo | 1593 | 7.7 | 1801 | 8.8 | 1515 | 10.8 |
| Tanga | 10967 | 8.3 | 9749 | 8.8 | 9583 | 8.6 |
| Handeni | 1531 | 9.7 | 1296 | 5.3 | 1937 | 3.5 |
| Korogwe | 1945 | 9.0 | 1034 | 6.1 | 795 | 6.8 |
| Lushoto | 450 | 22.2 | 811 | 13.2 | 537 | 11.0 |
| Muheza | 2667 | 8.1 | 1712 | 10.2 | 2463 | 9.1 |
| Pangani | 621 | 5.5 | 1169 | 5.7 | 509 | 4.7 |
| Tanga | 3753 | 6.3 | 3727 | 10.1 | 3342 | 11.7 |

Most regions had either a stable or an increasing trend in the prevalence of HIV infection when data for the year 2001 was compared to that of year 2000, Kagera region continued to have the highest prevalence of HIV infection among blood donors at 22.0%. Other regions with high prevalence (above the overall prevalence of 11%) included, Dar es Salaam (18.8%), Arusha (17.8%), Morogoro (17.2%) and Mbeya (16.4%). Regions with the lowest prevalence included: Lindi 3.8%, Kigoma 4.9%, and Kilimanjaro 5.9%. This information is given in greater detail in Table 6.

Prevalence by district fluctuated during the three years 1999-2001 thus showing no specific pattern in the trend of infection. However five districts showed an unusually high prevalence during the year 2001, these include: Kilombero 34.6%, Babati 33.9%, Muleba 33.7%, Kinondoni 33.3%, and Singida rural 27.5%. All except Kilombero had an increase in the magnitude of HIV infection. Fluctuation in prevalence of HIV infection among blood donors may be a result of use of different tests for HIV detection with different performance characteristics, the changing composition of donors depending on the site in question, characteristics of persons being screened (eg. false positivity when using Capillus rapid tests in Karagwe was once attributed to cross-reactivity with bovine antigen presumed to be present in the Karagwe population).

**Table 7: Prevalence of HIV infection among male blood donors by region, Tanzania 1992 - 2001**

| Region | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 |
|---|---|---|---|---|---|---|---|---|---|---|
| Arusha | 2.6 | 2.6 | 2.7 | 6.1 | 3.0 | 2.8 | 4.2 | 21.3 | 13.4 | 17.2 |
| Coast | 4.1 | 5.9 | 6.6 | 5.5 | 9.4 | 8.2 | 7.7 | 7.5 | 10.1 | 8.0 |
| Dodoma | 2.8 | 1.7 | 0.0 | 0.0 | 4.9 | 7.9 | 4.9 | 5.0 | 3.7 | 7.8 |
| DSM | 8.5 | - | - | 4.9 | 17.2 | 19.8 | 12.5 | 23.8 | 8.3 | 18.2 |
| Iringa | 11.1 | 13.2 | 7.7 | 13.0 | 14.2 | 14.2 | 14.8 | 14.7 | 13.7 | 17.9 |
| Kagera | 10.9 | 5.8 | 7.9 | 10.8 | 8.0 | 8.6 | 14.8 | 17.3 | 19.5 | 22.3 |
| Kigoma | 1.9 | 7.0 | 3.4 | 4.9 | 5.6 | 2.8 | 3.8 | 6.3 | 3.9 | 4.8 |
| Kilimanjaro | 2.4 | 3.4 | 1.5 | 10.7 | 4.1 | 4.1 | 4.8 | 4.7 | 6.2 | 5.8 |
| Lindi | 3.7 | 2.5 | - | 3.0 | 3.7 | 3.0 | 3.3 | 3.3 | 3.9 | 3.2 |
| Mara | 6.9 | 5.0 | 3.7 | 5.8 | 7.6 | 8.0 | 7.6 | 8.6 | 8.7 | 7.8 |
| Mbeya | 15.1 | 0.0 | - | 9.0 | 11.1 | 12.6 | 13.0 | 13.6 | 15.4 | 14.4 |
| Morogoro | 4.6 | 5.7 | - | - | 4.1 | 5.5 | 7.4 | 10.3 | 15.2 | 16.2 |
| Mtwara | 5.2 | 9.5 | 15.2 | 10.1 | 9.7 | 4.5 | 8.0 | 7.0 | 7.3 | 7.2 |
| Mwanza | 5.1 | 4.0 | 2.9 | 12.5 | 7.6 | 9.5 | 6.9 | 6.2 | 7.2 | 7.7 |
| Rukwa | 6.7 | - | - | - | 8.0 | 7.9 | - | - | 11.5 | 11.0 |
| Ruvuma | 6.2 | 7.3 | 2.0 | 3.3 | 8.1 | 7.7 | 7.4 | 9.8 | 9.5 | 10.3 |
| Shinyanga | 6.1 | 6.4 | 14.7 | 11.7 | 8.5 | 8.5 | 8.0 | 7.7 | 9.0 | 8.0 |
| Singida | 2.7 | 2.8 | 0.0 | - | 5.6 | 3.6 | 6.2 | 7.7 | 7.5 | 11.6 |
| Tabora | 2.8 | 4.4 | 2.5 | 6.2 | 3.2 | 6.1 | 5.9 | 6.8 | 6.8 | 7.3 |
| Tanga | 7.1 | 4.4 | - | 10.4 | 5.5 | 8.0 | 7.3 | 7.9 | 8.7 | 8.6 |
| Total | 5.3 | 5.9 | 6.9 | 7.8 | 6.8 | 7.6 | 8.5 | 8.7 | 9.2 | 10.4 |

To investigate whether sex specific HIV prevalence among blood donors varied by region, prevalence of HIV infection among males and female was analyzed by region. Table 7 shows the findings among males. High prevalence was noted in six regions namely: Kagera 22.3%, Dar es Salaam 18.2% among males, Iringa 17.9%, Arusha 17.2%, Morogoro 16.2% and Mbeya 14.4%. Regions with the lowest prevalence among males were Lindi (3.2%) and Kigoma (4.8%). Prevalence by region among females was highest in Dar es Salaam at 31.4% followed by Morogoro at 22.3% and Iringa at 21.4%. The lowest prevalence was observed in Lindi (6.7%), Kilimanjaro (6.9%), Tanga (8.6%) and Tabora (8.9%), Table 8. Generally the prevalence among females did not vary much from that of the year 2000 although it remained higher than that among males.

**Table 8: Prevalence of HIV infection among female blood donors by region, Tanzania 1992 - 2001**

| Region | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 |
|---|---|---|---|---|---|---|---|---|---|---|
| Arusha | 2.2 | 3.9 | - | 15.6 | 4.4 | 6.0 | 7.6 | 25.2 | 15.1 | 20.4 |
| Coast | 5.0 | 10.2 | 11.8 | 9.2 | - | 8.0 | 13.1 | 15.8 | 25.1 | 21.2 |
| Dodoma | 4.8 | - | - | 0.0 | - | 9.2 | 6.2 | 6.7 | 5.3 | 8.7 |
| DSM | 7.7 | - | - | 6.7 | - | 40.6 | 32.1 | 55.0 | 14.9 | 31.4 |
| Iringa | 8.1 | 17.6 | 20.0 | 7.8 | 12.4 | 16.4 | 15.1 | 14.4 | 20.8 | 21.4 |
| Kagera | 11.0 | 8.6 | 8.3 | 14.3 | 7.4 | 11.3 | 14.3 | 19.0 | 19.5 | 20.5 |
| Kigoma | 4.1 | 5.8 | 5.1 | 0.0 | 6.1 | 2.6 | 2.6 | 6.6 | 3.6 | 5.1 |
| Kilimanjaro | 2.2 | 1.8 | 2.9 | 0.0 | 5.9 | 8.1 | 8.1 | 6.6 | 11.4 | 6.9 |
| Lindi | 2.3 | 1.9 | - | 1.6 | 3.6 | 4.9 | 5.2 | 4.3 | 5.8 | 6.7 |
| Mara | 8.2 | 2.9 | 10.0 | 9.4 | 10.1 | 13.1 | 7.7 | 10.2 | 10.7 | 11.1 |
| Mbeya | 20.3 | - | - | 11.4 | 13.8 | 14.4 | 15.1 | 19.3 | 20.9 | 21.0 |
| Morogoro | 5.7 | 10.8 | - | - | 6.0 | 9.1 | 8.8 | 16.0 | 24.2 | 22.3 |
| Mtwara | 10.5 | 5.7 | 0.0 | 5.6 | 10.5 | - | 23 | 21.3 | 25.2 | 14.9 |
| Mwanza | 5.7 | 8.0 | 5.0 | 0.0 | 8.5 | 11.8 | 9.5 | 10.6 | 9.5 | 9.3 |
| Rukwa | 0.0 | - | - | - | 8.8 | - | - | - | 16.0 | 8.8 |
| Ruvuma | 6.4 | 6.7 | 2.1 | 6.1 | 10.5 | 12.7 | 12.2 | 11.8 | 12.7 | 14.1 |
| Shinyanga | 10.0 | 21.6 | 33.3 | 0.0 | 14.9 | 14.9 | 14.6 | 12.9 | 13.6 | 11.8 |
| Singida | 4.5 | 4.6 | 0.0 | - | 5.8 | 5.2 | 7.0 | 9.4 | 10.4 | 12.1 |
| Tabora | 2.7 | 5.8 | 0.0 | 12.9 | 3.2 | 7.7 | 9.5 | 8.8 | 9.3 | 8.9 |
| Tanga | 7.0 | 5.9 | - | 20.8 | 7.0 | 13.6 | 11.9 | 14.0 | 11.2 | 8.6 |
| Total | 5.9 | 6.2 | 4.8 | 9.4 | 8.2 | 11.6 | 11.8 | 12.6 | 13.3% | 13.7 |

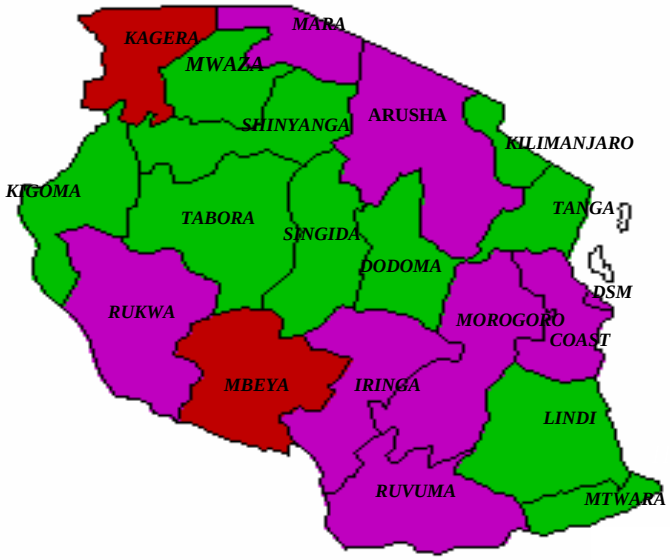
Since prevalence in the 15-24 years age group approximates new infections, blood donor data was analysed by age for each region. Generally prevalence was lowest in the age group 15-24 years in almost all regions. Comparing year 2001 prevalence with that of the past two years, Iringa, Kagera, Kilimanjaro, Mbeya, Morogoro, Rukwa, Singida and Tanga showed an increasing trend in this age group. Grouping prevalence estimates from this age group into five and ten percent categories revealed the following:

- Eight regions had prevalence above 10%, these included Arusha, Dar es Salaam, Iringa, Kagera, Mbeya, Morogoro, Rukwa and Ruvuma.
- Nine regions had prevalence estimates ranging from 5 - 9%, these include Coast region, Dodoma, Mara, Mtwara, Mwanza, Shinyanga, Singida, Tabora and Tanga,
- Three regions had prevalence estimates ranging from 0-4% in the 15-24 year age group, these include: Kigoma, Kilimanjaro and Lindi

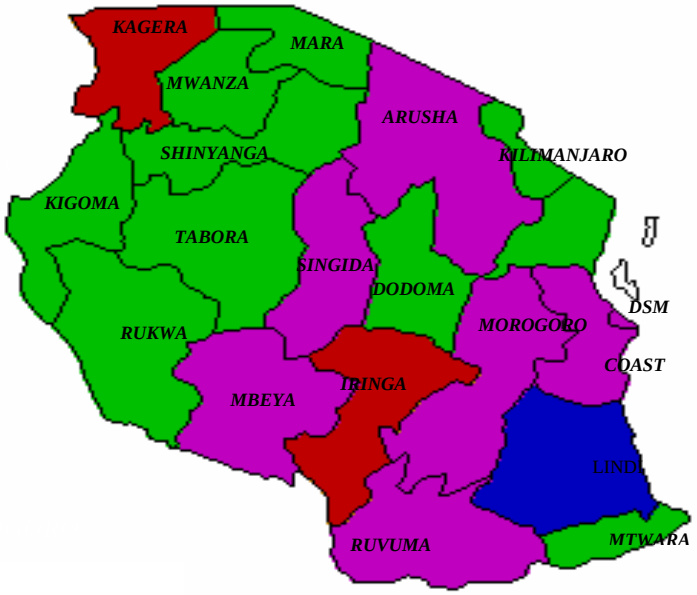
The distribution of regions in these categories did not change much in comparison to the previous year. Further information is presented in Maps 1 and 2, and table 9.

**Region specific Prevalence of HIV infection among blood donors aged 15-24 years, Tanzania 2000 and 2001**

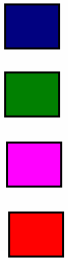
**Year 2000**




**Year 2001**




**Key**



0 - 4%

5 - 9%

10 - 19%

20% and above

**Table 9: Age specific HIV prevalence among blood donors by region, Tanzania 1999-2001**

| ***Region*** | ***Year 1999*** | | ***Year 2000*** | | ***Year 2001*** | |
|---|---|---|---|---|---|---|
| ***Age group*** | ***Total donors*** | ***% prevalence*** | ***Total donors*** | ***% prevalence*** | ***Total donors*** | ***% prevalence*** |
| Arusha | 3030 | 22.0 | 7223 | 13.8 | 6827 | 17.8 |
| 15 -24 | 853 | 20.5 | 1834 | 11.3 | 1659 | 15.2 |
| 25 - 34 | 1288 | 23.8 | 3365 | 14.7 | 3178 | 18.3 |
| 35+ | 889 | 20.7 | 2024 | 14.3 | 1990 | 19.2 |
| Coast | 3510 | 8.9 | 3160 | 12.5 | 3240 | 10.4 |
| 15 -24 | 941 | 7.8 | 606 | 8.2 | 829 | 7.2 |
| 25 - 34 | 1477 | 10.0 | 1305 | 13.1 | 1343 | 11.4 |
| 35+ | 1092 | 8.5 | 1249 | 13.9 | 1059 | 11.6 |
| Dar es Salaam | 694 | 33.1 | 1739 | 8.6 | 1956 | 18.8 |
| 15 -24 | 129 | 29.5 | 264 | 6.4 | 472 | 14.8 |
| 25 - 34 | 267 | 37.5 | 460 | 10.2 | 987 | 18.7 |
| 35+ | 298 | 31.0 | 1015 | 8.4 | 495 | 22.4 |
| Dodoma | 2269 | 5.1 | 3001 | 3.9 | 8984 | 7.9 |
| 15 -24 | 522 | 4.0 | 642 | 2.0 | 2026 | 6.6 |
| 25 - 34 | 960 | 5.8 | 1275 | 4.3 | 3856 | 8.2 |
| 35+ | 787 | 4.8 | 1084 | 6.4 | 3083 | 8.4 |
| Iringa | 4258 | 14.7 | 2393 | 14.6 | 5104 | 18.7 |
| 15 -24 | 1207 | 13.2 | 687 | 11.4 | 1324 | 15.9 |
| 25 - 34 | 1809 | 17.1 | 1003 | 16.8 | 2170 | 21.3 |
| 35+ | 1242 | 12.7 | 703 | 14.6 | 1608 | 17.4 |
| Kagera | 4572 | 17.7 | 3827 | 19.5 | 5753 | 22.0 |
| 15 -24 | 1435 | 12.1 | 1045 | 15.1 | 1601 | 18.2 |
| 25 - 34 | 1926 | 19.4 | 1694 | 21.2 | 2542 | 21.7 |
| 35+ | 1211 | 21.6 | 1088 | 21.1 | 1583 | 26.5 |
| Kigoma | 6860 | 6.4 | 6772 | 3.8 | 7412 | 4.9 |
| 15 -24 | 1537 | 4.8 | 1346 | 2.1 | 1811 | 3.9 |
| 25 - 34 | 2964 | 6.4 | 2959 | 4.3 | 3093 | 5.6 |
| 35+ | 2359 | 7.4 | 2467 | 4.3 | 2494 | 4.7 |
| Kilimanjaro | 5218 | 4.8 | 4435 | 6.8 | 4823 | 5.9 |
| 15 -24 | 1438 | 2.8 | 1189 | 3.8 | 1266 | 4.2 |
| 25 - 34 | 2374 | 5.2 | 1938 | 7.4 | 2103 | 6.1 |
| 35+ | 1406 | 6.3 | 1308 | 8.6 | 1448 | 6.8 |
| Lindi | 7083 | 3.4 | 5092 | 4.2 | 6046 | 3.8 |
| 15 -24 | 1905 | 3.0 | 1208 | 1.2 | 1484 | 2.1 |
| 25 - 34 | 3110 | 3.2 | 2088 | 4.4 | 2657 | 3.8 |
| 35+ | 2068 | 4.3 | 1796 | 5.4 | 1841 | 4.3 |
| Mara | 5151 | 9.2 | 10676 | 9.4 | 9277 | 9.0 |
| 15 -24 | 1870 | 7.9 | 3274 | 6.6 | 2928 | 7.8 |
| 25 - 34 | 2028 | 11.4 | 4261 | 10.8 | 4002 | 9.6 |
| 35+ | 1253 | 7.5 | 3141 | 10.3 | 2308 | 9.3 |
| Mbeya | 6691 | 15.2 | 7338 | 17.0 | 10618 | 16.4 |
| 15 -24 | 1922 | 10.8 | 2102 | 12.2 | 3118 | 12.7 |
| 25 - 34 | 2767 | 18.5 | 3051 | 20.1 | 4359 | 19.0 |
| 35+ | 2002 | 15.0 | 2185 | 17.3 | 3105 | 16.3 |
| Morogoro | 12389 | 11.3 | 7606 | 16.6 | 12755 | 17.2 |
| 15 -24 | 2980 | 10.2 | 1676 | 16.6 | 2881 | 16.7 |
| 25 - 34 | 5602 | 11.2 | 3430 | 16.2 | 5675 | 17.3 |
| 35+ | 3807 | 12.4 | 2500 | 17.0 | 4068 | 16.9 |

***… Table 9 continues***

| ***Region*** | ***Year 1999*** | | ***Year 2000*** | | ***Year 2001*** | |
|---|---|---|---|---|---|---|
| ***Age group*** | ***Total donors*** | ***% prevalence*** | ***Total donors*** | ***% prevalence*** | ***Total donors*** | ***% prevalence*** |
| Mtwara | 3030 | 7.8 | 8665 | 8.2 | 5767 | 7.5 |
| 15 -24 | 752 | 6.8 | 2084 | 7.0 | 1460 | 6.0 |
| 25 - 34 | 1409 | 8.4 | 3827 | 8.8 | 2589 | 7.4 |
| 35+ | 869 | 7.8 | 2754 | 8.2 | 1706 | 8.8 |
| Mwanza | 10273 | 7.0 | 9858 | 7.6 | 12515 | 8.0 |
| 15 -24 | 3081 | 5.6 | 2627 | 5.4 | 3783 | 5.6 |
| 25 - 34 | 4190 | 8.3 | 4059 | 8.5 | 5068 | 9.3 |
| 35+ | 3102 | 6.8 | 3172 | 8.4 | 3643 | 8.8 |
| Rukwa | | | 3277 | 11.8 | 531 | 10.7 |
| 15 -24 | | | 968 | 7.8 | 134 | 10.4 |
| 25 - 34 | | | 1321 | 14.5 | 215 | 9.8 |
| 35+ | | | 988 | 12.3 | 182 | 12.1 |
| Ruvuma | 8301 | 9.8 | 9813 | 10.2 | 12187 | 11.2 |
| 15 -24 | 2240 | 10.0 | 2688 | 8.4 | 3391 | 10.5 |
| 25 - 34 | 3689 | 10.6 | 4277 | 10.8 | 5342 | 11.5 |
| 35+ | 2372 | 8.3 | 2848 | 11.1 | 3327 | 11.5 |
| Shinyanga | 8654 | 8.2 | 9332 | 9.4 | 12305 | 8.4 |
| 15 -24 | 2167 | 6.6 | 2170 | 7.5 | 2759 | 6.4 |
| 25 - 34 | 3987 | 8.6 | 4217 | 10.0 | 5950 | 9.1 |
| 35+ | 2500 | 8.7 | 2945 | 10.0 | 3568 | 8.8 |
| Singida | 4187 | 8.1 | 5326 | 8.0 | 6785 | 11.8 |
| 15 -24 | 947 | 5.7 | 1195 | 7.7 | 1462 | 9.5 |
| 25 - 34 | 1868 | 8.9 | 2266 | 8.4 | 3049 | 12.7 |
| 35+ | 1372 | 8.7 | 1865 | 7.9 | 2241 | 12.1 |
| Tabora | 11335 | 7.1 | 9084 | 7.2 | 9628 | 7.6 |
| 15 -24 | 2877 | 5.3 | 2187 | 4.8 | 2464 | 6.0 |
| 25 - 34 | 5121 | 7.6 | 4084 | 7.4 | 4369 | 8.3 |
| 35+ | 3337 | 7.9 | 2813 | 8.4 | 2795 | 8.0 |
| Tanga | 10967 | 8.3 | 9749 | 8.8 | 9583 | 7.2 |
| 15 -24 | 2747 | 6.2 | 2383 | 8.7 | 2374 | 8.7 |
| 25 - 34 | 5122 | 8.6 | 4540 | 9.0 | 4436 | 9.5 |
| 35+ | 3098 | 9.8 | 2826 | 8.5 | 2745 | 7.1 |

# 3.0 SURVEILLANCE OF COMMON SEXUALLY TRANSMITTED INFECTIONS

## *3.1 SYPHILIS SURVEILLANCE AMONG ANTENATAL CLINIC ATTENDEES*

Surveillance of syphilis among ANC attendees is undertaken together with the HIV sero-surveillance. Methods for surveillance of HIV/AIDS and syphilis were revised and improved and data were collected for the duration of three months from January to April 2002. Results are presented in a separate report. However, syphilis prevalence data that were collected previously are maintained in this section to serve as reference material.

Screening for syphilis is recommended as part of routine antenatal care in Tanzania. During the year 2000 a total of 1974 women attending antenatal clinics for the first time for a particular pregnancy, were screened for syphilis infection. The prevalence of syphilis ranged from 0.0% to 44.1% compared with 0.4% to 17.3% in 1999 (table 10). A decreasing trend in the prevalence of syphilis is observed in various clinics (table 10) though an alarmingly high prevalence was noted in Arusha region particularly in Katesh and Monduli districts. However, irregularities in the screening and testing procedures as explanations to these high rates cannot be entirely excluded. More observations, research and intensification of quality control during surveillance are required.

**Table 10: Prevalence of Syphilis infection among pregnant women, Tanzania 1990 - 2000**

| Region | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Kagera | | | | | | | | | | | |
| Bukoba | | 2.7 | 3.6 | | | | | | | 6.2 | 4.1 |
| Mwanza | | | | | | | | | | | |
| Mwanza Urban | | 7.0 | 8.7 | 6.5 | | 7.9 | | | | | |
| Mkula (Magu) | | | 10.4 | 10.5 | | 11.0 | | | | | |
| Mbeya | | | | | | | | | | | |
| Mbeya Rural | | | 13.3 | | | | | 2.2 | 9.7 | 7.0 | 6.1 |
| Chimala | 4.4 | | 10.0 | | 14.0 | 8.5 | 2.5 | 6.3 | 8.0 | 7.5 | 7.5 |
| Isoko | 7.5 | 7.3 | 22.0 | | 5.5 | 0.7 | 2.7 | 0.0 | 8.8 | 7.5 | 5.0 |
| Itete | | | 8.0 | | 10.1 | 7.4 | 0.0 | 2.0 | 4.7 | 9.7 | 5.8 |
| Mwambani | 6.6 | | 8.0 | | 17.5 | 11.0 | 10.5 | 3.5 | 14.5 | 8.0 | 6.5 |
| Kyela | | 4.8 | 17.9 | | 7.5 | 1.0 | 4.1 | 0.0 | 5.0 | 1.5 | 5.5 |
| Mbozi | | | | | 8.0 | 6.2 | 2.5 | 1.5 | 9.0 | 8.0 | 6.5 |
| Mbeya Urban | 9.1 | 8.6 | | | | 7.3 | 6.8 | 0.8 | 4.8 | 4.0 | 5.5 |
| Kiwanjampaka | | 26.6 | 10.0 | | 13.5 | | | 0.5 | 3.5 | 6.5 | 5.7 |
| Mwanjelwa | | 20.0 | 14.0 | | 10.6 | | | 0.0 | | | - |
| Meta | | 11.9 | 5.0 | | 13.0 | | | 2.0 | 6.5 | 3.0 | 4.4 |
| Dar es Salaam | | | | | | | | | | | |
| Temeke Distr.Hosp. | | | 4.1 | | | | | | | | |
| Mwananyamala | | | 1.6 | | | | | | | | |
| Aga Khan Hosp | | | 13.6 | | | | | | | | |
| Kasorobo – Temeke | | | | | | | | | 32.6 | | |
| Kigamboni | | | | | | | | | 14.2 | | |
| Sinza | | | | | | | | | 12.1 | | |
| Coast | | | | | | | | | | | |
| Coast | | | 10.8 | | | | | | | | |
| Bagamoyo | | | 12.0 | | | | | | | | |
| Kisarawe | | | 6.8 | | | | | | | | |
| Kibaha | | | 11.2 | | | | | | | | |
| Kilimanjaro | | | | | | | | | | | |
| Umbwe | | 1.7 | 3.6 | 0.9 | | 1.1 | 0.7 | 4.8 | 0.0 | 0.4 | 0.0 |
| Iringa | | | | | | | | | | | |
| Mafinga | | 19.9 | 21.7 | 28.3 | | 1.2 | | | | 17.3 | |
| Mtwara | | 4.2 | | | | | | | | | |
| Nanguruwe | | | 8.3 | | | 0.0 | | | | | |
| Ndanda | | | | | | | | 15.0 | | | |
| Mara | | | | | | | | | | | |
| Nyasho | | 1.2 | 7.0 | 3.9 | | 5.0 | | | | | |
| Kibara | | | | | | | | | | | 11.5 |
| Bunda | | | | | | | | | | | 7.1 |
| Rukwa | | | 16.8 | | | | | | | | |
| Namanyere | | | 18.0 | | | | | | | | 0.0 |
| Sumbawanga | | | 15.7 | | | | | | | | 7.2 |
| Ruvuma | | | | | | | | | | | |
| Madaba | | 51.9 | 3.6 | | | | 12.0 | 2.5 | | | |
| Songea | | | 3.3 | | | 4.0 | 2.1 | 4.0 | | 12.1 | 0.0 |
| Namtumbo | | | 7.1 | | | 1.7 | 4.9 | 5.4 | | 14.0 | |
| Shinyanga | | | | 5.1 | | | | | | | |
| Morogoro | | | | | | | | | | | |
| Urban | | | | | | | | | | 17.3 | |
| Turiani | | | | | | | | | | 0.4 | |
| Arusha | | | | | | | | | | | 19.4 |
| Babati | | | | | | | | | | | 5.1 |
| Ketish | | | | | | | | | | | 44.1 |
| Meru | | | | | | | | | | | 4.0 |
| Monduli | | | | | | | | | | | 36.0 |
| Mkoaranga | | | | | | | | | | | 6.7 |

### *3.2 SURVEILLANCE OF OTHER STI*

**Introduction**
Sexually transmitted infections (STI) are a marker of sexual networking and give a clue to the extent of unprotected sex in a community. STI also facilitate sexual transmission of HIV infection. STI are a major public health problem which cause not only health related consequences, but also social and economic sequelae. In addition, they facilitate sexual transmission of HIV infection. Therefore control of STIs has been recognized as one of the major strategies in the control and prevention of HIV infection. However, implementation in many clinics in hampered by frequent lack of laboratory facilities to confirm diagnosis. Comprehensive STIs care is now expanded to 14 regions, including Mara, Mwanza, Shinyanga, Dodoma, Iringa, Morogoro, Arusha, Tanga, Lindi, Kigoma, Mbeya, Dar es Salaam , Rukwa and Mtwara.

**Methods**
Care providers' record information on new episodes of STI syndromes, re-treatment, contact tracing and demographic characteristics of clients including type and location of health facilities on the forms that are designed and distributed by NACP. Duly filled forms are returned to NACP through respective District and Regional Medical Officers.

**Results**
During the year 2001, a total of 211,291 STI episodes were reported, of these 90,058 were Genital discharge syndromes, 46,365 were genital ulcer diseases, 43,855 were Pelvic inflammatory diseases and other syndromes constituted the rest 31,013. Compared to the numbers reported during the previous two years – 149,222 for 2000, and 39,385 for 1999, there has been an increase in the number of reported STI episodes during the year 2001.

Regions reporting the highest number of episodes include Dar es Salaam, Dodoma, Mbeya, Morogoro and Shinyanga in decreasing order. The least number of episodes were reported from Tabora, Mtwara, Kagera, Kilimanajaro and Singida. Despite the fact that STD episodes among females may be asymptomatic, over 60% of the reported episodes was among females. The most affected age group was that of 20-29 years, age group 30 years and above coming next. Details regarding this information are shown in tables 11,12 and 13. The observed increasing number of reported STI episodes may be due to either improved recording and reporting or unprotected sex practices in the general population.

**Table 11: Distribution of syphilis cases (VDRL/RPR sero-reactivity) diagnosed in STI clinics by regions, age groups and sex, Tanzania Jan – December 2001**

| Region | | VDRL/RPR positive | | | Total |
|---|---|---|---|---|---|
| | Sex | <20 | 20-29 | 30+ | |
| Arusha | Male | 14 | 22 | 26 | 62 |
| | Female | 34 | 54 | 53 | 141 |
| Coast | Male | 0 | 1 | 1 | 2 |
| | Female | 40 | 118 | 52 | 210 |
| DSM | Male | 374 | 1059 | 1773 | 3206 |
| | Female | 575 | 2062 | 3060 | 5697 |
| Dodoma | Male | 127 | 1050 | 898 | 2075 |
| | Female | 301 | 2073 | 1571 | 3945 |
| Iringa | Male | 0 | 15 | 19 | 34 |
| | Female | 29 | 95 | 58 | 182 |
| Kagera | Male | 0 | 3 | 6 | 9 |
| | Female | 0 | 28 | 21 | 49 |
| Kigoma | Male | 6 | 41 | 62 | 109 |
| | Female | 17 | 81 | 52 | 150 |
| Kilimanjaro | Male | 1 | 2 | 9 | 12 |
| | Female | 8 | 17 | 18 | 43 |
| Lindi | Male | 3 | 23 | 32 | 58 |
| | Female | 39 | 126 | 82 | 247 |
| Mara | Male | 43 | 66 | 63 | 172 |
| | Female | 73 | 141 | 122 | 336 |
| Mbeya | Male | 132 | 500 | 523 | 1155 |
| | Female | 530 | 1360 | 575 | 2465 |
| Morogoro | Male | 61 | 211 | 259 | 531 |
| | Female | 426 | 1094 | 811 | 2331 |
| Mtwara | Male | 1 | 0 | 2 | 3 |
| | Female | 4 | 4 | 2 | 10 |
| Mwanza | Male | 6 | 37 | 10 | 53 |
| | Female | 188 | 591 | 227 | 1006 |
| Shinyanga | Male | 26 | 88 | 152 | 266 |
| | Female | 179 | 564 | 309 | 1052 |
| Singida | Male | 4 | 10 | 22 | 36 |
| | Female | 7 | 27 | 18 | 52 |
| Tabora | Male | 0 | 0 | 0 | 0 |
| | Female | 2 | 5 | 1 | 8 |
| Tanga | Male | 14 | 38 | 46 | 98 |
| | Female | 17 | 102 | 90 | 209 |
| Total | | 3241 | 11589 | 10972 | 25802 |

**Table 12: Distribution of reported new STI episodes by regions, syndromes, age groups and sex, Tanzania Jan – Dec. 2001**

| Region | Sex | GDS | | | | GUD | | | | PID | | | | OTHERS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Age. Grp | <20 | 20-29 | 30+ | Total | <20 | 20-29 | 30+ | Total | <20 | 20-29 | 30+ | Total | <20 | 20-29 | 30+ | Total |
| Arusha | Male | 48 | 88 | 149 | 285 | 16 | 59 | 73 | 148 | | | | | 27 | 36 | 47 | 110 |
| | Female | 81 | 157 | 249 | 487 | 29 | 106 | 109 | 244 | 55 | 130 | 209 | 394 | 49 | 105 | 78 | 232 |
| Coast | Male | 23 | 87 | 108 | 218 | 11 | 38 | 62 | 111 | | | | | 6 | 13 | 16 | 35 |
| | Female | 88 | 227 | 131 | 446 | 32 | 82 | 42 | 156 | 37 | 108 | 89 | 234 | 14 | 54 | 35 | 103 |
| DSM | Male | 2145 | 6031 | 3230 | 11406 | 1805 | 2789 | 2355 | 6949 | | | | | 1888 | 1890 | 1046 | 4824 |
| | Female | 4262 | 7367 | 4606 | 16235 | 2069 | 2537 | 2506 | 7112 | 2750 | 4436 | 3802 | 10988 | 2081 | 2045 | 2856 | 6982 |
| Dodoma | Male | 1018 | 2723 | 2793 | 6534 | 387 | 1444 | 1324 | 3155 | | | | | 542 | 972 | 894 | 2408 |
| | Female | 983 | 3180 | 2845 | 7008 | 549 | 1616 | 1457 | 3622 | 1306 | 3458 | 3300 | 8064 | 700 | 961 | 1847 | 3508 |
| Iringa | Male | 17 | 41 | 86 | 144 | 8 | 28 | 60 | 96 | | | | | 19 | 44 | 42 | 105 |
| | Female | 64 | 166 | 99 | 329 | 21 | 55 | 34 | 110 | 20 | 145 | 90 | 255 | 46 | 75 | 32 | 153 |
| Kagera | Male | 20 | 132 | 155 | 307 | 10 | 50 | 64 | 124 | | | | | 6 | 48 | 74 | 128 |
| | Female | 57 | 270 | 156 | 483 | 33 | 83 | 56 | 172 | 3 | 37 | 39 | 79 | 10 | 56 | 28 | 94 |
| Kigoma | Male | 99 | 618 | 670 | 1387 | 20 | 159 | 268 | 447 | | | | | 256 | 174 | 186 | 616 |
| | Female | 346 | 1214 | 942 | 2502 | 54 | 244 | 192 | 490 | 103 | 619 | 529 | 1251 | 187 | 217 | 174 | 578 |
| Kilimanjaro | Male | 9 | 79 | 101 | 189 | 0 | 8 | 3 | 11 | | | | | 17 | 10 | 11 | 38 |
| | Female | 93 | 347 | 194 | 634 | 1 | 8 | 9 | 18 | 88 | 260 | 160 | 508 | 32 | 29 | 20 | 81 |
| Lindi | Male | 122 | 378 | 416 | 916 | 38 | 193 | 246 | 477 | | | | | 62 | 141 | 227 | 430 |
| | Female | 144 | 339 | 225 | 708 | 78 | 199 | 135 | 412 | 162 | 570 | 486 | 1218 | 67 | 109 | 102 | 278 |
| Mara | Male | 71 | 185 | 157 | 413 | 67 | 162 | 181 | 410 | | | | | 54 | 70 | 69 | 193 |
| | Female | 111 | 239 | 235 | 585 | 118 | 233 | 215 | 566 | 29 | 127 | 178 | 334 | 46 | 83 | 93 | 222 |
| Mbeya | Male | 739 | 3178 | 3248 | 7165 | 691 | 3314 | 3785 | 7790 | | | | | 345 | 586 | 618 | 1549 |
| | Female | 1652 | 4611 | 2303 | 8566 | 1152 | 3237 | 1881 | 6270 | 744 | 3156 | 2702 | 6602 | 559 | 879 | 449 | 1887 |
| Morogoro | Male | 207 | 851 | 838 | 1896 | 84 | 353 | 420 | 857 | | | | | 105 | 203 | 209 | 517 |
| | Female | 526 | 1598 | 897 | 3021 | 216 | 637 | 317 | 1170 | 344 | 1106 | 954 | 2404 | 130 | 210 | 173 | 513 |
| Mtwara | Male | 9 | 41 | 28 | 78 | 8 | 9 | 10 | 27 | | | | | 0 | 1 | 0 | 1 |
| | Female | 19 | 66 | 44 | 129 | 9 | 24 | 17 | 50 | 9 | 12 | 6 | 27 | 0 | 0 | 0 | 0 |
| Mwanza | Male | 101 | 359 | 371 | 831 | 56 | 183 | 192 | 431 | | | | | 42 | 65 | 44 | 151 |
| | Female | 446 | 1540 | 1171 | 3157 | 85 | 269 | 218 | 572 | 230 | 898 | 822 | 1950 | 120 | 272 | 282 | 674 |
| Ruvuma | Male | 33 | 4 | 3 | 40 | 0 | 2 | 8 | 10 | | | | | 0 | 0 | 0 | 0 |
| | Female | 11 | 9 | 10 | 30 | 2 | 6 | 2 | 10 | 1 | 4 | 1 | 6 | 1 | 1 | 1 | 3 |
| Shinyanga | Male | 186 | 1165 | 1519 | 2870 | 144 | 486 | 748 | 1378 | | | | | 157 | 219 | 364 | 740 |
| | Female | 593 | 1822 | 1058 | 3473 | 277 | 588 | 425 | 1290 | 375 | 1670 | 1584 | 3629 | 199 | 296 | 239 | 734 |
| Singida | Male | 18 | 41 | 46 | 105 | 5 | 11 | 19 | 35 | | | | | 20 | 42 | 38 | 100 |
| | Female | 14 | 77 | 64 | 155 | 3 | 19 | 14 | 36 | 59 | 240 | 343 | 642 | 28 | 35 | 39 | 102 |
| Tabora | Male | 0 | 17 | 6 | 23 | 0 | 5 | 5 | 10 | | | | | 0 | 2 | 2 | 4 |
| | Female | 4 | 22 | 9 | 35 | 4 | 6 | 2 | 12 | 0 | 11 | 14 | 25 | 1 | 3 | 4 | 8 |
| Tanga | Male | 355 | 1049 | 1332 | 2736 | 128 | 254 | 375 | 757 | | | | | 334 | 394 | 591 | 1319 |
| | Female | 768 | 2106 | 1658 | 4532 | 172 | 357 | 301 | 830 | 796 | 2135 | 2314 | 5245 | 396 | 601 | 596 | 1593 |
| **Total** | | **15,482** | **42,424** | **32,152** | **90,058** | **8,382** | **19,853** | **18,130** | **46,365** | **7,111** | **19,122** | **17,622** | **43,855** | **8,546** | **10,941** | **11,526** | **31,013** |

**Table13: Distribution of reported new STI episodes by region, sex and syndromes, Tanzania Jan – Dec. 2001**

| | | GDS | GUD | PID | OTHERS | Totals | RE-TREATED | CONTACTS |
|---|---|---|---|---|---|---|---|---|
| Arusha | Male | 285 | 148 | | 110 | 543 | 48 | 218 |
| | Female | 487 | 244 | 394 | 232 | 1357 | 84 | 414 |
| Coast | Male | 218 | 111 | | 35 | 364 | 8 | 126 |
| | Female | 446 | 156 | 234 | 103 | 939 | 41 | 74 |
| DSM | Male | 11,406 | 6,949 | | 4824 | 23179 | 18650 | 16005 |
| | Female | 16,235 | 7,112 | 10988 | 6982 | 41317 | 29662 | 28700 |
| Dodoma | Male | 6,534 | 3,155 | | 2408 | 12097 | 1556 | 7747 |
| | Female | 7,008 | 3,622 | 8064 | 3508 | 22202 | 2026 | 8278 |
| Iringa | Male | 144 | 96 | | 105 | 345 | 36 | 131 |
| | Female | 329 | 110 | 255 | 153 | 847 | 57 | 62 |
| Kagera | Male | 307 | 124 | | 128 | 559 | 39 | 102 |
| | Female | 483 | 172 | 79 | 94 | 828 | 64 | 313 |
| Kigoma | Male | 1,387 | 447 | | 616 | 2450 | 324 | 865 |
| | Female | 2,502 | 490 | 1251 | 578 | 4821 | 592 | 2044 |
| Kilimanjaro | Male | 189 | 11 | | 38 | 238 | 7 | 179 |
| | Female | 634 | 18 | 508 | 81 | 1241 | 35 | 52 |
| Lindi | Male | 916 | 477 | | 430 | 1823 | 154 | 301 |
| | Female | 708 | 412 | 1218 | 278 | 2616 | 220 | 393 |
| Mara | Male | 413 | 410 | | 193 | 1016 | 181 | 277 |
| | Female | 585 | 566 | 334 | 222 | 1707 | 268 | 560 |
| Mbeya | Male | 7,165 | 7,790 | | 1549 | 16504 | 2240 | 3791 |
| | Female | 8,566 | 6,270 | 6602 | 1887 | 23325 | 5279 | 6928 |
| Morogoro | Male | 1,896 | 857 | | 517 | 3270 | 393 | 1562 |
| | Female | 3,021 | 1,170 | 2404 | 513 | 7108 | 891 | 1163 |
| Mtwara | Male | 78 | 27 | | 1 | 106 | 8 | 6 |
| | Female | 129 | 50 | 27 | 0 | 206 | 9 | 7 |
| Mwanza | Male | 831 | 431 | | 151 | 1413 | 267 | 1551 |
| | Female | 3,157 | 572 | 1950 | 674 | 6353 | 633 | 670 |
| Ruvuma | Male | 40 | 10 | | 0 | 50 | 2 | 1 |
| | Female | 30 | 10 | 6 | 3 | 49 | 3 | 2 |
| Shinyanga | Male | 2,870 | 1,378 | | 740 | 4988 | 718 | 2332 |
| | Female | 3,473 | 1,290 | 3629 | 734 | 9126 | 1267 | 3775 |
| Singida | Male | 105 | 35 | | 100 | 240 | 5 | 112 |
| | Female | 155 | 36 | 642 | 102 | 935 | 1 | 287 |
| Tabora | Male | 23 | 10 | | 4 | 37 | 0 | 0 |
| | Female | 35 | 12 | 25 | 8 | 80 | 0 | 0 |
| Tanga | Male | 2,736 | 757 | | 1319 | 4812 | 440 | 1524 |
| | Female | 4,532 | 830 | 5245 | 1593 | 12200 | 507 | 2754 |
| **Total** | | **90,058** | **46,365** | **43,855** | **31,013** | **211,291** | **66,715** | **93,306** |

# 4.0 MONITORING OF VOLUNTARY COUNSELLING AND HIV TESTING SERVICES

Voluntary counseling and testing services continued in the country during the year 2001. Information regarding these services was available from 19 regions. A total of 11,501 new clients were seen at these centers during 2001, out of these, 65% consented to be tested. Acceptance of the test ranged from 29% in Dodoma to 92% in Dar es Salaam. There was a tendency for regions with high prevalence of HIV infection to accept the test as compared to those with medium to low prevalence.

Prevalence of HIV infection was high in this population ranging from 51% in Arusha to 89% in Dar es Salaam indicating that high risk individuals are interested to know their serostatus as opposed to the low risk ones who do not seem to utilise these services.

Assessing acceptability of taking the test (defined here as the proportion of individuals visiting the VCT centres who eventually take the test), Dar es Salaam, Kigoma, Morogoro and Rukwa had higher proportions over the 5 year period of 1997 to 2001 compared to other regions. Regions having low acceptability include Arusha, Dodoma, Tabora and Shinyanga. This pattern however, is likely to change as VCT services continue being expanded both in terms of coverage and utilization through intensive IEC activities

**Table 14: Voluntary Counselling and HIV Testing Services by region, Tanzania 1997 - 2001**

| Region | 1997 | | | 1998 | | | 1999 | | | 2000 | | | 2001 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **New clients** | **Clients tested** | **HIV Positive (%)** | **New Clients** | **Client tested** | **HIV positive (%)** | **New clients** | **Client tested** | **HIV Positive (%)** | **New clients** | **Client tested** | **HIV Positive(%)** | **New clients** | **Client tested** | **HIV Positive (%)** |
| Arusha | 162 | 72 | 47.2 | 187 | 98 | 65.3 | 457 | 100 | 76.0 | 34 | 20 | 30.0 | 717 | 272 | 51 |
| Coast | 100 | 57 | 73.7 | 162 | 84 | 75.0 | 310 | 119 | 63.0 | 317 | 40 | 80.0 | 821 | 416 | 81 |
| Dodoma | 151 | 51 | 74.5 | 120 | 51 | 76.5 | - | - | 0 | | | | 310 | 91 | 71 |
| Dar es Salaam | 880 | 642 | 80.5 | 643 | 685 | 75.0 | 119 | 1109 | 86.6 | 3042 | 1799 | 58.8 | 3240 | 2989 | 89 |
| Iringa | 186 | 122 | 76.2 | 335 | 198 | 69.7 | 568 | 356 | 73.6 | 857 | 412 | 61.9 | 1010 | 617 | 73 |
| Kagera | 20 | 16 | 62.5 | 38 | 32 | 21.9 | - | - | 0 | | | | 516 | 260 | 61 |
| Kigoma | 130 | 40 | 57.5 | 35 | 27 | 25.9 | 76 | 33 | 72.7 | 227 | 170 | 59.4 | 468 | 332 | 62 |
| Kilimanjaro | 114 | 82 | 63.4 | 149 | 98 | 54.1 | - | - | 0 | | | | 461 | 301 | 64.4 |
| Lindi | 75 | 56 | 26.8 | 112 | 58 | 56.9 | - | - | 0 | 153 | 71 | 56.3 | 301 | 214 | 54.9 |
| Mara | 48 | 17 | 88.2 | 149 | 28 | 96.4 | - | - | 0 | 478 | 310 | 53.9 | 724 | 432 | 57.6 |
| Morogoro | 43 | 36 | 77.8 | 108 | 34 | 88.2 | 115 | 89 | 65.2 | 85 | 11 | 72.7 | 291 | 136 | 73 |
| Mtwara | 38 | 23 | 30.4 | 141 | 71 | 85.9 | 191 | 70 | 72.9 | 152 | | | 192 | 91 | 81 |
| Mwanza | 508 | 134 | 65.7 | 499 | 463 | 62.4 | 429 | 682 | 64.5 | 788 | 412 | 62.1 | 928 | 592 | 73 |
| Rukwa | 104 | 40 | 87.5 | 113 | 46 | 67.4 | 17 | 13 | 38.5 | 92 | 32 | 59.4 | 103 | 74 | 63 |
| Ruvuma | 75 | 23 | 73.9 | 153 | 34 | 70.6 | 157 | 20 | 90.0 | 76 | 17 | 88.2 | 132 | 101 | 89 |
| Singida | 244 | 78 | 71.8 | 164 | 127 | 63.0 | 15 | 9 | 66.7 | | | | 344 | 179 | 74 |
| Shinyanga | 281 | 196 | 69.4 | 218 | 114 | 50.9 | - | - | 0 | 155 | | | 381 | 156 | 68 |
| Tanga | 138 | 71 | 71.8 | 233 | 157 | 70.1 | 58 | 41 | 65.9 | 83 | 44 | 70.5 | 159 | 71 | 72 |
| Tabora | 168 | 142 | 46.5 | 61 | 174 | 33.9 | 36 | 0 | 0 | | | | 403 | 149 | 56 |
| TOTAL | 3465 | 1898 | 69.7 | 3620 | 2579 | 65.6 | 94 | 41 | 75.8 | 238 | 44 | 59.5 | 11501 | 7473 | |

## 5.0 HIGHLIGHTS OF RESEARCH ACTIVITIES IN TANZANIA

**Introduction**
This section tries to summarize some research activities that were conducted in Tanzania. Publications that are included in this section were selected from a long list of research publication in the area of HIV/AIDS and STIs basing on their direct implications to the ongoing HIV/AIDS/STI interventions in Tanzania.

### 5.1 Treatment Outcome of Urethral Discharge Syndrome in the Male in Dar es Salaam, Tanzania. *Chalamilla G, Mbwana J, Mhalu F, Lyamuya E, Swai A, Sandstorm E.*

**Objective:**
To evaluate the efficacy of the current national protocol for treatment of urethral discharge syndrome at a primary health care clinic for sexually transmitted infections (STIs) in Dar es Salaam.

**Results:** Analysis showed presence of intracellular diplococci suggestive of gonorrhoea in 149/198 (73.3%0, *T. vaginalis* in 5/182 (2.7%) and one patient had both intracellular diplococci and *T. vaginalis*. Out of the 224 recruited, 202 (90.2%) reported back for follow up after a week. Of these, 107 were on kanamycin plus doxycyclne regimen and 95 belonged to the sparfloxacin and doxycycline regimen. Among those treated with kanamycin and doxycycline, 102 (95.3%) were cured or had improved and 5 (4.7%) were not cured. All 95 treated with spafloxacin and doxycycline were cured.

**Conclusion:**
The findings indicate that the majority of male patients presenting with urethral discharge at the study clinic have evidence of gonococcal infection. The study has documented a high efficacy of the current national protocol for treatment of urethral discharge syndrome, comprising of kanamycin or sparfloxacin in combination with doxycycline.

**Recommendation:**
It is recommended to conduct regular evaluation of the National protocol for treatment of STIs in order to monitor its efficacy.

### 5.2 Patterns of Sexually Transmitted Infections (STIs) in Youths and Adolescents in Dar es Salaam, Tanzania. *Chalamilla G, Mbwana J, Mhalu FS, Mmari E, Swai A, Sandstrorm E.*

**Objective:**
To determine the patterns of STIs in youths attending a youth and adolescent health clinic at the city centre Dar es Salaam, Tanzania.

**Results:**
Of the 199 youths enrolled into the study, 98 (49.2%) and 101 (50.8%) were males and females, respectively. The majority, 154/199 (77%) were in the age group of 20 – 24 years and most of them 152/199 (76.4%) were single. The most common

presentation in both males and females was genital discharge 158/199 (79.4%). *Neisseria gonorrhoeae* was isolated in 16/199 of all the youths, more frequently among male youths 14/98 (14.2%) as compared to female youths 2/101 (1.9%).

*Chlamydia* infection was equally found in males 5/89 (5.1%) and females 5/101 (5.4%), *Candida* and *T. vaginalis* infections were more prevalent in females, 27/101 (26.7%), 10/101 (9.9%) as compared to males 3/98 (3.1%), 2/98 (2%), respectively.

Overall, 16% youths had HIV infections, 11.2% in males and 20.8% in females, suggesting that females had twice the risk of HIV infection compared to males.

**Conclusion:**
The pattern of STIs among youths has demonstrated high prevalence of treatable STIs. HIV is also a major problem among the youths.

**Recommendation:**
STIs including HIV are common among youths, therefore provision of special STI services to young age groups should be high on the agenda of STI programme planners and policy makers.

### 5.3 Antimicrobial Susceptibilities of recent (1997–2000) N. gonorrhoea strains in Dar es Salaam, Tanzania. Implication of current treatment guidelines

*J. Mbwana, F. Mhalu, C. Moshiro, E. Sandstrom.*

**Objective:**
To determine the antimicrobial susceptibilities of recent *N. gonorrhoeae* isolates in Dar es Salaam.

**Results:**
Of the 291 recent *N.gonorrhoeae* strains obtained, 220 (75.6%) were tested. Of the strains tested, 119/220 (54%) were penicillinase producing *N. gonorrheoeae* (PPNG). Resistance to penicillin and to cotrimoxazole remained stable at 62.2% and 17.2% respectively during the three years period. High resistance to doxycycline continued to be maintained and reached 100% during 2000. Ninety five percent, 97.7%, and 99.5% of the tested isolates were fully susceptible to ceftriaxone, ciprofloxacin and spectinomycin, respectively while 0.5%, 0% and 0% of the isolates were fully resistant to ceftriaxone, cirpofloxacin and spectinomycin, respectively. Susceptibility to kanamycin showed 59.5%, 31.6% and 8.6% were fully susceptible, moderately susceptible and fully resistant to the drug respectively. There was no statistically significant difference in the susceptibility patterns among the PPNG and non-PPNG isolates to the other tested antibiotics.

**Conclusion:**
There is high resistance of *N.gonorrhoeae* to penicillin, doxycycline and contrimoxazole in Dar es Salaam. The majority of *N.gonorrhoeae* isolates in the study were highly susceptible to ceftriaxone, ciprofloxacin and spectinomycin. Kanamycin demonstrated a moderate full susceptibility.

**Recommendation:**

Treatment regimens for *N. gonorrhoeae* in Dar es Salaam should be based on the use of ceftriaxone, ciprofloxacin and spectinomycin.
There is a need for close monitoring of efficacy of these drugs countrywide.

### 5.4 The accuracy of alternative confirmatory strategy for detection of antibodies to HIV-I: Experience from a regional laboratory in Kagera, Tanzania.

*W. Urassa, Karina Godoy, Japhet Killewo, Gideon Kwesigabo, Audax Mbakileki, Fred Mhalu, Gunnel Biberfeld.*

**Objectives:**
To evaluate an alternative HIV antibody testing strategy which involves consecutive testing of sera by two different enzyme–linked immunosorbent assays (ELISA).

**Results:**
A total of 1558 sera were tested, of which 204 (13.1%) were HIV-1 antibody – positive confirmed by WB analysis, 1353 were HIV antibody negative. All 204 samples which were initially reactive on both ELISAs were positive on the WB assay (sensitivity =100%). Enzygnost anti-HIV1/2 ELISA gave three and one false positive reactions on initial and repeat testing, respectively. The specificity was 99.8% (1330/1353) on initial testing and 99.9% 1352/1353 after repeat testing initially reactive samples. Wellcozyme HIV-1 recombinant ELISA showed 31 and seven false positive reactions on initial and repeat testing, respectively, giving a specificity of 97.7% (1322/1353) on initial testing and 99.5% (1346/1353) after repeat testing. None of the 120 randomly selected sera which were negative on both ELISAs showed a positive WB pattern. Thus the sensitivity and specificity were both 100% for a testing strategy involving initial screening of sera by the Enzygnost ELISA followed by testing of reactive sera by the Wellcozyme ELISA and retesting of discordant samples.

**Conclusion:**
This field evaluation of an HIV antibody testing strategy involving the use of recombinant antigen-based sandwich ELISA (Enzygnost) followed by a recombinant antigen-based competitive ELISA (Wellcozyme) showed that it had a sensitivity and specificity of 100%.

**Recommendations:**
This strategy is recommended for use in the diagnosis of HIV infection in centres which use ELISA test in Tanzania.
There is a need for evaluating other types of ELISA tests for anti HIV antibody detection in order to develop other alternative confirmatory strategies for detection of HIV infection.

### 5.5 Evaluation of an alternative confirmatory strategy for the diagnosis of HIV infection in DSM Tanzania based on simple rapid assay:

*Willy Urassa, Shahab Nozohoor, Sufi Jaffer, Kulthum Karama, Fred Mhalu, Gunnel Biberfeld.*

**Objective:**

To evaluate the performance of three simple/rapid HIV antibody assays in order to formulate an alternative confirmatory strategy for the diagnosis of HIV infection in Dar es Salaam, Tanzania.

**Results:**
All assays had a sensitivity of 100%. The initial specificity of the assays were 98.7, 98.2 and 97.9% for Capillus, Serocard and Determine, respectively. In an alternative confirmatory strategy the use of Capillus followed by Serocard or Determine gave a specificity of 99.9 and 99.8%, respectively. Serocard followed by Determine gave a specificity of 99.3%. A testing strategy with 100% specificity could be achieved by the sequential use of all three simple/rapid assays or by repeat testing by Capillus followed by Serocard.

**Recommendation:**
There is a need to conduct a wider evaluation of the several simple/rapid assays available on the market in order to develop suitable strategies for HIV diagnosis, surveillance and donor blood screening.

### 5.6 Efficacy of three short-course regimens of zidovudine and lamivudine in preventing early and late transmission of HIV-1 from mother to child in Tanzania, South Africa, and Uganda (Petra study): a randomised, double-blind, placebo-controlled trial. *The Petra Trial group*

**Objective:**
To determine the efficacy of three short course regimens of zidovudine and lamivudine in the prevention of mother-to-child transmission of HIV in African setting.

**Results:**
All together 1797 HIV-1-infected women were recruited. However, analysis was done on 1457 pregnant women who were randomised to the four intervention groups. Week 6 HIV-1 transmission rates were 5.7% for group A, 8.9% for group B, 14.2% for group C, and 15.3% for the placebo group. For the combined endpoint of HIV-1 infection and infant mortality at week 6, rates were 7.0%, 11.6%, 17.5% and 18.1%, respectively, 1081 (74%) of the women analysed initiated breastfeeding. Based on an interval-censored survival analysis, HIV-1 infection rates at month 18 were 15%, 18%, 20% and 22%, respectively.

**Conclusion:**
A short course regimen of combined zidovudine and lamivudine given prepartum, during labour and postpartum is effective in reducing mother-to child HIV transmission of HIV in Africa. This benefit is diminished after 18 months in a breast feeding population.

**Recommendation:**
It is imperative to explore various interventions for the prevention of HIV transmission through breastfeeding to complement the impact of antiretroviral drugs in reducing mother-to-child HIV transmission.

**5.7 Randomised Trial of Vitamin Supplements in Relation to Vertical Transmission of HIV – 1 in Tanzania.** *Wafaie W. Fawzi, Gernard Msamanga, David Hunter, Ernest Urassa, Boris Renjifo, David Mwakagile, Ellen Ertzmark, Jenny Coley, Miriam Garland, Saidi Kapiga, Gretchen Antelman, Max Essex and Donna Spiegelman.*

**Objective**:
To examine the effects of supplements of Vitamin A and/or multivitamin (excluding Vitamin A) on progression of HIV- 1 disease and on vertical transmission of infection among pregnant women infected with HIV –1 in Dar es Salaam, Tanzania.

**Results:**
Of babies in the multivitamin arm, 38 (10.1%) were HIV-positive at birth compared with 24 (6.6%) in the no-multivitamin arm. Of babies born to mothers in the vitamin A arm, 38 (10.0%) were HIV-positive at birth compared with 24 (6.7%) in the no-vitamin A arm. Neither multivitamins nor vitamin A had an effect on HIV status at 6 weeks among those who were HIV-negative at birth. Similarly, neither supplement was associated with being either HIV-infected or dead at birth. A beneficial effect of multivitamins on birth weight was limited to babies who were HIV-negative at birth; babies in the multivitamin arm weighed +94g more compared with those in the no-multivitamin arm. Among babies who were HIV-positive at birth, the corresponding difference was 13g.

**Conclusions:**
Vitamin A and multivitamins did not affect the risk of vertical transmission of HIV in utero nor during the intrapartum and early breastfeeding periods. Multivitamins resulted in a significant improvement in birth weight of babies who were HIV-negative at birth but had no effect among those who were HIV-positive. The effect of vitamin supplements on HIV transmission through breastfeeding and on clinical progression of HIV disease is yet to be ascertained.

**Recommendation:**
Affordable interventions to reduce vertical transmission in developing countries are urgently needed. In light of protective effects of multivitamins in this population on fetal loss, low birth weight and severe prematurity, as well as CD4 cell counts and haemoglobin levels; It is recommended to provide this regimen to all HIV-positive pregnant women. However, the effect of vitamin supplements on HIV transmission through breast feeding, on clinical progression of HIV disease and on pregnancy outcomes among HIV-negative women is yet to be ascertained.

### 5.8 HIV Counselling and Testing of Pregnant Women in Sub-Saharan Africa: Experiences from a Study on Prevention of Mother - To - Child HIV-1 Transmission in Dar es Salaam, Tanzania.

*Kilewo C, Massawe A, Lyamuya E, Semali I, Kalokola F, Urassa E, Giattas M, Temu F, Karlsson K, Mhalu F, Biberfeld G.*

**Objective:**
To determine the acceptability of HIV counselling and testing and participation in a mother-to-child HIV-1 transmission intervention study using antiretrovirals in Dar es Salaam, Tanzania.

**Results:**
HIV counselling was offered to a total of 10,010 pregnant women from June 1996 to May 1998, of whom 76.4% (7,647/10,010) agreed to be tested. The prevalence of HIV-1 infection was 13.7% (1,050/7,647). Overall, 68.1% (5,205/7,647) returned for their results. Of the HIV-1 seropositives, 27.4% (288/1,050) agreed to participate in the PETRA trial after fulfilling the eligibility criteria. Only 16.7% (48/288) of the enrolled women disclosed their positive HIV serostatus to their sexual partners. The main reasons for not disclosing the HIV serostatus were fear of stigma and divorce. Sixty percent (29/48) of the informed sex partners agreed to be HIV tested and 69% (20/29) were HIV seropositive.

**Conclusion:**
This information is useful in planning intervention programmes for prevention of mother to child HIV-1 transmission and it shows that improvements are required in counselling.

**Recommendation:**
Experiences from the Dar es Salaam PETRA site have demonstrated the need for intensive counselling in intervention programmes for prevention of MTCT of HIV-1 in order to increase the acceptability of HIV-testing and participation in intervention programmes. Efforts should be made to involve sexual partners as early as possible in the counselling process.

### 5.9 Is Care and Support Associated with Prevention Behaviour among People with HIV?

*J. M. MacNeil, F. Mberesero, G. Kilonzo.*

**Objective:**
To assess if care and support play a critical role in assisting people who are HIV positive to understand the need for prevention and to protect others.

**Result:**
Over the six-month period, significant risk reduction occurred among both groups, with most of the behaviour change occurring during the first three months, e.g. 86 respondents (56%) reported condom use at last intercourse at 3 months compared with

24 (16%) at baseline. Extra care and support did not lead to increased risk reduction among the experimental group.

**Conclusion:**
These results suggest that learning one is seropositive can lead to significant risk reduction, at least in the short term. Enhanced care and support during the first six months after learning one was positive did not have a significant impact on behaviour change. Yet the study population as a whole decreased their risk behaviour. It is likely that the post-test counselling all participants had received, coupled with condom promotion and accessibility, contributed to this behavour change.

**Recommendation:**
Disclosure of serostatus to sexual partner involvement in PMTCT and issues of reproductive choice, particularly for HIV positive women, remain areas where enhanced care and support in the form of ongoing counselling could play a more critical role.

### 5.10 Cost-effectiveness of voluntary HIV-1 counselling and testing in reducing sexual transmission of HIV-1 in Kenya and Tanzania. *Michael Sweat, Steven Gregorich, Gloria Sangiwa, Colin Furlonge, Donald Balmer, Claudes Kamenga, Olga Grinstead, Thomas Coates.*

**Objective:**
To assess the impact, cost and cost-effectiveness of HIV-1 VCT in less-developed country settings.

**Results:**
HIV-1 VCT was estimated to avert 1104 HIV-1 infections in Kenya and 895 in Tanzania during the subsequent year. The cost per HIV-1 infection averted was US$249 and $346, respectively, and the cost per DALY saved was $12.77 and $17.78. the intervention was most cost-effective for HIV-1 infected people and those who received VCT as a couple.

**Conclusion:**
HIV-1 VCT is highly cost-effective in urban East African settings. Cost-effectiveness of VCT is improved significantly when VCT is targeted to populations with high HIV-1 prevalence and couples.

**Recommendation:**
Since it is cost-effective, VCT services should be made more accessible to people in HIV endemic areas and emphasis should be placed on couple involvement.

# 6.0 RECENT PUBLICATIONS AVAILABLE AT NACP LIBRARY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# APPENDIX

Reported AIDS cases by regions and hospitals, Tanzania 2000 - 2001

| *Region* | *Hospital* | *Cases2000* | *Percent* | *Cases2001* | *Percent* |
|---|---|---|---|---|---|
| Arusha | Arumeru | | | 38 | 7.7 |
| | Babati | 32 | 12.9 | 19 | 3.9 |
| | Dareda | | | 23 | 4.7 |
| | Karatu | | | 14 | 2.8 |
| | Kibaya | 18 | 7.26 | 1 | 0.2 |
| | Mbulu | 6 | 2.42 | 10 | 2.0 |
| | Meru | | | 13 | 2.6 |
| | Monduli | 12 | 4.84 | 43 | 8.7 |
| | Oldeang | 14 | 5.65 | 41 | 8.3 |
| | Selian | 53 | 21.37 | 92 | 18.7 |
| | Uhai | 49 | 19.76 | 159 | 32.3 |
| | Not stated | 64 | 25.81 | 39 | 7.9 |
| | ***Total*** | ***248*** | ***100*** | ***492*** | ***100.0*** |
| Coast | Bagamoyo | 9 | 0.92 | 0 | 0.0 |
| | Kibaha | 28 | 2.88 | 0 | 0.0 |
| | Kisame | 11 | 1.13 | 0 | 0.0 |
| | Kisarawe | 11 | 1.13 | 11 | 4.7 |
| | Mafia | 30 | 3.08 | 9 | 3.9 |
| | Mkuranga | 18 | 1.85 | 0 | 0.0 |
| | Utete | 52 | 5.34 | 59 | 25.4 |
| | Not stated | 814 | 83.66 | 153 | 65.9 |
| | ***Total*** | ***973*** | ***100*** | ***232*** | ***100.0*** |
| Dodoma | Dodoma | | | 121 | 52.8 |
| | Kondoa | 44 | 22.8 | 34 | 14.8 |
| | Kongwa | 39 | 20.21 | 3 | 1.3 |
| | Mpwapwa | 110 | 56.99 | 0 | 0.0 |
| | Not stated | | | 71 | 31.0 |
| | ***Total*** | ***193*** | ***100*** | ***229*** | ***100.0*** |
| Dsm | Temeke | 494 | 35.04 | 973 | 37.8 |
| | Ilala | 694 | 49.22 | | 0.0 |
| | TMS | 60 | 4.26 | | 0.0 |
| | Sunni | 17 | 1.21 | | 0.0 |
| | St. Benard | 26 | 1.84 | | 0.0 |
| | Aga Khan | 50 | 3.55 | | 0.0 |
| | Dr. Khan | 41 | 2.91 | | 0.0 |
| | Tumaini | 28 | 1.99 | | 0.0 |
| | Other | | | 1601 | 62.2 |
| | ***Total*** | ***1410*** | ***100*** | ***2574*** | ***100.0*** |
| Iringa | Ikonda | | | 51 | 42.9 |
| | Iringa | | | 39 | 32.8 |
| | Mafinga | | | 3 | 2.5 |
| | Mtibwa | | | 2 | 1.7 |
| | Mfindi | | | 4 | 3.4 |

| *Region* | *Hospital* | *Cases2000* | *Percent* | *Cases2001* | *Percent* |
|---|---|---|---|---|---|
| | Not stated | 103 | 100 | 20 | 16.8 |
| | ***Total*** | ***103*** | ***100*** | ***119*** | ***100.0*** |
| Kagera | Bukoba | 216 | 98.63 | 50 | 11.2 |
| | Isingiro | | | 3 | 0.7 |
| | Nyakainga | | | 10 | 2.2 |
| | Rubya | | | 33 | 7.4 |
| | Not stated | 3 | 1.37 | 351 | 78.5 |
| | ***Total*** | ***219*** | ***100*** | ***447*** | ***100.0*** |
| Kigoma | Babtisst | | | 19 | 22.9 |
| | Kabanga | 29 | 24.37 | 10 | 12.0 |
| | Kasulu | 16 | 13.45 | 17 | 20.5 |
| | Kibondo | 20 | 16.81 | 31 | 37.3 |
| | Maweni | 15 | 12.61 | | 0.0 |
| | Not stated | 39 | 32.77 | 6 | 7.2 |
| | ***Total*** | ***119*** | ***100*** | ***83*** | ***100.0*** |
| Kilimanjaro | Hai | | | 79 | 7.8 |
| | Huruma | 160 | 49.69 | 164 | 16.3 |
| | Kibongoto | 41 | 12.73 | 301 | 29.8 |
| | Kibosho | | | 98 | 9.7 |
| | Kilema | | | 92 | 9.1 |
| | Marangu | | | 14 | 1.4 |
| | Mawenzi | 3 | 0.93 | 30 | 3.0 |
| | Mwanga | 18 | 5.59 | | 0.0 |
| | Same | 36 | 11.18 | 108 | 10.7 |
| | THC | | | 7 | 0.7 |
| | TPC | | | 22 | 2.2 |
| | Usangi | 43 | 13.35 | | 0.0 |
| | Not stated | 21 | 6.52 | 94 | 9.3 |
| | ***Total*** | ***322*** | ***100*** | ***1009*** | ***100.0*** |
| Lindi | Kinyonga | 12 | 2.01 | 31 | 5.6 |
| | Ligula | | | 6 | 1.1 |
| | Liwale | 131 | 21.98 | 98 | 17.7 |
| | Mnero | 15 | 2.52 | 45 | 8.1 |
| | Nyangao | 303 | 50.84 | 229 | 41.3 |
| | Ruangwa | 6 | 1.01 | | 0.0 |
| | Sokoine | 79 | 13.26 | 77 | 13.9 |
| | Notstated | 50 | 8.39 | 69 | 12.4 |
| | ***Total*** | ***596*** | ***100*** | ***555*** | ***100.0*** |
| Mara | Kamnyonge | 1 | 0.26 | | 0.0 |
| | Kibara | 13 | 3.36 | | 0.0 |
| | Mugumu | 4 | 1.03 | | 0.0 |
| | Musoma | 164 | 42.38 | 27 | 13.0 |
| | Tarime | 6 | 1.55 | 94 | 45.2 |
| | Not stated | 199 | 51.42 | 5 | 2.4 |
| | Shirati | | | 82 | 39.4 |

| ***Region*** | ***Hospital*** | ***Cases2000*** | ***Percent*** | ***Cases2001*** | ***Percent*** |
|---|---|---|---|---|---|
| | ***Total*** | ***387*** | ***100*** | ***208*** | ***100.0*** |
| Mbeya | Chimala | 47 | 1.44 | | 0 |
| | Chunya | 5 | 0.15 | | 0 |
| | Igawilo | 3 | 0.09 | | 0 |
| | Mbeya Referal Hosp. | 2235 | 68.47 | | 0 |
| | Ileje | | | 14 | 0.4 |
| | Vwawa | 137 | 4.2 | 971 | 28.8 |
| | Isoko | 15 | 0.46 | | 0 |
| | Mwambani | | | 265 | 7.9 |
| | Itete | | | 468 | 13.9 |
| | Igongwe | | | 851 | 25.3 |
| | Tukuyu | 172 | 5.27 | 168 | 5 |
| | Mbozi | 415 | 12.71 | 371 | 11 |
| | Kyela | 235 | 7.2 | 227 | 6.7 |
| | Not stated | | 33 | 1 | |
| | ***Total*** | ***3264*** | ***100*** | ***3,368*** | ***100*** |
| Morogoro | Berega | 13 | 2.48 | 73 | 16.9 |
| | Kilombero | 42 | 8 | 6 | 1.4 |
| | Kilosa | 3 | 0.57 | 10 | 2.3 |
| | Lugala | 13 | 2.48 | | 0.0 |
| | Mahenge | 4 | 0.76 | 3 | 0.7 |
| | MHC | 53 | 10.1 | 10 | 2.3 |
| | Mikumi | 31 | 5.9 | 36 | 8.3 |
| | Mtibwa | 15 | 2.86 | 4 | 0.9 |
| | Turiani | 343 | 65.33 | 250 | 57.9 |
| | Not stated | 8 | 1.52 | 34 | 7.9 |
| | KSCO | | | 6 | 1.4 |
| | ***Total*** | ***525*** | ***100*** | ***432*** | ***100.0*** |
| Mtwara | Ligula | 106 | 40.46 | 48 | 12.8 |
| | Mkomaindo | 33 | 12.6 | 17 | 4.5 |
| | Ndanda | 58 | 22.14 | 181 | 48.1 |
| | Newala | 43 | 16.41 | 12 | 3.2 |
| | Masasi | | | 16 | 4.3 |
| | Nyangao | | | 50 | 13.3 |
| | Not stated | 22 | 8.4 | 52 | 13.8 |
| | ***Total*** | ***262*** | ***100*** | ***376*** | ***100.0*** |
| Mwanza | Geita | 170 | 37.44 | 147 | 35.5 |
| | Kwimba | 24 | 5.29 | 13 | 3.1 |
| | Magu | 4 | 0.88 | 52 | 12.6 |
| | Misungwi | 19 | 4.19 | 13 | 3.1 |
| | Mkula | 15 | 3.3 | 26 | 6.3 |
| | Nansio | 37 | 8.15 | 29 | 7.0 |
| | Sekoutoure | 111 | 24.45 | 47 | 11.4 |

| ***Region*** | ***Hospital*** | ***Cases2000*** | ***Percent*** | ***Cases2001*** | ***Percent*** |
|---|---|---|---|---|---|
| | Sumve | 27 | 5.95 | 0 | 0.0 |
| | Not stated | 47 | 10.35 | 87 | 21.0 |
| | ***Total*** | ***454*** | ***100*** | ***414*** | ***100.0*** |
| Rukwa | Mpanda | 129 | 34.31 | 191 | 49.6 |
| | Sumbawanga | 188 | 50 | 137 | 35.6 |
| | Not stated | 59 | 15.69 | 57 | 14.8 |
| | ***Total*** | ***376*** | ***100*** | ***385*** | ***100.0*** |
| Ruvuma | Litembo | 111 | 17.2 | 113 | 11.6 |
| | Liuli | 83 | 12.8 | 106 | 10.9 |
| | Mbesa | 83 | 12.8 | 116 | 11.9 |
| | Mbinga | 3 | 0.5 | 46 | 4.7 |
| | Peramiho | 290 | 44.9 | 424 | 43.5 |
| | Songea | 46 | 7.1 | 122 | 12.5 |
| | Tunduru | 4 | 0.6 | 2 | 0.2 |
| | Not stated | 26 | 4.0 | 46 | 4.7 |
| | ***Total*** | ***646*** | ***100*** | ***975*** | ***100.0*** |
| Shinyanga | Bariadi | 77 | 13.3 | 37 | 4.3 |
| | Bukombe | | | 9 | 1.0 |
| | Kahama | 6 | 1.04 | | 0.0 |
| | Kolandoto | | | 2 | 0.2 |
| | Maswa | 4 | 0.69 | 7 | 0.8 |
| | Mwadui | 14 | 2.42 | 31 | 3.6 |
| | Shinyanga | 170 | 29.36 | 608 | 69.9 |
| | Ushirombo | 11 | 1.9 | | 0.0 |
| | Not stated | 297 | 51.3 | 176 | 20.2 |
| | ***Total*** | ***579*** | ***100*** | ***870*** | ***100.0*** |
| Singida | Iramba | 31 | 46.27 | | 0.0 |
| | Makiungu | 36 | 53.73 | 111 | 37.5 |
| | Manyoni | | | 64 | 21.6 |
| | Singida | | | 59 | 19.9 |
| | Kimboi | | | 23 | 7.8 |
| | Kondoa | | | 2 | 0.7 |
| | St. Gaspa | | | 11 | 3.7 |
| | Kilimatinde | | | 13 | 4.4 |
| | Not stated | | | 13 | 4.4 |
| | ***Total*** | ***67*** | ***100*** | ***296*** | ***100.0*** |
| Tabora | Igunga | 373 | 49.93 | 52 | 12.9 |
| | Kitete | 92 | 12.32 | 49 | 12.2 |
| | Ndala | 63 | 8.43 | 63 | 15.6 |
| | Nkinga | 27 | 3.61 | 45 | 11.2 |
| | Nkula | 14 | 1.87 | | 0.0 |
| | Nzega | 72 | 9.64 | 53 | 13.2 |
| | Sikonge | 15 | 2.01 | 137 | 34.0 |
| | Urambo | 50 | 6.69 | | 0.0 |

| ***Region*** | ***Hospital*** | ***Cases2000*** | ***Percent*** | ***Cases2001*** | ***Percent*** |
|---|---|---|---|---|---|
| | Notstated | 41 | 5.49 | 4 | 1.0 |
| | Total | 747 | 100 | 403 | 100.0 |
| Tanga | Bombo | | | 118 | 18.3 |
| | Bumbuli | 23 | 12.57 | | 0.0 |
| | Handeni | | | 57 | 8.8 |
| | Lushoto | 28 | 15.3 | 20 | 3.1 |
| | Mhezaa DDH | | | 167 | 25.9 |
| | Korogwe | | | 197 | 30.5 |
| | Pangani | 128 | 69.95 | 86 | 13.3 |
| | Not stated | 4 | 2.19 | | 0.0 |
| | ***Total*** | ***183*** | ***100*** | ***645*** | ***100.0*** |
| **Grand Total** | | **11,673** | | **14,112** | |