Federal Ministry of Health

Department of Public Health,
National AIDS/STDs Control Programme

Technical Report

2003 National HIV Sero-prevalence Sentinel Survey

April 2004

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Office of the National Coordinator
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Department of Public Health
Federal Ministry of Health
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Maitama, Abuja.
Nigeria.

The 2003 National HIV/Syphilis Sentinel Survey among Pregnant Women in Antenatal Clinics in Nigeria was conducted in collaboration with the following partners:

National Action Committee on AIDS (NACA)
United States Centers for Disease Control and Prevention (CDC)
United States Agency for International Development (USAID)
World Health Organization (WHO)
Policy Project-Futures Group International
Joint United Nations Programme on HIV/AIDS (UNAIDS)

FOREWORD

The greatest health problem threatening the human race in our time is the HIV/AIDS pandemic where the burden is greatest in Sub-Saharan Africa. According to the Joint UN Programme on HIV/AIDS, over 40 million people had been infected with the virus by the end of 2003 of which over 28 million were in Sub-Saharan Africa.

Although the first case of AIDS in Nigeria was reported in 1986, the epidemic has now reached an alarming proportion. Over 3million Nigerians are infected with the virus. The human toll of AIDS is a tragic reality experienced by families, communities and the nation at large. There is concern that the country may be heading for a social and developmental crisis as a result of the impact of this pandemic. For this reason, HIV/AIDS control remains one of the priorities of this government.

Since 1999, Nigeria has adopted a multi-sectoral approach in fighting the HIV/AIDS epidemic. This approach ensures that the relevant line ministries play an active role in combating and mitigating the impact of the epidemic in their areas of comparative advantage, with the Federal Ministry of Health providing a lead role.

Among the programmes put in place by the Federal Ministry of Health is a comprehensive antiretroviral drug treatment programme for People Living With HIV/AIDS, the largest in Africa, as part of its care and support programme, prevention of Mother-to-Child Transmission (PMTCT), Voluntary Confidential Counselling and Testing (VCCT) and surveillance, etc. There is also a high level of political commitment, community sensitisation and effective strategies for resource mobilization to ensure programme sustenance.

One of the tools for assessing the impact of interventions in the country is an institutionalised and sustained HIV surveillance system. In the African region, active HIV sero-surveillance sentinel system using pregnant women attending antenatal clinics as the survey population is employed. This is in line with the World Health Organization (WHO) and the Joint United Nations Programme on HIV/AIDS (UNAIDS) recommendation on HIV Surveillance. Such surveys have been conducted biennially in Nigeria since 1991 with the recent being the 2003 survey.

Findings from these surveys show that HIV prevalence in Nigeria has been on a consistent increase from 1.8% (1991) to 5.8% (2001). The national median prevalence for the 2003 Survey is 5.0%. Although this is perhaps the first drop recorded in HIV prevalence trend in the country, there are indications of explosive epidemics in specific locations in some States. The report reaffirms that no State or community is spared by this epidemic. There are wide variations between States and between urban and rural areas across the country. **It is therefore not sufficient to conclude that the epidemic has stabilized or is on a downward trend and it would be most inappropriate to relax intervention efforts based on these observations alone.**

This Technical Report, which contains details of the survey methodology and findings, is recommended for all to peruse, analyse and proffer explanations. Above all, it is recommended to all stakeholders to use in developing relevant strategies based on evidence provide therein.

Government is determined to ensure the sustenance of interventions and also step up these at all levels and in all communities. This requires the commitment of all stakeholders from the Federal level through to the States, the Local Government Councils, the Private Sectors, the NGOs/CBOs, the communities and indeed the individuals and the People Living with HIV/AIDS.

The unflinching support of our collaborating partners in making the conduct of this survey a reality is appreciated. I once again appeal to them to continue to work with us to sustain our efforts and achieve the reduction of the impact of HIV/AIDS in our communities.

I thank the State Governments for their interest in ensuring that the surveys were successfully conducted in their States. This great service to our people must be sustained.

This Survey Report calls for great actions on our part and we must all be determined not to relent in our efforts until we have successfully brought the epidemic under control in Nigeria.

Professor Eyitayo Lambo
Honourable Minister of Health
Federal Republic of Nigeria

PREFACE

The most widely acceptable used, and cost effective method of monitoring the trends and making estimates and projections of the magnitude of the HIV/AIDS epidemic is the sentinel surveillance system.

Over the past decade, the health sector has provided the leadership for collecting information on the HIV/AIDS epidemic in Nigeria through sentinel surveys. This expertise was called to task again in the 2003 sentinel surveillance survey. The survey samples were collected from pregnant women aged 15-49 years, who were first attendees at antenatal clinics in public institutions in all the States of the federation. The information from this survey is important as it provides the HIV/Syphilis prevalence rates for all the States in the federation as well as estimates of HIV infections in the general population aged 15-49 years.

The results of this survey have been presented in this technical report for use of all actors in the prevention and control of HIV/AIDS. The prevalence for the various states and zones has been estimated following a rigorous quality control procedure. I therefore, wish to recommend this technical report to all involved in the commendable work of alleviating the burden of HIV/AIDS on our society. We acknowledge the onerous responsibility of continuing to provide this important data as we strive to improve our efficiency to deliver appropriate intervention strategies for the prevention and control of HIV/AIDS in Nigeria.

Umaru Aji, OON
Permanent Secretary,
Federal Ministry of Health,
Abuja.

ACKNOWLEDGEMENT

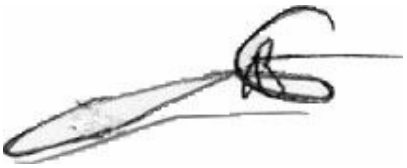
The preparations for the 2003 sentinel survey and the implementation of activities have come a long way. Various stakeholders have expressed their interest and shown commitment to ensure the sustenance of this important national exercise. On behalf of The Federal Ministry of Health, Federal Republic of Nigeria, I wish to specially acknowledge the contributions of the various organizations and their staffs towards the successful implementation of the 2003 HIV sentinel sero-surveillance in Nigeria.

Particularly, I would like to mention the CDC Atlanta team, for taking their time to make sure that the appropriate survey equipment including test kits were purchased and delivered to Nigeria on time This ensured that the data collection was completed before the end of 2003. The Technical assistance provided by international experts during the planning stages, protocol development, training of field staff, field supervision, quality control and data management ensured that the survey is of high standard.

The Survey Management Committee (SMC), the field operators, the quality control team, the data management team, the data analysis team, the report writers, the technical staff and volunteers from the National AIDS/STD Control Programme worked tirelessly for long hours to ensure the completion of this surveillance survey. Their efforts are most appreciated. The survey would not have been successful but for the active roles and cooperation of the State AIDS Programme Coordinators and their site fieldworkers. These include: Medical Officers, Laboratory Scientists and Nurses, to whom we owe a special gratitude.

It took the goodwill and the resources of the federal government and development partners to ensure that funds were available for the logistics of the survey. I wish to express very special appreciation to The National Action Committee on AIDS (NACA), the World Health Organization (WHO), Joint United Nations Programme on AIDS (UNAIDS), the United States Agency for International Development (USAID), the AIDS Prevention Initiative in Nigeria (APIN) of Bill and Melinda Gates Foundation, the Society for Family Health (SFH), the Policy Project, and others for their technical, financial and logistic support.

It is our sincere hope that this survey result will stimulate discussions on the HIV/AIDS epidemic in Nigeria as well as spur us all to work tirelessly to control its spread and reduce its impact on the socio-economic development of Nigeria.



Dr. Edugie Abebe, mni
Director,
Department of Public Health.

Executive Summary

HIV Sero surveillance surveys have been repeatedly conducted in Nigeria since 1991. Though two yearly intervals are recommended such regularity has only been maintained from 1999 till date.

The objectives of the survey were:

- To determine the prevalence of HIV infection among the adult population of 15-49 years in the country using pregnant women attending antenatal clinic in public health institutions in all states of the country as proxy.
- To monitor the trend of HIV infection in the country over the years.
- To make information available to policy makers, health planners and project implementers for planning, programming, advocacy, and evaluation of impact of ongoing interventions

The survey was planned and implemented through a broad-based Survey Management Committee (SMC) set up by Federal Ministry of Health, under the chairmanship of the Director of Public Health. The National Action Committee on AIDS (NACA), UN agencies and bilateral agencies that are stakeholders participated as members of the committee.

The committee designed and adopted the protocol, training manuals and the list of all equipment and material requirements. It also supervised the training and implementation of activities at all stages of the survey. All the personnel involved in the survey including the laboratory scientists underwent an intensive central level and state level training before the commencement of the survey.

The committee adopted the unlinked anonymous method, using the screening for syphilis as entry point. All samples were stripped of identity, recoded by state, site, age, properly stored and sent for HIV testing with Capillus and Genie II kits as specified in the protocol. All results and samples were documented and forwarded to the National Reference Laboratory in Abuja. The samples were subjected to quality control in the Reference Laboratory. Testing attained 98% concordance rate.

Supervisory visits from the Survey Management committee (SMC) were carried out to ensure adherence to survey protocol. Identified problems were brought to the attention of the SMC during meetings and issues addressed. No changes to the protocol were needed.

Data entry was done centrally and all data were double entered and cleaned according to the protocol, with 100% validation of entries. The data was analysed with the EPI-Info version 2002. A total of 27,708 samples were analysed.

The syphilis testing was done at the site using RPR and later confirmed in the state laboratories using TPHA. Very few samples were positive for syphilis.

The results showed that the national median HIV prevalence was 5.0%, which was lower than the 2001 prevalence of 5.8%. The state HIV prevalence ranged from 1.2% in Osun State to 12.0% in Cross River State. In some states there was an increase in the prevalence over the 2001 results. Thirteen states and the FCT had prevalence rates of over 5%.

The age group 20-24 years had the highest national prevalence of 5.6%. The HIV prevalence for women aged 15-24 years was 5.2%. In 3 zones the highest age specific prevalence was among women aged 20-24 years. HIV prevalence was found to be generally high in both urban and rural areas, however the prevalence was higher in the urban areas (5.7%) than in the rural areas (3.7%). Urban areas however showed higher prevalence in all zones except the South East.

The prevalence in respondents with only primary education (5.6%) and secondary education (5.4%) was found to be higher than in respondents with tertiary education (4.0%). The lowest prevalence was found in women with no formal education (3.8%) or only Quranic education (3.9%). Prevalence was higher in women who had received blood transfusion in three zones – North West, North Central and North East. There was generally no difference in prevalence by history of surgery.

Estimates based on the EPP and Spectrum models show the number of people living with HIV/AIDS in Nigeria in 2003 was between 3.2 and 3.8 million. The number of AIDS cases will continue to rise as this reflects those already infected in the population who

will go on to develop the disease. The number of HIV positive births is also expected to rise within the next few years.

In conclusion, the results showed a drop in national prevalence from the 2001 survey, even though there were indications of explosive epidemics in specific locations. Marked variations in prevalence between locations remained the order. The 2003 point prevalence is not sufficient to conclude that the epidemic has stabilized or is on a downward trend and it would be dangerous to relax intervention efforts based on the current observation.

Based on the survey findings the following recommendations are made:

- The current momentum of political commitment, resource mobilization and multisectoral approach need to be strengthened and sustained especially at the state level.
- The current care and support activities especially the anti-retroviral program needs to be scaled-up as to meet the increasing demand of large number of estimated AIDS cases in the country.
- The national Rural HIV prevalence was not markedly different from the urban prevalence; intervention strategies should therefore equally target the rural communities.
- Young people (age 15-24 years) still constitute a large proportion of those infected and the high HIV prevalence amongst women 15-24 years suggest a high incidence of infection still occurring. There is the need to focus intervention programmes towards this sub-population.
- There is need to strengthen the implementation of the National Blood Safety programme especially in the northern zones of the country.

The HIV prevalence amongst persons with primary and secondary levels of education suggests additional risk of exposure for the female student. There is a need to focus activities on girls within schools to empower them to protect themselves from HIV infection. HIV/AIDS education in schools should be adopted as a strategy to address this issue.

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ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Clinic
APIN	AIDS Prevention Initiative in Nigeria
CDC	US Centres for Disease Control and Prevention
C.I.	Confidence Interval
CSW	Commercial Sex Workers
DFID	Department for International Development
FCT	Federal Capital Territory
FHI	Family Health International
HIV	Human Immunodeficiency Virus
HSS	HIV Sero-prevalence Sentinel Survey
MTCT	Mother-to-child Transmission
NACA	National Action Committee on AIDS
NC	North Central
NE	North East
NGOs	Non-Governmental Organisations
NPC	National Population Commission
NW	North West
PLWHA	People Living with HIV/AIDS
PTB	Pulmonary Tuberculosis
QC	Quality Control
RPR	Rapid Plasma Reagin
SAPC	State AIDS Programme Coordinator
SE	South East
SFH	Society for Family Health
SMC	Survey Management Committee
SS	South South
STD	Sexually Transmitted Diseases
STI	Sexually Transmitted Infections
SW	South West
TB	Tuberculosis
TPHA	Trepenoma Palladium Haemagglutination Assay
UCH	University College Hospital
UNAIDS	Joint united Nations Programme on AIDS
UNICEF	United Nations Children's Fund
VCT	Voluntary, Confidential Counselling and Testing
WHO	World Health Organisation
WHO-AFRO	World Health Organization African Region

CHAPTER 1

1.0 Background

1.1 Country Profile

Nigeria is the tenth largest country in the world and the most populous country in Africa. The estimated population of the country in 2003 stood at 126.2 million (NPC). The annual population growth rate is 2.98 (NPC). Males constitute about 50% of the population (NPC). There are more than 350 ethnic and linguistic groups.

The country lies within latitudes 4^{o} 1' and 13^{o} 9' North and longitudes 2^{o} 2' and 14^{o} 30' East, and is bordered in the north by Niger Republic, in the east by the Republic of Chad and Cameroun and in the west by the Republic of Benin. It has a total surface area of approximately 923,768 square kilometres.

Nigeria is a democratic Federal Republic consisting of 36 states and the Federal Capital Territory (FCT). The states and the FCT are organized for political administration and are further divided into 774 Local Government Areas. The states have also been grouped, on the basis of geographical proximity or ethnic homogeneity and other political considerations, into six geo-political zones—North East, North West, North Central, South West, South East and South South. The zones differ from each another in size, population, ecological characteristics, language, culture, settlement patterns, economic opportunities and historical background.

The country has a mixed public and private economy since independence in 1960 but national revenue has been derived mostly from crude oil. Other sources of national revenue include agriculture, industry, solid minerals, trade and to some extent tourism. The economy is currently severely strained by a foreign debt overhang of over US$30 billion. It is estimated that about 70% of Nigerians are poor and the majority of whom are women. The Human Development Report 2000 ranked Nigeria at 151^{st} out of 174 countries and among the poorest 20 countries in the world. The GDP growth rate in 1999 was 2.7% while the income per capita in the same year was $US350.
Infectious and parasitic diseases are still predominant causes of morbidity and mortality. Health and socioeconomic related indicators for 2002 are presented below:

Indicators	Estimate
Life Expectancy (in years)	51
Fertility Rate (births per woman)	6.4
Infant Mortality Rate (per 1,000 live births)	79
Under 5 mortality rate (per 1,000 children)	146
Literacy (% age 15 and above)	55.6

1.2 Epidemiology of HIV/AIDS in Nigeria

Some parts of the country are worse affected than others, but no state or community is unaffected. All the states of Nigeria have general population prevalence of over 1%. In The first AIDS case in Nigeria was reported in 1986. Since then, the epidemic has steadily grown. The adult HIV prevalence has increased from 1.8% in 1991 to 4.5% in

1996 and 5.8% in 2001. Estimates using the 2001 HIV/Syphilis sero-prevalence sentinel survey among women attending antenatal clinics indicate that more than 3.5 million Nigerians were infected with the virus by the end of 2001. The epidemic in Nigeria has extended beyond the commonly classified high-risk groups and is now common in the general population. With the adult prevalence rate at 5.8 percent in 2001, the nation was said to be at the threshold of an exponential growth of the epidemic.
some communities, prevalence was higher than 10.0%. HIV affects all age groups; but youths between the ages 20 – 29 years are more infected, though in some zones (South-South and the South-West zones), there was a higher prevalence in the 15 – 19 year age group, as recorded in the 2001 sentinel survey.

Lately, an increasing number of children are being either infected with the virus, through mother-to-child-transmission, or are loosing one or both adult parents to the disease. By all indications, the HIV/AIDS epidemic has continued to grow largely through heterosexual unprotected sexual exposures.

AIDS cases are becoming more visible in communities. Although AIDS case reporting has been characterized by under-reporting, delayed reporting and under-recognition, the number of reported cases has been on the increase, especially since 1996.

HIV prevalence rate among Female Sex Workers in Nigeria has remained high and on the increase, from 17.5% in 1991, through 22.5% (1993) to 35.6% (1995). This group constitutes an important reservoir of HIV infection for transmission to the general population, through sexual networking. Also, the growth in prevalence among tuberculosis patients has remained relatively high – 21.0% (1991), 7.9% (1993), 13% (1995) and 17.0% (2000) with attendant strain on the health system.

Chapter 2

2.0 Goals and Objectives of ANC Survey

2.1 Goals

The general objective of conducting this survey is to provide information about the current HIV infection and the distribution in the country, with the aim of sensitizing all stakeholders to taking appropriate measures.

2.2 Objectives

The specific objectives are:

- To determine the prevalence of HIV infection among women attending antenatal clinics.
- To estimate the national HIV median prevalence.
- To monitor trends of HIV prevalence among women attending antenatal clinics in the various sites.
- To relate HIV prevalence with selected demographic characteristics and geographical locations.
- To make general population estimates and projections of the HIV/AIDS epidemic and its impact in the country.

CHAPTER 3

3.0 Methodology

3.1 Sentinel Population

The sentinel survey population for the year 2003 survey remained women aged 15-49 years attending antenatal clinics for the first visit during a confirmed pregnancy. Pregnant women constitute the most practical group for this survey as they are sexually active, easily defined and accessible, and are receiving care, which requires a routine blood collection for syphilis testing. They are also generally regarded as good representation of the sexually active population.

3.1.1 *Eligibility criteria*

Inclusion criteria for women in the survey were that:

1) The woman is aged 15-49
2) The pregnancy is confirmed by a health care provider on site
3) The woman is attending the antenatal clinic for the first time
4) The woman accepts syphilis testing

3.2 Site selection

A site refers to a public health facility providing antenatal care for pregnant women, which can be a general hospital, maternity hospital, comprehensive health centre, specialist or teaching hospital. In order to provide for the continuous monitoring of the trend of the epidemic, all the sentinel sites (85 sites) from the 2001 survey were maintained for the 2003 survey. For the purpose of this survey, a sentinel site was defined as a health facility providing antenatal care services to pregnant women.

At least two sentinel sites were selected in each state in the 2003 survey. One of the sites was in the state capital (major town) and the other site(s) outside the state capital (outside major town). A site was considered to meet the later definition if it is not located in the state capital, but has sufficient number of antenatal clients to meet the required minimum sample size within the study period. Sites were also allowed to recruit collaborating health facilities within the same catchments area for the purpose of achieving the required sample size.

3.2.1 Site selection criteria

Selection of sites was based on the following criteria:

- Participation in previous surveys
- Availability of staff, facilities and procedure for drawing blood from antenatal clinic attendees on their first visit of the current pregnancy
- Provision of services to a relatively large number of pregnant women per week to meet the minimum sample size in 12 weeks.
- Availability of qualified personnel and willingness of on-site staff to cooperate.

In addition, each state was required to collect samples from a TRUE RURAL SITE. This is defined as a locality within the state with a total population estimated to be less than 20,000 people, the selection of which was decided by individual states.

Prior to the start of the survey, each site was evaluated to determine whether there were appropriate personnel, supplies and training to function as a surveillance site. Evaluation criteria used for determining site selection were as follows:

- Ability to demonstrate methods for assuring patient anonymity
- Appropriate data collection methods
- Sufficient laboratory and sample storage capacity.

For each selected site, 2 nursing staff and one laboratory scientist were identified and trained as the site surveillance staff responsible for data and blood collection.

3.3 Survey design and sample size

Based on the WHO recommendations, which took into consideration an estimate of HIV prevalence in the population to be surveyed, the precision or relative error considered acceptable (5%) and the level of confidence (95%) desired, the minimum sample size of 300 was deemed adequate per selected site. Formal collaboration with nearby facilities (such that combined sample size equals 300 per site) was allowed for areas that might not attain the required sample size within the sampling period. The true rural site in each state was expected to generate a minimum sample size of 50 such that the combined rural samples for a zone formed a rural cluster with a combined sample size of 300-350. This was used to estimate the true rural prevalence in each zone.

Eligible women that attended the ANC during the sampling period were consecutively sampled. The sampling period for the survey was 10 weeks. Those sites reaching the minimum sampling size in fewer weeks, at the discretion of the surveillance coordinator, either continued sampling (up to 350) or stopped sampling depending on resource availability.

3.4 Blood and data collection

An unlinked anonymous method of testing was used (e.g. testing HIV antibodies in aliquot of samples originally drawn for syphilis that are linked to a patient's demographic data but not to the patient herself.) All women, regardless of eligibility, were offered the opportunity to be screened and treated for syphilis as part of routine antenatal care.

To conduct anonymous, unlinked HIV testing, incoming women during the survey period were first screened to ensure that the eligibility criteria were met. For those women that were eligible, initial demographic information of the client was recorded in the data collection form. The demographic data for each eligible woman included age, education, occupation of spouse, and marital status, history of transfusion, history of surgery and parity. A sample of the data collection instrument used is included as Appendix II.

The eligible attendee was then sent to the laboratory staff or nurse responsible for blood collection. 5-10mls of blood was collected from the subject into a sterile vacutainer tube, from which 200 micro-litre was dispensed as spots on the blotting paper provided. The vacutainer tube containing the blood sample was then labelled and accompanied with laboratory request form for syphilis. Serum obtained from the sample was transferred to two separate cryovials. One sera sample was used for syphilis screening at the sentinel site laboratory, and the other, having no personal identifier of the subject, was labelled with the survey pre-labelled stickers containing a code specific to that sentinel site and was passed on to the state laboratory where HIV screening was done.

3.5 *Laboratory methods*

3.5.1. *Site Laboratory Screening*:
Blood samples were tested for syphilis at the site laboratory and test results returned to the clinic where the decision on treatment was taken by the ANC doctor. These results were also recorded on the laboratory data form provided with the same patient code as the specimen container. Thereafter, all identifying markers were stripped from the samples and each sample coded and transported to the state laboratory for HIV testing and syphilis confirmation. Blood spots collected were dried and transported to the state laboratory for onward transmission to the QC centre.

3.5.2 *State Laboratory Screening*
Samples were retrieved daily from sites with no adequate storage facilities and weekly where storage facilities were available, to the State laboratory. Serum samples for HIV testing at the State laboratory were stored until ready for laboratory testing by laboratory scientists specifically trained for the survey. Each sample was initially screened with a Rapid HIV testing kit (Capillus). All samples with a "non reactive" result were reported as negative, while all samples that were reactive in the initial screening test were further tested using Genie II for confirmation and differentiation of antibodies to HIV-I and/or HIV-2, and reported as such. Samples with negative results in the first test were reported as negative for HIV antibodies. Samples that were reactive in both tests were considered positive for HIV antibodies. Any sample that was reactive in the first test but negative in the second test was recorded as negative. Similar screening procedure was done for syphilis using RPR at the blood collection site, while all positive and weakly positive samples were sent to the State laboratory for TPHA testing.

3.6 Data Retrieval
Completed patient information, laboratory data forms and all samples irrespective of sero status were transported by the state laboratory scientists to the quality control centre, maintaining the cold chain. States that required more than 2 hours travel time to the QC centre travelled by air.

3.7 Quality assurance
The following measures were adopted to ensure that results were accurate, reliable and reproducible:

- Engagement of qualified and experienced laboratory scientists who were currently practising at the site and state laboratories.
- Organization of training at the central and state levels for all laboratory personnel with emphasis on the practical.
- Use of the same screening and confirmation test kits for syphilis and HIV in all site and state laboratories.
- Evaluation of all test kits for potency and shelve life before use,
- Storage of test kits and samples at appropriate temperatures.
- Retesting of all samples with doubtful results
- Subjecting all Capillus positive, TPHA positive, 10% of Capillus negative, as well as 5% of TPHA negative samples, to QC testing
- Strict adherence to the Standard Operating Procedures and protocol at all levels

- Retesting of all samples in any state where more than 5% false negative rate was observed at the QC centre
- Regular supervisory visits by members of the survey management committee to sites and states to ensure compliance to the survey protocol by all laboratory personnel.

3.8 Central screening and quality control

All samples that were positive for Capillus were retested at the QC and 10% of the negative samples were selected randomly from pools of negative samples and re-tested at the QC centre. In sites where false negatives were detected, the number of positive samples was adjusted by applying the false negative rate to all the negative samples. This adjustment affected only 16 out of the total 123 sites. For syphilis screening, all RPR positive samples and 5% of the RPR negative samples were also subjected to re-testing. This was in accordance with the agreed QC protocol.

Experienced laboratory scientists performed the Quality Control testing. The Laboratory working group consisting of both national and international experts coordinated the exercise.

3.9 Survey Management

A Survey Management Committee (SMC), with wide representation from stakeholders, coordinated the survey centrally. WHO, UNAIDS and CDC provided technical assistance during the survey. This committee met three times during the survey. The meetings of this committee served as fora where findings from the supervisory visits were discussed and major decisions taken.

3.10 Training

3.10.1 Central training

A 3-day Central training on the survey protocol was conducted for the field workers participating in the survey. The categories involved in the central training included the State AIDS Programme Coordinators (SAPC), medical officers at the site antenatal clinics, and State laboratory Scientists. Others included national supervisors, facilitators and donors/stakeholders. The training was done in two batches for the Southern and Northern zones. One day was dedicated for laboratory practical session in order to ensure hands-on training for the laboratory scientists**.** The training was facilitated by resource persons from the Federal Ministry of Health, research institutions within the country, WHO, UNAIDS and CDC.

3.10.2 State level training

A 2-day training was organized in each state for other categories of field workers not trained centrally. These included the site laboratory scientists, nurses and laboratory assistants. The SAPCs, site medical officers and the state laboratory scientists served as trainers for field workers at state level.

3.11 Survey supervision

Four levels of supervision were built in the survey. This was to ensure the quality of procedure and adherence to the survey protocol.

3.11.1 Central supervision
Members of the SMC using a uniform supervisory checklist carried out supervisory visits to all states. Findings from these visits were discussed at the SMC meetings and any observed problems addressed.

3.11.2 Zonal supervision
The Zonal Managers of NASCP and staff of the FMOH carried out zonal supervision during the survey. All shortfalls in reagents, consumables and problems of supplies and other logistics identified during the central supervisory visits were addressed during these visits. In addition, zonal supervisors provided a closer supervision of the survey in the states and were in a position to alert the survey secretariat in the event of issues requiring urgent attention.

3.11.3 State supervision
The State AIDS Programme Coordinators coordinated the day-to-day survey activities. They supervised the collection of data; storage and transportation of samples; and evaluated the performance of the survey in all the sentinel sites in their states. The State Laboratory Scientist assisted them in this function.

3.11.4 Site supervision
Each sentinel site had a local staff in charge of the survey: the site Medical Officer in the ANC, assisted by the site laboratory scientist. Together they ensured that staffs in the site survey team were working in harmony and within the survey protocol.

3.12 ***Ethical considerations***
Women were informed of the results of their syphilis screening and treatment offered by the consulting clinician. The survey protocol ensured that the unlinked anonymous testing procedure for HIV was maintained. In the state laboratories where all HIV tests for the state were carried out, it was ensured that different laboratory persons were involved with syphilis and HIV testing and used separate locations. Since the study was designed to be unlinked and anonymous, and subjects were not informed of their HIV results, the need for the subject's consent and provision of pre- and post-test counselling did not arise.

It was also ensured that the flow of samples and data was unidirectional i.e. from site to state laboratory. On no account was the state laboratory scientist allowed to make reference of HIV result to the laboratory scientist, medical officer or nurse on that site.

3.13 ***Data management***
Data forms were checked for completeness, obvious errors and inconsistencies to identify any data quality errors. Data was entered using Epi-info 2002 computer software. Specific measures were taken to ensure that data entry was accurate. Using programmed and guided screens; only legal entries and data in specified ranges were entered. Validation of entered data was done using double data entry. Discrepant records were reviewed and corrected before data analysis commenced. Frequency tables were generated for all variables in order to further examine whether there were any unusual entries.

3.13.1 Data analysis

The analysis focused on determining the prevalence rates of HIV infection and syphilis by the relevant independent variables - age, site, state, zone, parity, and education. Response categories for occupation were not discriminatory enough for meaningful analysis. The site and state prevalence rates were determined by expressing the number of positive samples as a percentage of the total samples tested, while the zonal prevalence was calculated as the median of the prevalence rates of all the sites within each zone, including the zonal cluster of rural sites. The national prevalence was determined as the median of the zonal prevalence rates. Exact 95% confidence intervals were determined for all rates. A chi square analysis for trend was performed using data from the 1999, 2001, and 2003 surveys.

3.14 Methods for estimations and projections

The Epidemic Projection Package (EPP) was used to estimate and project adult HIV prevalence from surveillance data on ANC clients. The software uses inputs such as base population, sex ratio and urban - rural infection ratio. The resulting national estimated adult HIV prevalence was then transferred to a demographic package, Spectrum, a computer modelling for demographic projections to calculate the number of people infected and other parameters, such as AIDS cases, AIDS deaths, and AIDS orphans.

3.15 Limitations

One of the limitations of ANC sentinel surveillance is the fact that women attending public health facilities may not be representative of women in the general population since the later include those who are using some form of contraception as well as those who are infertile. Moreover, pregnant women who choose to attend public health facilities may have characteristics different from all pregnant women; and, a substantial proportion of pregnant women, for various reasons, may not attend antenatal clinics. It is also known that men and women have different HIV-related risk behaviours and therefore may have different rates of infection. Sentinel sites were purposely selected on the basis of specific criteria and therefore may not be representative of all health facilities. Among the selected facilities, there may be policies and practices that may influence the pattern of attendance. However, studies in many countries have shown that HIV prevalence from pregnant women compares favourably with data from the general population.

CHAPTER 4

4.0 Results

Analysis was based on data from 27708 pregnant women aged 15–49 years, who attended antenatal clinics in public health facilities during the survey period.

4.1 *Characteristics of the Survey Population*

The characteristics of the surveyed population are depicted in Tables 1 and 2.

4.1.1 Age distribution

Women aged 15-24 years constituted 38.6% of the total sample. The single largest age group was 25-29 (31.3%) and the smallest was 40-49 (2.1%). The age composition of the sample showed that at the zonal level the highest proportions of women age 15-19 were from the North East (19.6%) and the North West (15.3%) and the lowest were in the South East (5.0%) and the South West (4.7%). Women aged 15-24 years constituted about one half of subjects in the North West (49.1%) and the North East (50.4%) but just over one-quarter in the South West (26.8%) and the South East (28.3%). In all zones women 40-49 years formed a very small proportion.

4.1.2 Marital Status

The marital status of subjects was recorded during the survey and the categories included married, single and divorced/widowed. Most of the subjects (96.6%) were married. The proportions ranged from 92.7% in the South South zone to 99.8% in the North West. Conversely, the smallest proportion of single women was in North West (0.2%) and the largest in South South (7.2%).

4.1.3 Educational level

Over one-half (51.8%) of the subjects had secondary or higher education; only 11.3% had no formal education. The largest proportion of women with no formal education was reported from the North East (28.0%) and North Central (21.0%) and the lowest (2.3%) from South South. In the North West and North East zones, 41.1% and 29.0% of the respondents respectively had Quranic education only. At the national level, 15.2% of the subjects had higher education, with the largest proportions coming from South West zone (26.2%), South East zone (22.2%) and South South zone (17.5%). The North East zone had the lowest proportion of subjects in this educational category (4.3%).

4.1.4 Parity

Overall about one quarter of the women have not had any deliveries, while about two thirds had had less than 3 deliveries. Only 13.5% had more than 4 deliveries.

Table 1 Characteristics of women involved in the 2003 HIV sentinel surveillance

CHARACTERISTICS	No.	%
AGE GROUP (n=27708)		
15-19	2778	10.0
20-24	7935	28.6
25-29	8672	31.3
30-34	5492	19.8
35-39	2243	8.1
40-49	588	2.1
MARITAL STATUS (n=27708)		
MARRIED	26379	96.6
SINGLE	881	3.2
DIVORCED/WIDOWED	60	0.2
EDUCATIONAL LEVEL (n=27324)*		
NONE	3074	11.3
QURANIC ONLY	3661	13.4
PRIMARY	6418	23.5
SECONDARY	10009	36.6
HIGHER	4162	15.2
PARITY (n=24582)**		
0	6578	26.8
1-2	9296	37.8
3-4	5392	21.9
>4	3316	13.5

** 384 did not provide information on level of education*
*** 3126 did not provide information on parity*

Table 2 Characteristics of Surveyed women by zone

Characteristics	North Central		North East		North West		South East		South South		South West	
Age	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
15 – 19 yrs	451	8.6	813	19.6	786	15.3	191	5.0	293	7.1	244	4.7
20 – 24 yrs	1649	31.6	1281	30.8	1834	33.8	893	23.3	1120	27.0	1158	22.1
25 – 29 yrs	1685	32.3	1064	25.6	1266	24.7	1356	35.4	1463	35.3	1837	35.1
30 – 34 yrs	1107	19.5	582	14.0	785	15.3	919	24.0	874	21.1	1315	25.1
35 – 39 yrs	343	6.6	300	7.2	342	6.7	355	9.3	327	7.9	576	11.0
40 – 49 yrs	76	1.5	116	2.8	112	2.2	117	3.1	68	1.6	99	1.9
Total	5221	100	4156	100	5125	100	3831	100	4146	100	5229	100
Educational Status												
None	1043	21.0	1164	28.0	476	9.3	119	3.1	92	2.3	180	3.5
Quranic only	284	5.7	1204	29.0	2098	41.1	16	0.4	9	0.2	50	1.0
Primary	1345	27.1	805	19.4	931	18.2	844	22.1	1115	27.3	1378	26.4
Secondary	1587	32.0	800	19.3	1239	24.3	1992	52.1	2148	52.6	2243	43.0
Higher	697	14.1	178	4.3	358	7.0	849	22.2	716	17.5	1364	26.2
Total	4956	100%	4151	100%	5102	100%	3821	100%	4080	100%	5215	100%
Marital status												
Married	4839	97.6	4055	97.6	5099	99.8	3677	96.0	3756	92.7	4953	95.0
Single	115	2.3	76	1.8	8	0.2	138	3.6	290	7.2	254	4.9
Divorced/ widowed	5	0.1	25	0.6	2	0.0	14	0.4	6	0.1	8	0.2

4.2 HIV Prevalence

The national median prevalence was 5.0%. Of all the positive samples only three were HIV subtype 2.

The highest prevalence of *7.0%* was recorded in the North Central while the lowest prevalence of 2.*3%* was recorded in the South West. The national median prevalence was *5.0%*.

Figure 1 Median HIV prevalence by zone, HSS 2003

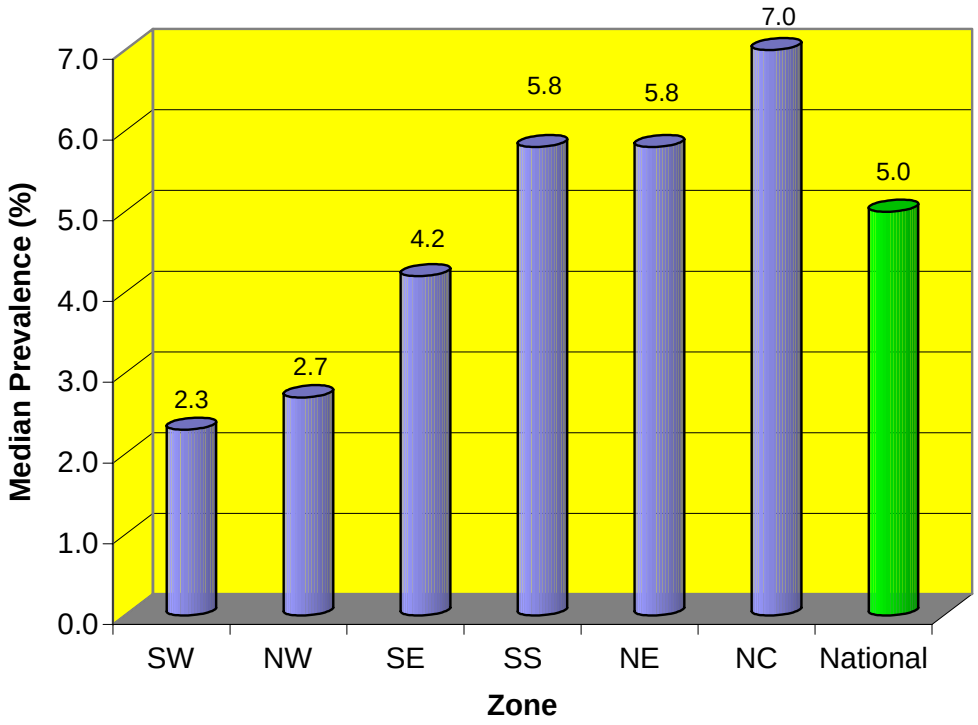


Figure 2 National HIV Prevalence by Location, HSS 2003

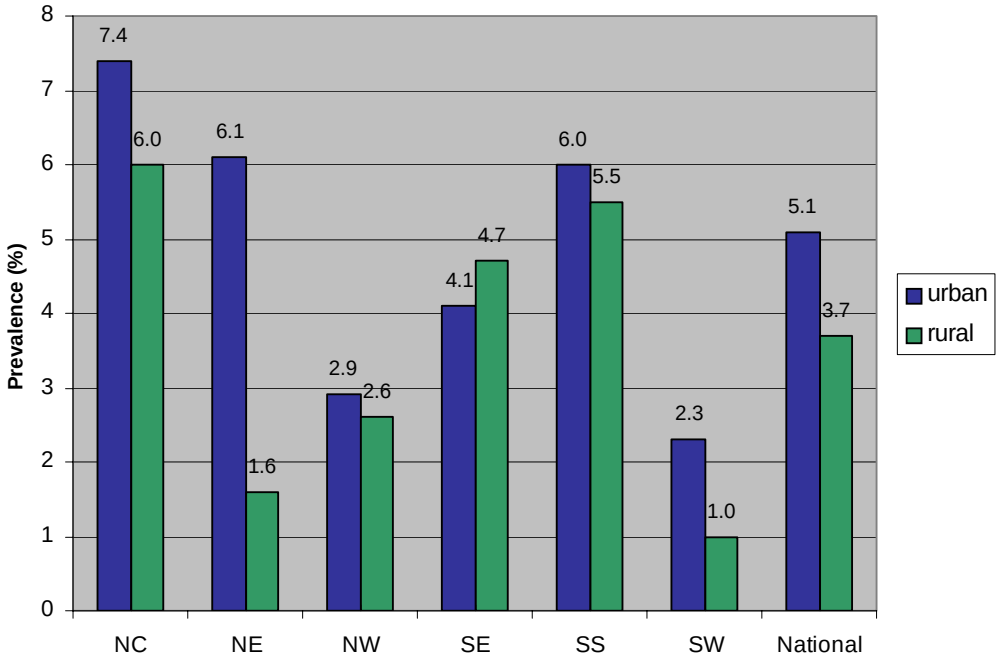
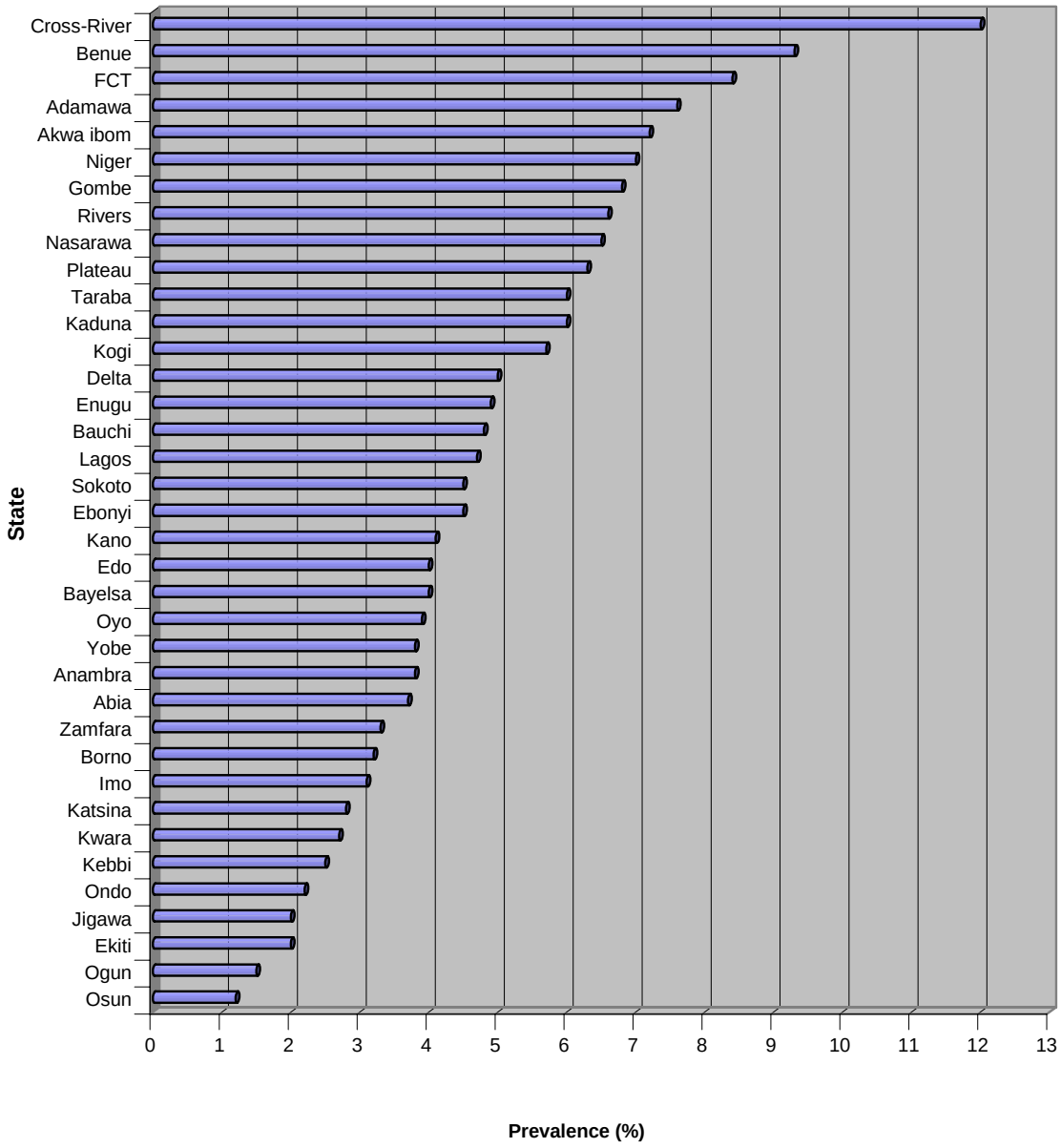


Figure 2 shows HIV prevalence by location in all the zones. Generally, HIV prevalence was higher in the urban locations than rural except in the South East zone. These differences were more pronounced in the North East and South West zones.

Figure 3 HIV prevalence by State in Nigeria, HSS 2003



There were marked differences in the HIV prevalence recorded in the various states, as shown in figure 3.The State ranking of HIV prevalence showed that Cross River State had the highest prevalence of 12.0% followed by Benue State which had 9.3% and FCT with a prevalence of 8.4%. The lowest HIV prevalence of 1.2% was recorded in Osun State. While only 4 states had HIV prevalence of 2% and below, 14 had 5% and above.

Table 3 HIV Prevalence in the North Central Zone by State and Location, HSS 2003

STATE	SITE	SITE STATUS	TOTAL SAMPLE	NUMBER POSITIVE	PREVALENCE (%)	C.I.
BENUE	Makurdi	MT	300	29	9.7	6.6 -13.6
	Otukpo	OMT	300	23	7.7	4.9-11.3
	Ihugh	OMT	300	32	10.7	7.4-14.7
	Total		**900**	**84**	**9.3**	**7.5-11.4**
FCT	Garki	MT	300	31	10.3	7.1-14.3
	Gwagwalada	OMT	310	18	5.8	3.5-9.0
	Nyanya	OMT	315	29	9.2	6.2-13.0
	Total		**925**	**78**	**8.4**	**6.2-10.4**
KOGI	Lokoja	MT	300	21	7.0	4.4-10.5
	Ankpa	OMT	298	13	4.4	2.3-74
	Total		**598**	**34**	**5.7**	**4.0-7.9**
KWARA	Ilorin	MT	300	9	3.0	1.4-5.6
	Offa	OMT	300	7	2.3	0.9-4.7
	Total		**600**	**16**	**2.7**	**1.5-4.3**
NASARAWA	Lafia	MT	350	31	8.9	6.1-12.3
	Nasarawa Eggon	OMT	300	11	3.7	1.8-6.5
	Total		**650**	**42**	**6.5**	**4.7-8.6**
NIGER	Minna	MT	298	19	6.4	3.9-9.8
	Wushishi	OMT	300	23	7.7	4.9-11.3
	Total		**598**	**42**	**7.0**	**5.1-9.4**
PLATEAU	Jos	MT	300	23	7.7	4.9-11.3
	Shendam	OMT	300	15	5.0	2.8-8.1
	Total		**600**	**38**	**6.3**	**4.5-8.5**
Zonal urban sites			**4871**	**334**	**6.9**	**6.2 – 7.6**
Zonal rural sites			**350**	**21**	**6.0**	**3.8 – 9.0**

Zonal median prevalence = 7.0

Table 3 shows the findings in North Central zone. The Zonal median prevalence was 7.0% The highest prevalence was recorded in Benue State (9.3%) and the lowest in Kwara State (2.7%).

Table 4 HIV Prevalence in North East Zone by State and Location, HSS 2003

STATE	SITE	SITE STATUS	TOTAL SAMPLE	NUMBER POSITIVE	PREVALENCE (%)	95% C.I.
ADAMAWA	Yola	MT	350	26	7.4	4.9-10.7
	Mubi	OMT	299	23	7.7	4.9-11.3
	Total		**649**	**49**	**7.6**	**5.6-9.9**
BAUCHI	Bauchi	MT	300	12	4.0	2.1-6.9
	Azare	OMT	299	17	5.7	3.3-8.9
	Total		**599**	**29**	**4.8**	**3.3-6.9**
BORNO	Maiduguri	MT	297	11	3.7	1.9-6.5
	Biu	OMT	295	8	2.7	1.2-5.3
	Total		**592**	**19**	**3.2**	**1.9-5.0**
GOMBE	Gombe	MT	300	22	7.3	4.7-10.9
	Kaltungo	OMT	300	19	6.3	3.9-9.7
	Total		600	41	**6.8**	4.9-9.2
TARABA	Jalingo	MT	319	20	6.3	3.9-9.5
	Zing	OMT	310	18	5.8	3.5-9.0
	Total		**629**	**38**	**6.0**	**4.3 – 8.2**
YOBE	Damaturu	MT	299	13	4.3	2.3-7.3
	Geidam	OMT	181	12	6.6	3.5-11.3
	Potiskum	OMT	300	5	1.7	0.5-3.5
	Total		**780**	**30**	**3.8**	**2.6-5.4**
Zonal urban sites			**3849**	**206**	**5.4**	**4.7 – 6.1**
Zonal rural sites			**307**	**5**	**1.6**	**0.5 – 3.8**

Zonal Median Prevalence **= 5.8**

Table 4 presents the HIV prevalence in the North East zone. The zonal median HIV prevalence was 5.8%. The highest HIV prevalence was recorded in Adamawa (7.6%) while the lowest was recorded in Borno State (3.2%).

Table 5 **HIV prevalence in the North West Zone by State and location**, HSS 2003

STATE	SITE	SITE STATUS	TOTAL SAMPLE	NUMBER POSITIVE	PREVALENCE (%)	CI
JIGAWA	Dutse	MT	300	7	2.3	0.9-4.7
	Hadejia	OMT	300	5	1.7	0.5-3.5
	Total		**600**	**12**	**2.0**	**1.0-3.5**

KADUNA	Kaduna	MT	300	18	6.0	3.6-9.3
	Kafanchan	OMT	300	29	9.7	6.6-13.6
	Zaria	OMT	289	6	2.1	0.8-4.5
	Total		**889**	**53**	**6.0**	**4.5-7.7**
KANO	AKTH	MT	300	13	4.3	2.3-7.3
	MM	OMT	300	17	5.7	3.3-8.9
	Rano	OMT	300	7	2.3	0.9-4.7
	Total		**900**	**37**	**4.1**	**2.9-5.6**
KATSINA	Katsina	MT	298	10	3.4	1.6-6.1
	Funtua	OMT	300	7	2.3	0.9-4.7
	Total		**598**	**17**	**2.8**	**1.7-4.5**
KEBBI	Birnin Kebbi	MT	300	7	2.3	0.9-4.7
	Argungu	OMT	300	8	2.7	1.2-5.2
	Total		**600**	**15**	**2.5**	**1.4-4.0**
SOKOTO	Sokoto	MT	300	23	7.7	4.9-11.3
	Dogan Daji	OMT	298	4	1.3	0.4-3.4
	Total		**598**	**27**	**4.5**	**3.0-6.5**
ZAMFARA	Gusau	MT	300	9	3.0	1.4-5.6
	Talata-Mafara	OMT	300	11	3.7	1.8-6.5
	Total		**600**	**20**	**3.3**	**2.0-5.1**
Zonal Urban Sites			**4777**	**181**	**3.8**	**3.3 – 4.4**
Zonal rural sites			**348**	**9**	**2.6**	**1.2 – 4.9**

Zonal median prevalence = 2.7

Table 5 shows the HIV prevalence for the North West zone. The zonal prevalence was 2.7 %. Kaduna State had the highest prevalence (6.0%) while Jigawa recorded the lowest (2.0%). The site prevalence ranged from 1.3 to 9.7% within the zone.

Table 6 **HIV prevalence in the South East Zone by State and location**, HSS 2003

STATE	SITE	SITE STATUS	TOTAL SAMPLE	NUMBER POSITIVE	PREVALENCE (%)	95% C.I
ABIA	Umuahia	MT	300	14	4.7	2.6-7.7
	Aba	OMT	300	8	2.7	1.2-5.2
	Total		**600**	**22**	**3.7**	**2.3-5.5**

ANAMBRA	Awka	MT	300	13	4.3	2.3-7.3
	Onitsha	OMT	300	12	4.0	2.1-6.9
	Ekwulobia	OMT	274	8	2.9	1.3-5.7
	Total		**874**	**33**	**3.8**	**2.6-5.3**
EBONYI	Abakaliki	MT	324	15	4.6	2.6-7.5
	Afikpo	OMT	300	13	4.3	2.3-7.3
	Total		**624**	**28**	**4.5**	**3.0-6.3**
ENUGU	Enugu	MT	300	6	2.0	0.7-4.3
	Achi	OMT	227	27	11.9	8.0-16.8
	Nsukka	OMT	295	7	2.4	1.0-4.8
	Total		**822**	**40**	4.9	3.5-6.6
IMO	Owerri	MT	303	6	2.0	0.7-4.3
	Orlu	OMT	309	13	4.2	2.3-7.1
	Total		**612**	**19**	**3.1**	**1.9-4.7**
Zonal Urban sites			3531	142	4.0	3.4 – 4.7
Zonal rural sites			300	14	4.7	2.6 – 7.7

Zonal Median prevalence = 4.2

The zonal prevalence for the South East was 4.2%. Enugu State had the highest prevalence (4.9%) while Imo state recorded the lowest (3.1%). Site prevalence ranged from 2.0 to 11.9% (Table 6)

Table 7 **HIV prevalence in the South South Zone by State and location**, HSS 2003

STATE	**SITE**	**SITE STATUS**	**TOTAL SAMPLE**	**NUMBER POSITIVE**	**PREVALENCE (%)**	**95% C.I**
AKWA IBOM	Uyo	MT	299	19	6.4	3.9-9.7
	Essien-Udim	OMT	300	24	8.0	5.2-11.7
	Total		**599**	**43**	**7.2**	**5.2-9.5**
BAYELS	Yanogoa	MT	300	15	5.0	2.8-8.1

A	Sagbama	OMT	297	9	3.0	1.4-5.7
	Total		**597**	**24**	**4.0**	2.6-5.9
CROSS RIVER	Calabar	MT	300	38	12.7	9.1-17.0
	Ikom	OMT	300	34	11.3	8.0-15.5
	Total		**600**	**72**	**12.0**	**9.5-14.9**
DELTA	Warri	MT	300	12	4.0	2.1-6.9
	Agbor	OMT	300	18	6.0	3.6-9.3
	Total		**600**	**30**	**5.0**	8.4-7.1
EDO	Benin City	MT	300	12	4.0	2.1-6.9
	Ekpoma	OMT	258	12	4.7	2.4 – 8.0
	Total		**558**	**24**	**4.3**	**2.8 – 6.3**
RIVERS	Port Harcourt	MT	300	11	3.7	1.8-6.5
	Bori	OMT	300	23	7.7	4.9-11.3
	Bonny	OMT	300	25	8.3	5.5-12.1
	Total		**900**	**59**	**6.6**	**5.1-8.4**
Zonal Urban sites			**3854**	**252**	**6.5**	**5.8 – 7.4**
Zonal rural sites			**292**	**16**	**5.5**	**3.2 – 8.7**

Zonal median prevalence = 5.8

The zonal prevalence for the South South zone was 5.8%. Cross Rivers State had the highest prevalence (12.0%) while Bayelsa state recorded the lowest (4.0%). Site prevalence ranged from 3.0 to 12.7% (Table 7)

Table 8 **HIV prevalence in the South West Zone by State and location**, HSS 2003

STATE	**SITE**	**SITE STATUS**	**TOTAL SAMPLE**	**NUMBER POSITIVE**	**PREVALENCE (%)**	**95% C.I**
EKITI	Ado-Ekiti	MT	300	5	1.7	0.5-3.8
	Ikole Ekiti	OMT	300	7	2.3	0.9-4.7
	Total		**600**	**12**	**2.0**	**1.0-3.5**
LAGOS	Ikeja	MT	350	27	7.7	6.0-12.8
	Lagos Island	MT	301	5	1.7	0.5-3.8
	Surulere	MT	300	8	2.7	1.2-5.2

	Badagry	OMT	350	22	6.3	4.0-9.4
	Epe	OMT	330	14	4.2	2.3-7.0
	Total		**1631**	**76**	**4.7**	**3.7-9.8**
OGUN	Abeokuta	MT	300	2	0.7	0.1-2.4
	Ijebu-Ode	OMT	299	7	2.3	0.9-4.8
	Total		**599**	**9**	**1.5**	**0.7-2.7**
OSUN	Osogbo	MT	300	2	0.7	0.1-2.4
	Ilesa	OMT	300	5	1.7	0.5-3.8
	Total		**600**	**7**	**1.2**	**0.5-2.4**
ONDO	Akure	MT	300	6	2.0	0.7-4.3
	Ondo	OMT	300	7	2.3	0.9-4.7
	Total		**600**	**13**	**2.2**	**1.2-3.7**
OYO	Ibadan	MT	300	5	1.7	0.5-3.8
	Ogbomoso	OMT	300	11	3.7	1.8-6.5
	Saki	OMT	299	19	6.4	3.9-9.7
	Total		**899**	**35**	**3.9**	**2.7-5.4**
Zonal Urban sites			4929	152	3.1	2.6-3.6
Zonal rural sites			300	3	1.0	0.2 – 2.9
Zonal median prevalence = 2.3						

Table 8 presents the HIV prevalence in South West Zone. The zonal median prevalence was 2.3%. Lagos State had the highest prevalence (4.7%) while Osun state recorded the lowest (1.2%). The site prevalence ranged from 0.7 to 7.7%.

4.3 HIV Prevalence by Age:

Figure 4 shows the age-specific HIV prevalence recorded at the national level. The highest age-specific prevalence was observed among women aged 20-24 years (5.6%) followed closely by those aged 25-29 years (5.4%). For youths aged 15-24 years, the prevalence was 5.2%.

Figure 4 Age-specific prevalence of HIV in Nigeria, HSS 2003

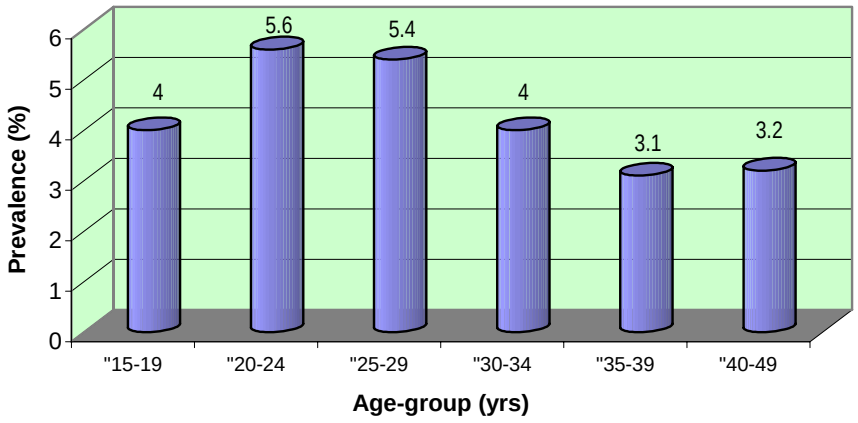


Figure 5 Age-specific prevalence of HIV in North Central Zone, HSS 2003

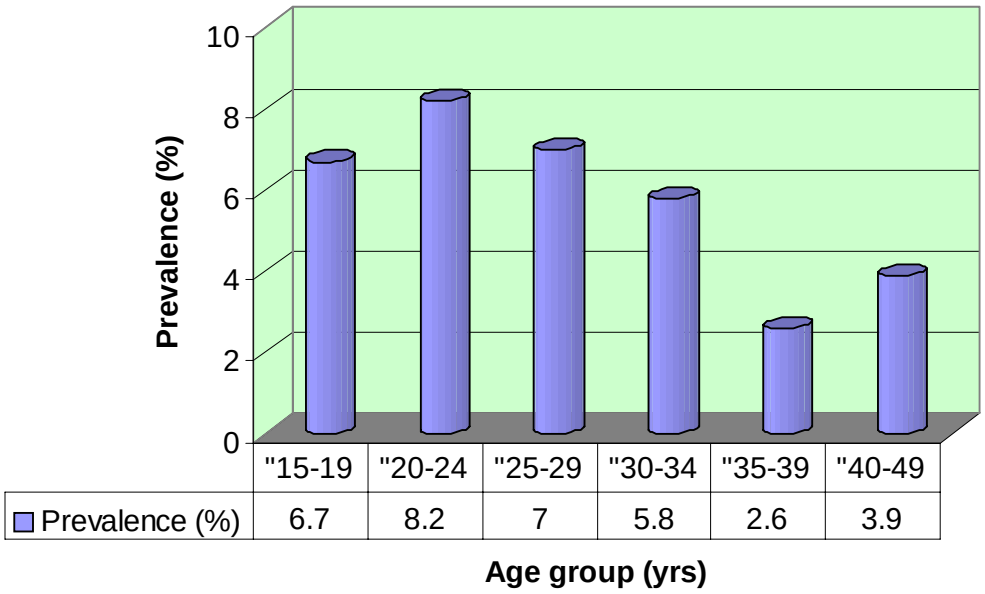


Figure 5 shows the age specific prevalence of HIV in the North Central Zone. The highest prevalence was seen in women 20-24years (8.2%) while the lowest was observed amongst women 35-39years (2.6%).

Figure 6 Age-specific prevalence of HIV in North East Zone, HSS 2003

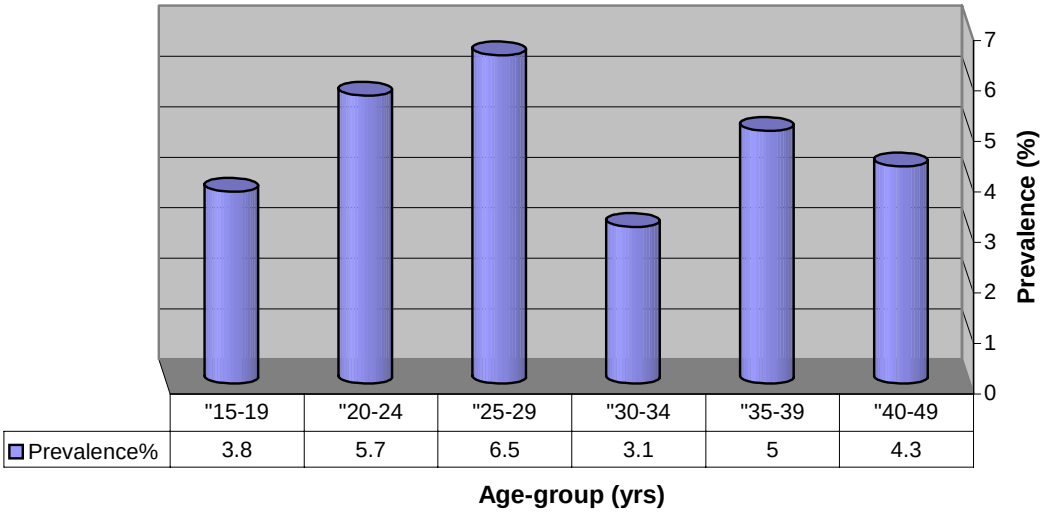


Figure 6 depicts the age specific prevalence recorded in the North East zone. The prevalence was highest among women 25-29 years (6.5%) and lowest amongst women 30-34years (3.1%).

Figure 7 Age-specific prevalence of HIV in North West Zone, HSS 2003

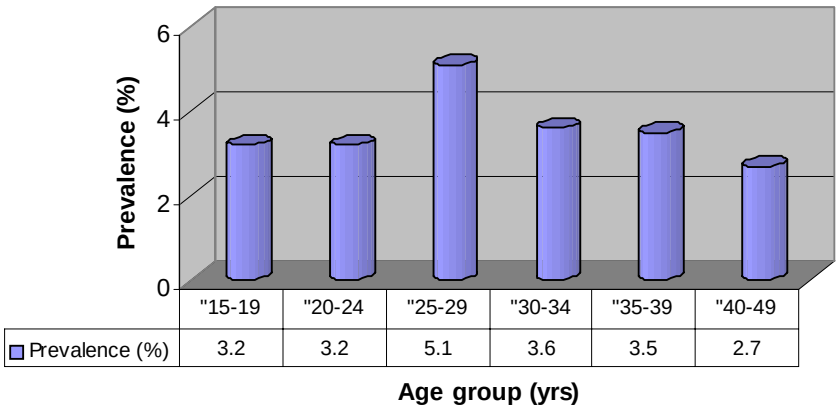


Figure 7 shows age specific HIV prevalence in the North West Zone .The highest was recorded in the age group 25-29 years (5.1%) while the lowest was observed among the 40-49 age group (2.7%).

Figure 8 Age-specific prevalence of HIV in South East Zone, HSS 2003

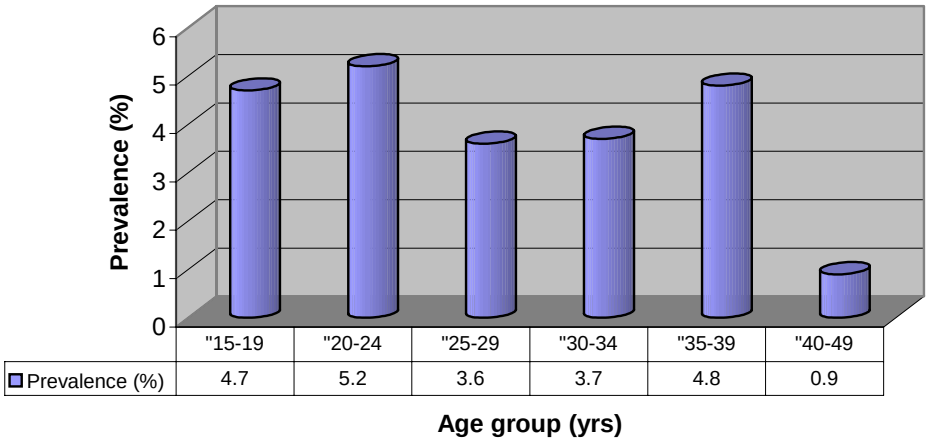


Fig 8 presents the age specific HIV prevalence in the South East Zone. The 20-24 age bracket in this survey showed the highest prevalence of 5.2%, while the lowest of 0.9% was observed among the 40-49 age bracket.

Figure 9 Age-specific prevalence of HIV in South South Zone, HSS 2003

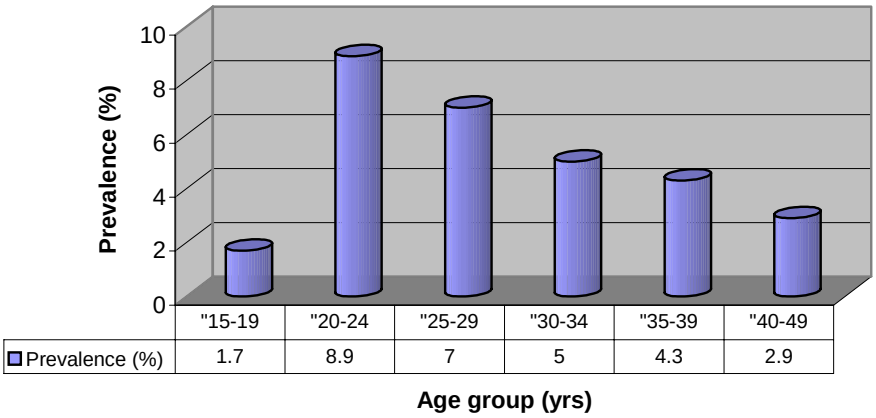
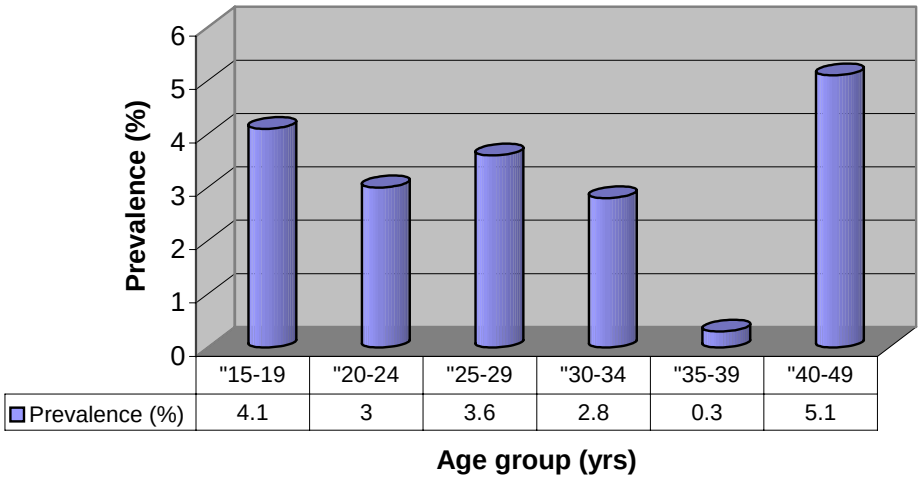


Figure 9 shows the age specific HIIV prevalence in the South South zone. The 20-24 age bracket showed the highest prevalence of 8.9% followed closely by 25-29 with 7.0%, while the lowest prevalence of 1.7% was from the 15-19 age bracket; there was a consistent fall from 20-24 year age group down to the 40-49 year age group

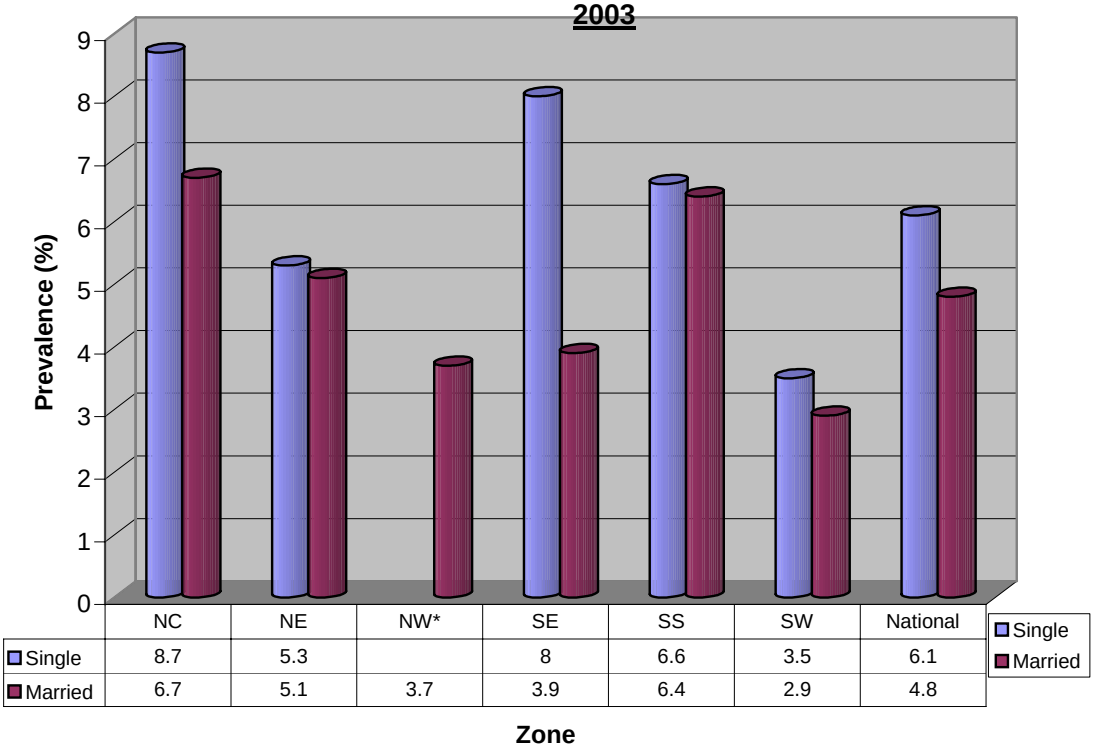
Figure 10 Age-specific prevalence of HIV in South West Zone, HSS 2003



The age specific HIV prevalence in South West zone is presented in figure 10, which shows the highest prevalence of 5.1% among women aged 40-49 years.

4.4 HIV prevalence by Marital Status

Figure 11 National HIV prevalence by Marital Status by zone, HSS 2003

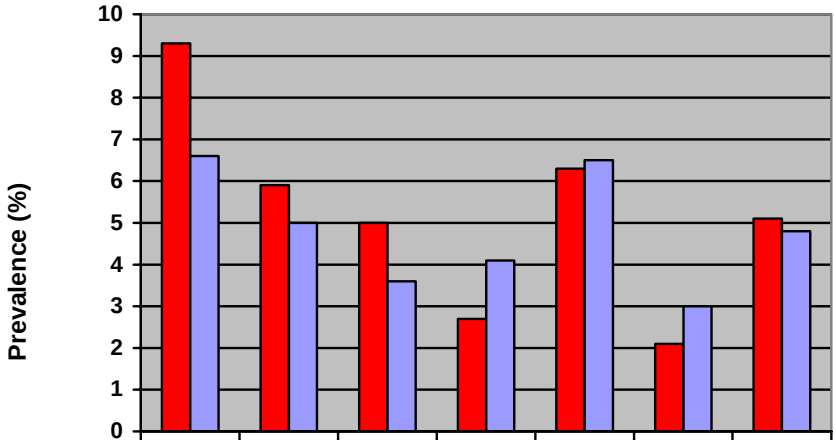


	NC	NE	NW*	SE	SS	SW	National
Single	8.7	5.3		8	6.6	3.5	6.1
Married	6.7	5.1	3.7	3.9	6.4	2.9	4.8

Figure 11 shows the prevalence of HIV by marital status by zones. The HIV prevalence was higher among singles when compared to those married. The number of single women in the North West zone was too few for meaningful analysis.

4.5 HIV Prevalence by History of Blood Transfusion

Figure 12 HiV prevalence by history of blood transfusion by zone, HSS 2003

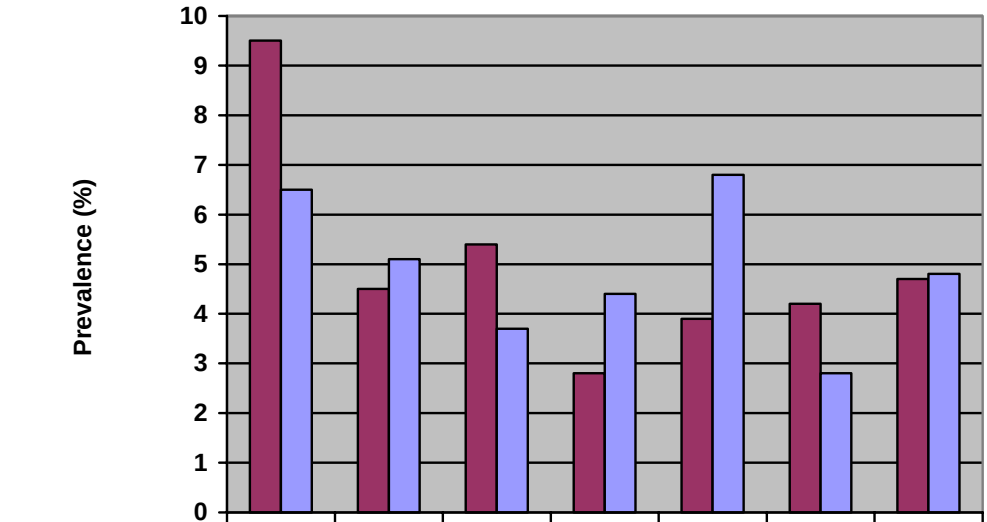


	NC	NE	NW	SE	SS	SW	National
Hx of blood transfusion	9.3	5.9	5	2.7	6.3	2.1	5.1
No Hx of blood transfusion	6.6	5	3.6	4.1	6.5	3	4.8

Fig 12 presents HIV prevalence among women who had ever received blood transfusion compared to those who had never. The result showed a consistent difference in HIV prevalence between the two sub-populations in the three northern zones where the rates were higher among women with history of blood transfusion. In the southern zones however, it is the reverse.

4.6 HIV Prevalence by History of Surgery

Figure 13 HIV prevalence by history of Surgery by zone, HSS 2003



	NC	NE	NW	SE	SS	SW	National
Hx of Surgery	9.5	4.5	5.4	2.8	3.9	4.2	4.7
No Hx of Surgery	6.5	5.1	3.7	4.4	6.8	2.8	4.8

HIV prevalence among ANC attendees by history of surgery is presented in figure 13. The result showed no consistent pattern between the two groups. In three zones (North Central, North West and South West), women with history of surgery had higher prevalence than those with no history; whereas in the other three zones (North East, South East and South South) the reverse was the case.

4.7 HIV Prevalence by Parity

Figure 14 HIV Prevalence by Parity, HSS 2003

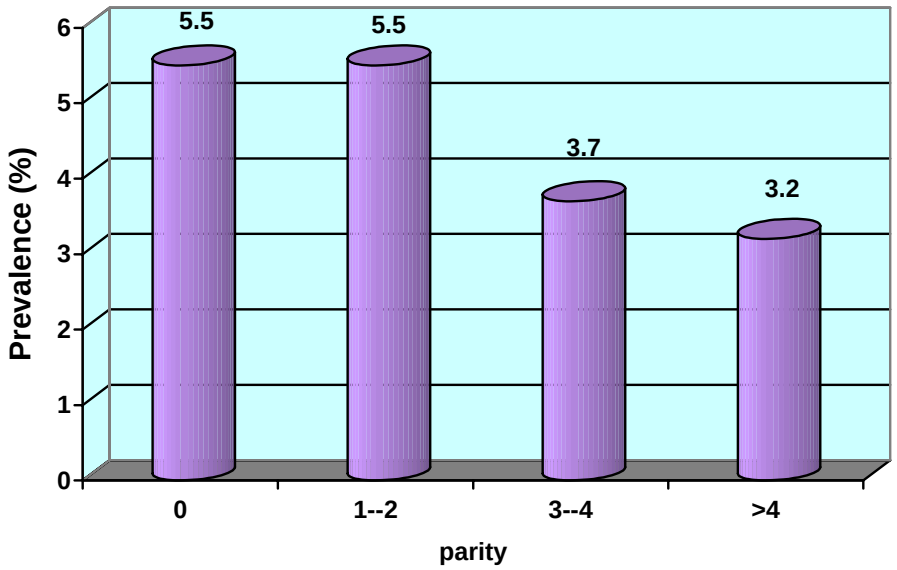
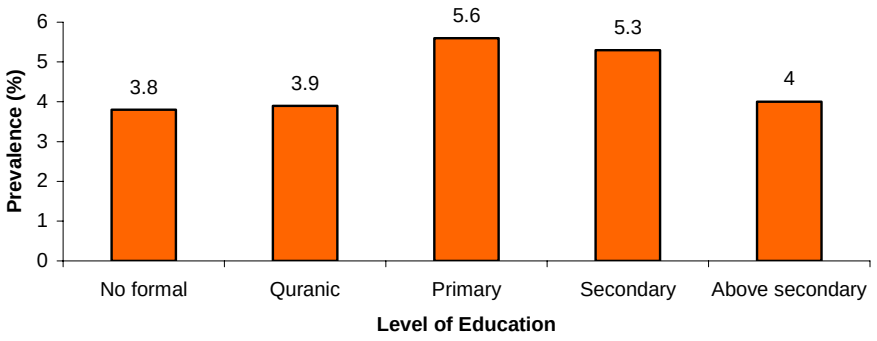


Figure 14 shows the HIV prevalence by parity. The highest prevalence was recorded amongst women with less than three deliveries (5.5%)

4.8 HIV Prevalence by Level of Education

Fig. 15 HIV prevalence by level of education, HSS 2003



In Figure 15, the HIV prevalence by level of education is presented. The highest prevalence of 5.6% was recorded among women with only primary education followed by those with secondary education (5.3%). Women who had only Quranic or no formal education had comparatively lower prevalence.

4.9 Trends in HIV prevalence in the country

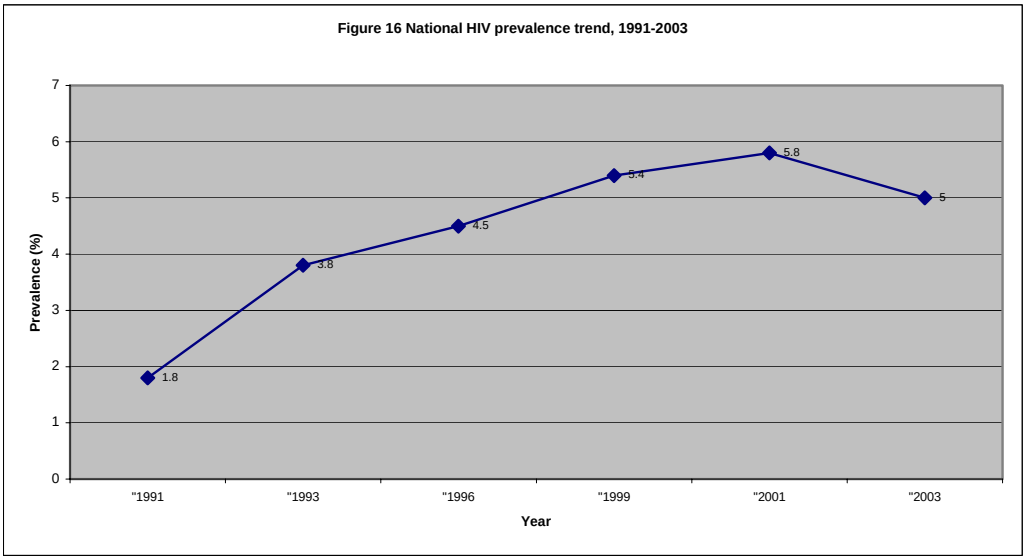
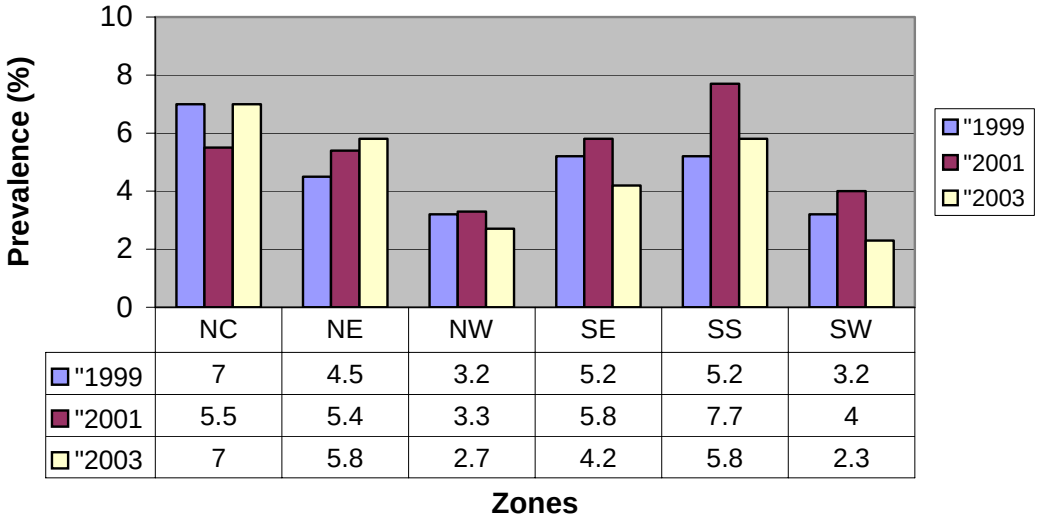


Figure 16 shows the trend of HIV prevalence in Nigeria between 1991 and 2003, as reported from the HIV Sentinel Sero-Surveillance cycles. There was a steady increase in HIV prevalence from 1991 to 2001. The result for 2003 showed a fall from the peak of 5.8% in 2001 to 5.0%.

Figure 17 Trend in HIV prevalence by Zones, 1999 - 2003



	NC	NE	NW	SE	SS	SW
"1999	7	4.5	3.2	5.2	5.2	3.2
"2001	5.5	5.4	3.3	5.8	7.7	4
"2003	7	5.8	2.7	4.2	5.8	2.3

Figure 17 presents HIV prevalence trend by zones between 1999 and 2003, from the Sentinel Sero-prevalence surveys. In the last three surveillance cycles, the prevalence showed a fall in 2003 in four zones. In the North East there was a slow and consistent rise within the period whereas in the North Central there was no consistent trend.

Table 9 HIV Prevalence by State, 1991-2003

S/N	State	Year					
		1991/92	1993/94	1995/96	1999	2001	2003
1	Adamawa	0.3	1.3	5.3	5.0	4.5	7.6
2	Anambra	0.4	2.4	5.3	6.0	6.5	3.8
3	Benue	1.6	4.7	2.3	16.8	13.5	9.3
4	Borno	4.4	6.4	1.0	4.5	4.5	3.2
5	Cross River	0.0	4.1	1.4	5.8	8.0	12.0
6	Delta	0.8	5.1	2.3	4.2	5.8	5.0
7	Edo	0.0	1.8	3.0	5.9	5.7	4.3
8	Enugu	1.3	3.7	10.2	4.7	5.2	4.9
9	Kaduna	0.9	4.6	7.5 (estimated)	11.6	5.6	6.0
10	Kano	0.0	0.4	2.5 (estimated)	4.3	3.8	4.1
11	Kwara	0.4	2.4	1.7	3.2	4.3	2.7
12	Lagos	1.9	6.8	---	6.7	3.5	4.7
13	Osun	0.0	1.4	1.6	3.7	4.3	1.2
14	Oyo	0.1	0.2	0.4	3.5	4.2	3.9
15	Plateau	6.2	8.2	11.0	6.1	8.5	6.3
16	Sokoto	1.8	1.6	---	2.7	2.8	4.5
17	Abia	Not done	Not done	Not done	3.0	3.3	3.7
18	Akwa Ibom	Not done	Not done	Not done	12.5	10.7	7.2
19	Bauchi	Not done	Not done	Not done	3.0	6.8	4.8
20	Bayelsa	Not done	Not done	Not done	4.3	7.2	4.0
21	Ebonyi	Not done	Not done	Not done	9.3	6.2	4.5
22	Ekiti	Not done	Not done	Not done	2.2	3.2	2.0
23	Gombe	Not done	Not done	Not done	4.7	8.2	6.8
24	Imo	Not done	Not done	Not done	7.8	4.3	3.1
25	Jigawa	Not done	Not done	1.7	1.7	1.8	2.0
26	Katsina	Not done	Not done	Not done	2.3	3.5	2.8
27	Kebbi	Not done	Not done	Not done	3.7	4.0	2.5
28	Kogi	Not done	Not done	2.3	5.2	5.7	5.7
29	Nasarawa	Not done	Not done	Not done	10.8	8.1	6.5
30	Niger	Not done	Not done	Not done	6.7	4.5	7.0
31	Ogun	Not done	Not done	0.1	2.5	3.5	1.5
32	Ondo	Not done	Not done	Not done	2.9	6.7	2.3
33	Rivers	Not done	Not done	1.0	3.3	7.7	6.6
34	Taraba	Not done	Not done	6.0	5.5	6.2	6.0
35	Yobe	Not done	Not done	Not done	1.9	3.5	3.8
36	Zamfara	Not done	Not done	Not done	2.7	3.5	3.3
37	FCT	Not done	Not done	Not done	7.2	10.2	8.4

Table 9 presents the state prevalence trends between 1991 and 2003. The first round of HIV sentinel surveillance survey was conducted in 1991 in 9 states but it was possible to determine the prevalence for 16 states following the creation of more states in the country during the survey period. This was done by using the data available from the location of sentinel sites that fell within the new states. It was also possible to estimate the prevalence

for as many states in 1993 and 1995 using the same approach. Information has been more complete for sentinel surveys conducted in 1999, 2001 and 2003.

During the period, HIV prevalence has been rising in the following states: Adamawa, Cross River, Delta, Kano, Lagos, Niger, and Sokoto. Abia, Jigawa, and Yobe. Some States showed prevalence figures that tend to fluctuate with each surveillance cycle.

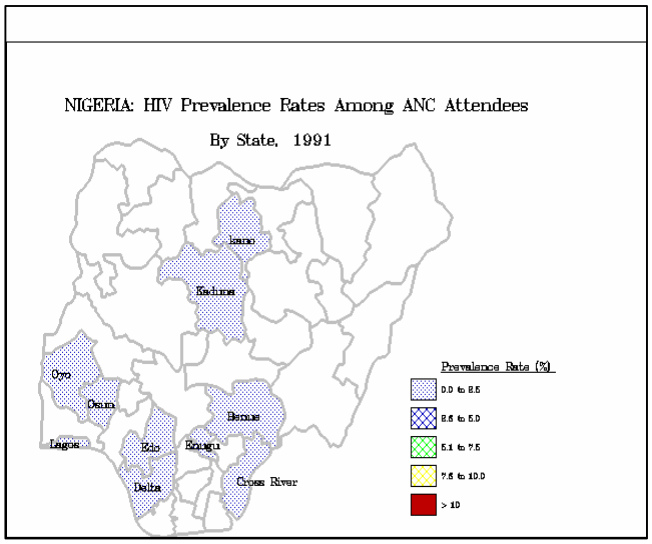
Table 10 HIV Prevalence Trends in HIV Sentinel Sites used Consistently from 1993 to 2003 HSS 2003

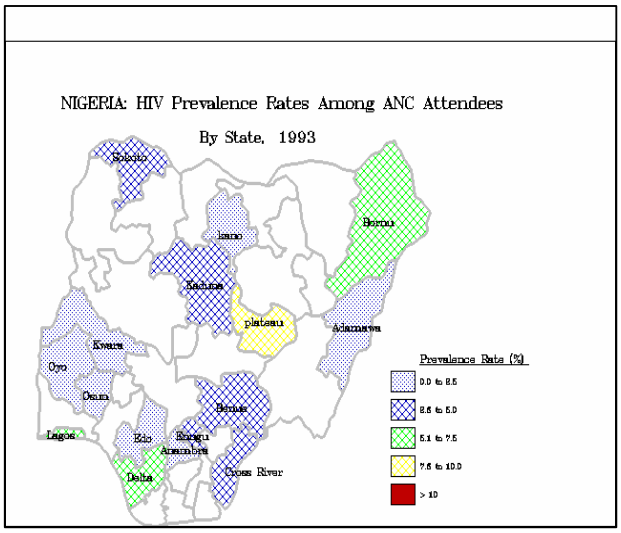
	Zone	State	Site	No. of Sample Tested and Percent Positive									
				1993/94		1995/96		1999		2001		2003	
				No Tested	% +ve	No Tested	% +ve	No. Tested	% +ve	No. Tested	% +ve	No. Tested	% +ve
A	South East	Anambra	Awka	200	1.0	93	2.1	298	8.4	254	6.7	300	4.3
			Ekwulobia	100	4.0	200	4.5	300	3.7	250	6.8	274	2.9
		Ebonyi	Abakaliki	439	3.9	200	13.0	153	11.1	300	6.7	324	4.6
		Enugu	Achi	202	5.4	140	8.6	165	4.2	110	13.6	227	11.9
			Enugu	138	2.9	352	9.5	300	5.0	300	4.7	300	2.0
B	South West	Osun	Osogbo	282	2.1	496	1.6	300	2.7	300	3.0	300	0.7
		Oyo	Ibadan	484	0.2	666	0.2	300	2.7	300	3.3	300	2.0
C	North West	Kaduna	Kafanchan	582	5.0	60	76.7*	299	15.1	300	9.3	300	9.7
			Kaduna	560	4.3	190	45.8*	298	8.1	300	4.0	300	6.0
D	North East	Adamawa	Yola	398	1.3	400	5.3	310	5.5	300	5.7	350	7.4
		Borno	Maiduguri	400	8.0	400	0.3	300	4.3	300	4.3	297	3.7
			Biu	375	4.8	172	2.3	300	4.7	300	3.7	295	2.7
E	North Central	Kwara	Ilorin	400	3.8	700	1.0	358	3.1	300	3.7	300	3.0
			Offa	400	2.5	1014	2.8	240	3.3	321	5.2	300	2.3
		Plateau	Jos	401	5.0	400	4.5	321	7.8	300	11.3	300	7.7
F	South South	Edo	Benin	400	1.8	413	0.0	300	4.0	300	4.3	300	4.0
		Delta	Warri	399	1.5	401	0.7	299	3.3	300	2.3	300	4.0
			Agbor	400	8.8	334	5.4	300	5.0	300	9.3	300	6.0

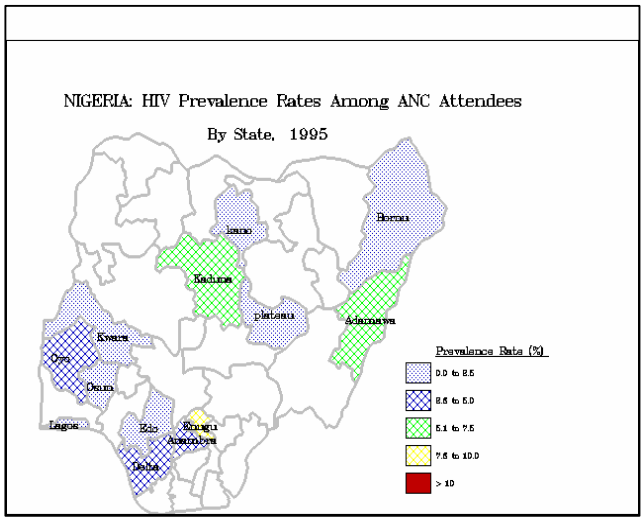
*** Data unreliable**

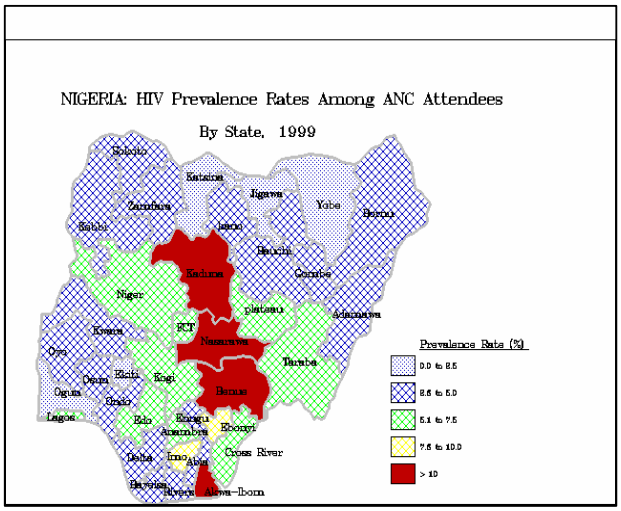
Sentinel surveys have been consistently conducted in 18 sites in 12 states in the Federation since 1993 (Table 10).

Most of these sites had their peak prevalence in the 1999 and 2001 except Borno State sites which peaked in 1993. Most sites have also started to show declining prevalence apart from Kafanchan, Warri and Yola where the prevalence has not yet showed any decline.

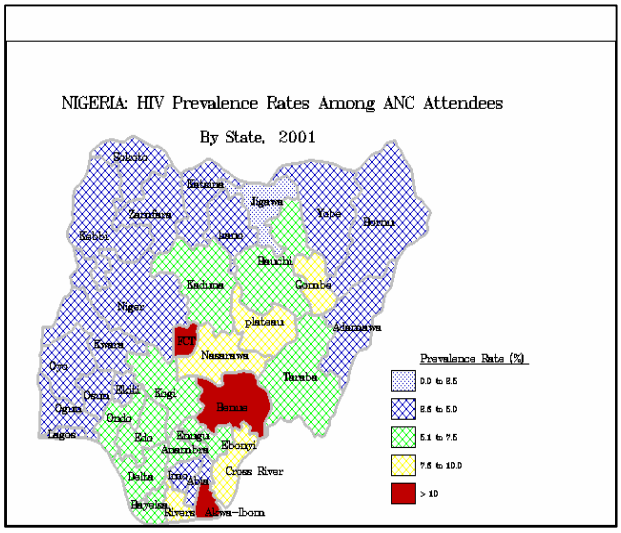


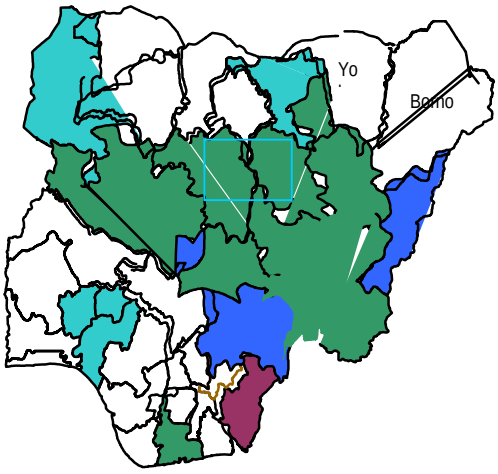






NIGERIA: HIV Prevalence Rates Among ANC Attendees
by State, 2003





0.0-2.5

2.6-5.0

5.1-7.5

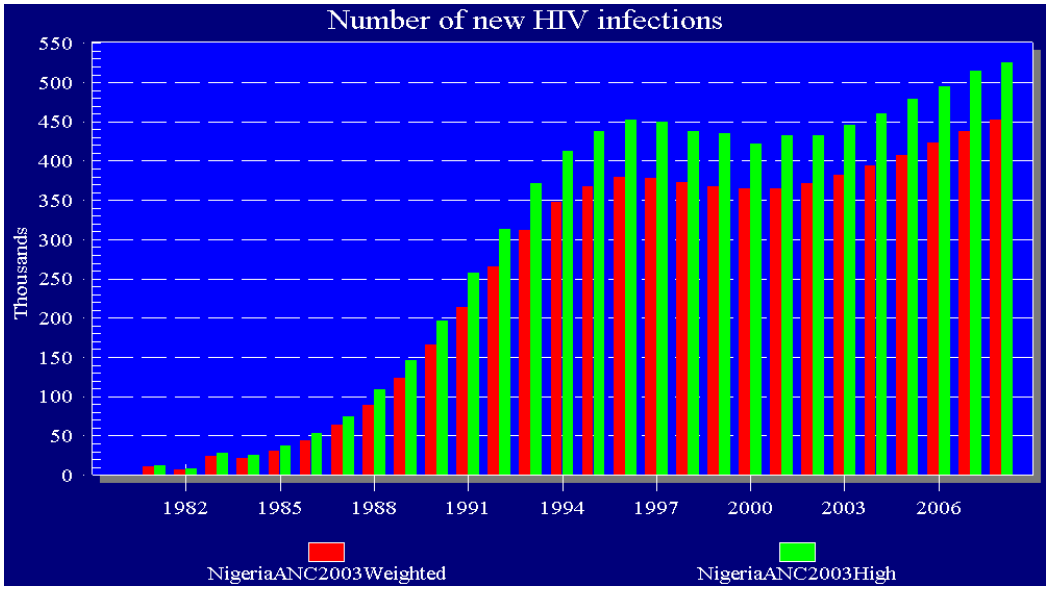
7.6-10

>10

4.10 Estimates and projections

Estimates and projections using Epidemic Projections Package (EPP) show the number of people living with HIV/AIDS (PLWA) in Nigeria as at the end of 2003 to be between 3.2 and 3.8 million. In the low prevalence scenario, this is expected to rise to 3.4 million by 2005 and 3.7 million by 2008, while in the high scenario the number will rise to 4 million by 2005 and 4.3 million by 2008. The HIV prevalence over the period is also expected to be between 4.6% and 5.4% in 2004 and 4.5% to 5.3% in 2008. By 2008 there would be a cumulative deaths of 3.6 to 4.2 million from AIDS.

	HIV ESTIMATES AND PROJECTION						
1	**HIV Population (millions)**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
	Males	1.47-1.73	1.51-1.78	1.55-1.82	1.59-1.87	1.64-1.92	1.68-1.97
	Females	1.75-2.06	1.8-2.11	1.84-2.16	1.88-2.2	1.93-2.25	1.98-2.31
	Total	3.22-3.79	3.31-3.89	3.39-3.98	3.48-4.07	3.56-4.17	3.66-4.28
2	**New AIDS cases (thousands)**						
	Males	144.19-170.61	151.25-178.71	157.27-185.57	162.44-191.43	166.97-196.53	171.15-201.24
	Females	160.63-190.26	169.12-200.02	175.76-207.57	180.74-213.1	184.63-217.35	187.73-220.66
	Total	304.82-360.87	320.36-378.73	333.02-393.14	343.18-404.52	351.6-413.88	358.87-421.9
3	**Annual HIV + births (thousands)**						
	Total	75.13-88.44	75.52-88.78	75.8-89.02	76.07-89.28	76.53-89.78	76.86-90.15
	Percent	1.47-1.74	1.46-1.72	1.45-1.71	1.44-1.7	1.43-1.69	1.42-1.68
4	**Annual AIDS deaths (thousands**						
	Males	135.95-162.05	143.9-171.38	150.68-179.28	156.46-185.96	161.44-191.68	172.37-196.61
	Females	149.99-179.01	160.08-190.93	168.28-200.5	174.69-207.87	179.5-213.27	190.81-217.37
	Total	285.93-341.06	303.98-362.32	318.97-379.78	331.15-393.83	340.95-404.95	363.18-413.98
	Per thousand	2.16-2.58	2.23-2.67	2.28-2.73	2.31-2.76	2.31-2.76	2.4-2.75
5	**Cumulative AIDS deaths (millions)**						
	Males	0.95-1.13	1.1-1.31	1.25-1.49	1.41-1.67	1.57-1.86	1.74-2.06
	Females	0.97-1.15	1.13-1.34	1.3-1.54	1.47-1.75	1.65-1.96	1.84-2.18
	Total	1.92-2.29	2.23-2.65	2.55-3.03	2.88-3.42	3.22-3.83	3.58-4.24



4.11 Syphilis

The prevalence of syphilis by zone is shown in Table 4.11. The prevalence was highest in the North East (0.6%) and lowest in South West (0.1%). Generally the prevalence was less than 1% in all the zone**.** In most of the sites, the prevalence was 0%. The overall national prevalence was 0.3%.

Figure 4.11 Prevalence of syphilis by zone, 2003

Zone	Number of samples Tested	Number positive	Prevalence (%)
North Central	**5221**	**30**	**0.6**
North East	**4156**	**16**	**0.4**
North West	**5125**	**16**	**0.3**
South East	**3831**	**7**	**0.2**
South South	**4146**	**7**	**0.2**
South West	**5229**	**4**	**0.1**
Total	**27708**	**80**	**0.3**

Chapter 5

5.0 Discussion

The 2003 HIV sentinel survey in Nigeria witnessed a conscious effort for improvement in quality, in both design and implementation, over the previous surveys. The protocol development was timely, comprehensive and brought in additional features for improved data collection and management. The central and state level trainings were better focused, with greater emphasis on the laboratory aspect of the survey and skill building for the field officers in protocol application, to ensure high standard.

Regular external supervisions (at zonal and central levels) by experts and experienced officers, commencing within the first few days of sample collection, ensured early correction of any errors in the field (sites and state laboratory). The survey was effectively managed by a Survey Management Committee (SMC) of national and international officers experienced in HIV sentinel survey, who also carried out the field supervisions. Each of the three supervisory visits was promptly followed by an SMC meeting in which field findings were discussed and solutions to problems found.
The HIV results from the states had remarkably high concordance rate of 99.4% using GenieII.
An additional strategy adopted to improve on the quality of data entered was double entry of all records, ensuring 100% validation. This was an improvement over the past surveys in which the validation was done on only 10% of the records.

The national HIV prevalence for 2003 was 5.0%. This figure is similar to what is obtainable in some West African Countries, like Benin and Ghana where prevalence levels have remained below 5%.
Although the trend of HIV prevalence in Nigeria showed a consistent, slowly rising pattern from 1991 to 2001, the 2003 survey result produced the first decline (5.8% to 5.0%). However, a chi-square analysis showed no statistically significant change in trend between 1999 and 2003 suggesting that the epidemic might be stabilizing. By UNAIDS definition, the HIV prevalence in a community is said to be declining when two consecutive surveys show a declining prevalence.
HIV prevalence levels in seven major West African cities including Abidjan, Cotonou, and Ouagadougou have remained fairly constant during the mid and late nineties. Recent data in some countries e.g. Botswana, Benin Republic, Burkina Faso and Cote d'Ivore suggest modestly decreasing prevalence. In 2002 for instance, Abidjan reported its lowest HIV prevalence among pregnant women since 1990 (7.4%).

The year 2003 survey used sites that were actually rural by the NPC definition, which makes the national estimates more accurate. HIV prevalence in rural areas cannot therefore be compared with that of previous surveys, since sites classified as rural in the previous surveys were considered urban in this study.
The epidemic shows higher prevalence in the urban than in the rural areas except in the South East. This pattern is similar to what is observed in many African countries. The scenario as presented in the South East should be taken seriously and requires further evaluation. The prevalence in some of the rural sites was found to be higher than in the urban sites.

Even though there was a fall in the national prevalence, the trend was not consistent in all states. The 2003 survey results showed variation in state trend between 1999 and 2003. While Benue, Akwa Ibom, Nasararwa, Ebonyi, Edo and Imo states showed a decline, five other states showed a rising prevalence. These included Yobe, Jigawa, Abia, Sokoto and Cross River States.

It was also noted that states showing a decline had previous HIV prevalence above 5%, while those on the rise had previous prevalence rates below 5%, with the exception of Cross River state. No simple explanations can be offered for the variations observed in the sites, States and Zones. Possible factors that may have accounted for these differences might include the following; socio-cultural practices, access to information about modes of transmission of HIV, utilization of public health facilities, degree of urbanization, differences in the prevalence of other Sexually Transmitted Diseases and sexual behavioral practices and implemented interventions.

There was a change in state prevalence ranking, with Cross River State moving up to the first position (with 12.0%) shifting Benue and the FCT to the second and third positions respectively. Yobe State also moved up from its lowest position in 1999 to the 14th in 2003 while Osun assumed the lowest rank with a prevalence of 1.2%. The case of Cross River and some other States with rising prevalence is indicative of evolving epidemic by location.

The age-specific prevalence by zones presented a fairly uniform pattern of highest prevalence among the 20-24 year age bracket (3 zones) or the 25-29 group (two zones), with the exception of the South West Zone where highest age-specific prevalence was observed among women aged 40-49 years. In the 2001 survey, the young age bracket of 15 – 19 had the highest prevalence in three of the six zones. HIV prevalence in the younger age brackets is generally accepted as indicative of level of newer infections. In the 2001 survey, HIV prevalence among young people aged 15-24 years was 6% while in the current survey it was found to be 5.2%. This might suggest a modest decline in number of new infections in the country.

Further analysis of the data by level of education showed the highest prevalence to be among the survey subjects with only primary education (5.9%) and the secondary education group (5.4%). From the general population HIV/AIDS and Reproductive Health Survey (NARHS) of 2003 there are correlations between the HIV prevalence and risk taking, by level of education, and age. The NARHS report showed that younger women (15 – 19 and 20 – 24 years) reported higher rates of multiple non-marital sex partnership (12.9% and 11.5% respectively) compared to the 30 –39 year group (2.7%). This was further corroborated by the finding that the same younger women groups (15-19years and 20 – 24 years) reported higher rates of boy-friend sexual relationship (12.6%, 15% respectively) compared to the 30 – 39 group, reporting a rate of 3.0%. Women with only primary or secondary education had much higher rates of non-marital sex partnerships (6.6% and 14.6% respectively) than those with 'no formal' or Quranic education (1.6% respectively). The primary and secondary level groups also reported higher rates of boy-friend sexual relationship (7.2%, 16.2% respectively) compared to the 'no formal' or Quranic education group (1.7%, 1.6% respectively). Thus, younger ages, primary and secondary education levels, were associated with higher risk of HIV infection, by these surveys.

Lower HIV prevalence observed among the subjects with 'no formal' or Quranic education only (3.9%) is probably due to earlier marriage and shorter period between sexual debut and marriage associated with lower vulnerability.

Higher HIV prevalence was observed among women who had never delivered (5.7%) and those with one or two deliveries (5.8%) as against low prevalence for the three to four (3.8%) and above four deliveries (3.2%). This could also be indicative of higher prevalence of HIV infection for younger persons. Thus, there was an association between low parity, younger age and high prevalence.

When women who ever had blood transfusion were compared with those who never had, the result showed higher HIV prevalence among the former than the latter, consistently in the three northern zones only. This may imply a higher risk of HIV infection through blood transfusion in the North than in the South. Further studies may be needed to ascertain this. Comparison of prevalence by history of surgery did not show any consistent association between the zones.

The apparent decline in HIV prevalence should be a welcome development if the trend can be sustained. Data from subsequent surveys will be needed in order to confirm that there is an actual and sustained decline in the prevalence of HIV epidemic in the country. Many factors may have contributed to the decline in the 2003 national HIV prevalence. Among these could be the impact of intervention programmes all over the country. The strongest programmes are for awareness on HIV/AIDS and for promotion of condom use. For example, the national HIV/AIDS and Reproductive Health Survey (NARHS) conducted in 2003 showed that up to 88% of the public was aware of HIV/AIDS. The public was not only aware of the existence of HIV/AIDS, they were also able to attribute it to sexual intercourse (>80%). Condom use among youth and the general population has been shown to be on the increase.

Furthermore, some religious organizations have instituted a practice of mandatory testing among potential marital partners, although not in conformity with the national policy on HIV/AIDS. Where either partner is found to be positive, the couple is usually counselled on the implications of such marriage. This would reduce the likelihood of HIV-positive women being included in the survey. HIV-positive women and those who have developed AIDS are less likely to become pregnant and therefore less likely to constitute part of our numerator. Moreover, in some state public health facilities, mandatory HIV-testing is the routine and this practice may influence the pattern of attendance at such facilities. Further investigations are necessary to determine to what extent these practices may influence the decline in prevalence observed in 2003.

In recent times there is increase in the number of AIDS cases seen at health facilities. It should be noted that the cases seen currently are the result of infections that may have occurred five to ten years ago and not necessarily recent infections.

It was observed that rural sites had prevalences generally lower than urban sites across the zones, except the South East, which had the reverse. The results from this survey confirm an earlier assertion that the epidemic has reached every part of the country and therefore interventions should be extended beyond urban areas.

Over the years, various statistical models have been used to make estimates of the burden of HIV/AIDS. Understanding the magnitude and future trends of the HIV/ AIDS epidemic is a necessary pre-requisite for proper planning and mobilization of resources for its prevention and control. Since 1998, UNAIDS has been conducting global, regional and national HIV/AIDS estimates using the EPP. This exercise allows national AIDS Programmess to estimate the burden of disease in the country , evaluate the HIV/AIDS situation and plan better the need for services to mitigate the impact of the epidemic. Using this model, the number of people living with HIV/AIDS as at December 2003 was between 3.2 and 3.8 million. This is expected to rise over the next five years to 3.7 to 4.3million. As the number of HIV positive births and HIV/ AIDS cases in the general adult population increases, more persons would be in need of anti-retroviral treatment thereby putting serious strains on health resources. With increasing AIDS deaths there will be increase in the number of orphans, thus raising new dimensions in the social burden of HIV/AIDS in Nigeria.

It must however be noted that the estimates presented here are as good as the assumptions put into the computer programme. Comprehensive intervention programmes and greater political and financial commitment can reduce the number of new infections and AIDS-related deaths.

Chapter 6

6.0 Conclusions and Recommendations

6.1 Conclusions

The 2003 HIV sentinel survey in Nigeria was of high standard in design and implementation. The results showed a decrease in national prevalence from the 2001 survey, even though there were indications of explosive epidemics in specific locations. Marked variations in prevalence between locations remained the order. The 2003 point prevalence is not sufficient to conclude that the epidemic has stabilized or is on a downward trend and it would be dangerous to relax intervention programmes based on the current observation.

6.2 Recommendations

6.2.1 Policy

1. The current momentum of political commitment, resource mobilization and multisectoral approach need to be strengthened and sustained especially at the state level.
2. The current care and support activities especially the anti-retroviral programme need to be scaled-up as to meet the increasing demand of large number of estimated AIDS cases in the country.
3. The national rural HIV prevalence was not markedly different from the urban prevalence; intervention strategies should therefore equally target the rural communities.
4. Young people (age 15-24 years) still constitute a large proportion of those infected and the high HIV prevalence amongst women 15-24 years suggest a high incidence of infection still occurring. There is the need to focus intervention programmes towards this sub-population.
5. There is need to strengthen the implementation of the National Blood Safety programme, especially in the northern zones of the country.
6. The HIV prevalence amongst persons with primary and secondary levels of education suggests additional risk of exposure for the female student. There is a need to focus activities on girls within schools to empower them to protect themselves from HIV infection. HIV/AIDS education in schools should be adopted as a strategy to address this issue.

6.2.2 Programmatic

1. Sentinel sero-surveys among ANC clients should be continued every two years to enable the country assess the direction of the epidemic.

2. There is need to conduct a detailed population based HIV/AIDS Survey in the country, at least once every five years in order to calibrate / correlate the result of ANC survey.
3. Behavioural survey should be continued so as to generate data that can explain the various factors driving the epidemic in the various health zones in the country and inform intervention nation-wide.
4. Passive HIV surveillance in those sites with unusually high prevalence or a rise in trend is highly recommended, to monitor the evolving local epidemic closely.
5. Prevention of mother-to-child transmission programme needs to be accessible to all pregnant women especially in states and sites where HIV prevalence is shown to be high.
6. Voluntary Counseling and testing services need to be intensified in antenatal clinics; this will act as an entry into the PMTCT programme

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Appendix I. Year 2003 HIV/Syphilis survey schedule

S/no	Period	Description of Activities
1.	7th – 13th September 2003	Central Training Workshop for Fieldworkers
2.	14th – 20th September 2003	State level training
3.	6th – 10th October 2003	Distribution of consumables & Test kits
4.	13th October 2003	Commencement of blood collection
5.	13th – 20th October 2003	First Zonal Supervision
6.	20th – 26th October 2003	First Central Supervision
7.		First Survey Management Committee Meeting
8.	2nd – 7th November	Second Zonal Supervision
9.	9th – 15th November	Second Central Supervision
10.	17th November 2003	Second Survey Management Committee Meeting
11.	December 6-13, 2003	Third Zonal and Central Supervision
12.	December 14,2003-Jan 4, 2004	Retrieval of blood samples to quality control laboratory
13.	Jan 5-26, 2004	Quality Control excise
14.	Jan 14-31, 2004	Data Management
15.	Feb 6-13, 2004	Data Analysis
16.	Feb. 14-29, 2004	Report Writing
17.	March 17, 2003	Third Survey Management Committee Meeting
18.	March 18-19, 2004	Data Producers and Users Meeting
19.	March 30-April 2, 2004	Report Editing
20.	April 27th 2004	Ministerial Press Briefing
21.	May- June 2004	Dissemination workshops

Appendix II. 2003 HIV/Syphilis ANC Survey Data Collection Form

ZONE: _____ STATE: _____ SITE:_____

S/No. _____

Code Number: _____

Age: _____

Sex: _____

Marital Status:
Single = S
Married = M
Divorced/Widowed = D

Level of education:
1. None
2. Quranic only
3. Primary
4. Secondary
5. Higher

History of blood transfusion: (Y/N)_____
History of blood surgery: (Y/N)_____
Parity: _____

Appendix III. 2003 HIV/Syphilis ANC Survey Laboratory Data Collection Form

Code	Age	RPR	TPHA	Capillus	Genie II

Appendix IV. 2003 ANC Survey Supervisory Check Lists

First Supervisory Check List

i. Name of Supervisor…….
ii. State……
iii. Site (urban/rural/true rural)……
iv. Tel:……..
v. Name of Medical officer……...
vi. Name of site nurse (a)……..(b)……
vii. Name of site Lab. Scientists…….. …

Check to be carried out by the Team Leader of each site at every collection of sample day.

1. <u>At the Antenatal clinic</u>

1.1. Availability of survey material at site (see list in the appendix)	Adequate ☐	Not adequate ☐
1.2. Availability of forms for recording data of survey participants	Adequate ☐	Not adequate ☐
1.3. Completeness in filling the form	Satisfactory ☐	Not satisfactory ☐
1.4. Completeness of the register of survey participants	Satisfactory ☐	Not satisfactory ☐
1.5. Labeling of sample containers	Correct ☐	Not correct ☐
1.6. Labeling of container in agreement with filing of forms	Yes ☐	No ☐
1.7 Collection of blood at booking clinic or Laboratory: Is there any problem observe?	Yes ☐	No ☐
1.8. Any collaborating center that the site is using	Yes ☐	No ☐
1.9. Did you observe any problem with the blood Collection exercise	Yes ☐	No ☐

1.10. If yes state the nature of problem ----------

……

2.0. <u>At the Laboratory</u>

2.1. How regular is testing a specimen carried out in the lab	Regularly ☐	Some delay ☐

2.2. How is the serum being separated in the lab — Centrifuge ☐ Standing tube gravity ☐

2.3. Storage of samples in the lab — Satisfactory ☐ Not satisfactory ☐

2.4..Storage of reagents in the lab — Satisfactory ☐ Not satisfactory ☐

2.5. The boxes provided for transporting specimen from site — Yes ☐ No ☐

2.6. Did you observe any problem with any procedure in the lab — Yes ☐ No ☐

2.7. If yes – state the nature of the problem ----------

3.0. <u>SAPC Supervisory Visit</u>

3.1. Regularity of retrieval of samples from site — Regular ☐ Not Regular ☐

3.2. Regularity of testing retrieved samples from site — Regular ☐ Not Regular ☐

3.3. Storage of samples in the state lab — Satisfactory ☐ Not Satisfactory ☐

3.4. Storage of testing kits (reagents) in the site lab — Satisfactory ☐ Not satisfactory ☐

3.5. Recording of test results — Prompt ☐ Delay ☐

3.6. Arrangement of samples in the boxes — Satisfactory ☐ Not satisfactory ☐

3.7. Check the use of disposables

3.8. Check the level of team work at the site

3.9. General comment on the survey ----------

Second Supervisory Checklist

Name of site… ……..

ANC clinic

1. Booking dates…….
2. Patient load/day…….
3. ANC women recruited so far…….
4. Nurse: Does the nurse understand unlinked anonymous technique Yes/No
5. Level of understanding of protocol

	Poor	Fair	Good	Very Good
SAPC				
ANC Doctor				
Nurses				
Laboratory scientist				

6. Patient data forms adequately filled poorly filled

Laboratory

List of shortfalls:

a.
b.
c.
d.
e.
f.
g.
h.
i.
j.
k.
l.
m.

Problem performing the tests

RPR	Yes	No
Cappilus	Yes	No
TPHA	Yes	No
Genie II	Yes	No

Safety Procedures

1 Biohazard bags used for laboratory wastes	Yes/No
2 … containers for needles	Yes/No
3. General disposal of waste	adequate /not adequate
4. Are biosafety procedures recorded (e.g. wearing lab. Coats, gloves, etc.)	Yes/No

Samples

1. Are sera and blotted papers stored in the freezer component Yes/No
2. Does lab scientist pick samples adequately from other sites

3. Is SAPC providing adequate supervision to the lab. Procedure.

Total samples collected

Positive RPR Positive Capillus

List of state team
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.
19.
20.

Name of supervisor: _____

Appendix V. 2003 HIV/Syphilis Sentinel Survey sites

NORTH CENTRAL ZONE

STATE	SITE
BENUE	MAKURDI
	OTUKPO
	IHUGH
	OKPOGA (R)
FCT	GARKI
	GWAGWALADA
	NYANYA
	BWARI (R)
KOGI	LOKOJA
	ANKPA
	CHARI-MAI GUMERI BARRACKS (R)
KWARA	ILORIN
	OFFA
	PATEGI (R)
NASARAWA	LAFIA
	N/EGGON
	GARAKU (R)
NIGER	MINNA
	WUSHISHI
	PAIKO (R)
PLATEAU	JOS
	SHENDAM
	PANYAM (R)

TOTAL NUMBER OF SITES IN NORTH CENTRAL ZONE 23

NORTH EAST ZONE

STATE	SITE
ADAMAWA	YOLA MUBI HONG (R)
BAUCHI	BAUCHI AZARE CHIRA (R)
BORNO	MAIDUGURI BIU KONDUGA (R)
GOMBE	GOMBE KALTUNGO ZAMBUK (R)
TARABA	JALINGO ZING YAKOKO (R)
YOBE	DAMATURU GEIDAM BANBANGIDA (R)

TOTAL NUMBER OF SITES IN NORTH EAST ZONE 18

SOUTH SOUTH ZONE

STATE	SITE
AKWA IBOM	UYO
	ESSIEN - UDIM
	IKONO (R)
BAYELSA	YENOGOA
	SAGBAMA
	BRASS (R)
CROSS RIVER	CALABAR
	IKOM
	AKAMPA (R)
DELTA	WARRI
	AGBOR
	ETHIPE EAST (R)
EDO	BENIN CITY
	EKPOMA
	IRUEKPEN (R)
RIVERS	PORT HARCOURT
	BONNY
	BORI
	AHODA (R)
TOTAL NUMBER OF SITES IN SOUTH SOUTH ZONE 18	

SOUTH WEST ZONE

STATE	SITE
EKITI	ADO EKITI
	IKOLE EKITI
	IPAO-EKITI (R)
LAGOS	IKEJA
	LAGOS ISLAND
	SURULERE
	BADAGRY
	EPE
	AGBOWA (R)
OGUN	ABEOKUTA
	IJEBU - ODE
	AYETORE (R)
ONDO	AKURE
	ONDO
	IJU (R)
OSUN	OSOGBO
	ILESA
	IRAGBERI (R)
OYO	IBADAN
	SAKI
	OGBOMOSHO
	LAGELI (R)
TOTAL NUMBER OF SITES IN SOUTH WEST ZONE 19	

SOUTH EAST ZONE

STATE	SITE
ABIA	UMUAHIA
	ABA
	OHAFIA (R)
ANAMBRA	AWKA
	ONITSHA
	EKWULOBIA
	ENUGU-UKWU (R)
EBONYI	ABAKALIKI
	AFIKPO
	NDUBIA (R)
ENUGU	ENUGU (UNTH)
	ENUGU PARKLANE
	ACHI
	UDI (R)
IMO	OWERRI
	ORLU
	ABO MBAISE (R)

TOTAL NUMBER OF SITES IN SOUTH EAST ZONE 17

NORTH WEST ZONE

STATE	SITE
JIGAWA	DUTSE HADEJIA MALLAM MADORI (R)
KADUNA	KADUNA ZARIA KAFANCHAN KWOI (R)
KANO	KANO MMSH KANO AKTH RANO TUDUN WADA (R)
KATSINA	KATSINA FUNTUA JIBIA (R)
KEBBI	BIRNIN KEBBI ARGUNGU ALLERO (R)
SOKOTO	SOKOTO DOGON DAJI GWADABAWA (R)
ZAMFARA	GUSAU TALATA – MARAFA KOTORKOSHI (R)
TOTAL NUMBER OF SITES IN NORTH WEST ZONE 23	

Appendix VI. 2003 HIV/Syphilis ANC Survey Team

SURVEY MANAGEMENT COMMITTEE

Name	*Designation*	*Organization*
Dr.E.A. Abebe mni	Director Public Health/Chairman Survey Management Committee	Federal Ministry of Health
Prof. B. Osotimehin	Chairman	National Action Committee on AIDS
Dr.N.Sani-Gwarzo	Deputy Director (former National Coordinator NASCP)	Federal Ministry of Health
Dr. O. Salawu	CSG1 National Coordinator NASCP	Federal Ministry of Health
Dr. Shehu Sule	Director Planning & Research	Federal Ministry of Health
Dr. A. Nasidi	Director Special Project	Federal Ministry of Health
Dr. Michael Ekpo	Medical Director	Federal Psychiatric Hospital, Calabar
Clyton Davis	Managing Director	Society for Family Health
Pastor Zacch Akinyemi	GM Social Marketing	Society for Family Health
Dr. Oni Idigbe	Director	Nigeria Institute of Medical Research
Prof.Tekena Harry	Professor of Virology	University of Maiduguri Teaching Hospital
Dr.K. Sabitu	Consultant	Ahmadu Bello University Teaching Hospital
Augustine Ankomah	Consultant	Population services International (PSI)/Society for Family Health (SFH)
Dr. J. Mafeni	Country Representative	Policy Project
Dr.Txema Calleja	Consultant	WHO Geneva
Prof D.O. Olaleye	Professor of Virology	University College Hospital Ibadan
Mr.M. A. Momoh	Deputy Director Laboratory Services, MFCT	Ministry of Federal Capital Territory
Dr G.O.Okafor	Consultant Haematologist	University of Nigeria Teaching Hospital Enugu
Dr T.O.Odusote	Programme Officer HIV/AIDS	USAID
Dr Martins Overedjo	Consultant	Tripod Consultant Warri
Dr.R.A.Lawal	Consultant Psychiatrist	Psychiatrist Hospital Yaba, Lagos
Mr Idris Saliu	Dept. of Haematology	University College Hospital Ibadan
Dr.Hazel Dean		CDC-Atlanta
Dr Tony Eloike	Zonal Manger South East	HIV/AID South East Zonal Office, 3 King Way Road GRA Enugu
Dr. Ibrahim A. Umar	Zonal Manger North Central	Ministry of Health, Minna
Dr. C. Okeh	Zonal Manger South South	Ministry of Health, Port Harcourt
Dr. A. Okesola	Zonal Manger South West	Ministry of Health, Ibadan
Mr.S.A.Egbewunmi	consultant	No 69 Sholanke Street Akoka, Yaba Lagos
Elder U.A. Udofia	SAPC Akwa Ibom state	Ministry of Health, Uyo
Dr. M. Mukhtar	Surveillance Officer National AIDS/STD Control Programme	Secretary, Federal Ministry of Health

REPORT WRITING TEAM

NAME	*ORGANIZATION*
Prof. E. E Ekanem	Lagos University Teaching Hospital
Dr. Michael Ekpo	Federal Psychiatric Hospital Calabar
Dr.K. Sabitu	Ahmadu Bello University Teaching Hospital, Zaria
Dr. A. Ankoma	Society for Family Health
Dr. Alti Zwandor	Joint United Nations Programme on HIV/AIDS
Dr. Tony Eloike	NASCP zonal coordinator SE zone
Mr. M.A. Momoh	Ministry of Federal Capital Territory
Dr. Wole Fajemisi	Policy Project
Dr. M.Y. Mukhtar	Federal Ministry of Health
Dr. Jesus M. Txema Calleja	WHO Geneva
Hazel Dean	CDC Atlanta
Mrs. Perpetua Agbi	Federal Ministry of Health
Mr. Gabriel O. Ikwulono	Federal Ministry of Health
Mr Alex Onwuchekwa	Federal Ministry of Health
Mr Akinbiyi.O.A	Federal Ministry of Health
Njoku Lawrence N.	Federal Ministry of Health

QUALITY CONTROL

Name	*Designation*	*Organization*
Dr. N. Sani-Gwarzo	Deputy Director	Federal Ministry of Health
Prof.Tekena Harry	Virologist	University of Maiduguri Teaching Hospital, Maiduguri
Mr. M. Momoh	Medical Laboratory Scientist	Dept. of Laboratory Services Ministry of Federal Capital Territory
Mr. Idris Saliu	Haematologist	Dept. of Haematology University College Hospital, Ibadan
Mr.S.A.Egbewunmi	Consultant	
Mr. Adamu Baba	Chief Medical Laboratory Scientist	General Hospital, Minna
Dr M.Mukhtar	Senior Medical Officer	Federal Ministry of Health
Mr. Gabriel O. Ikwulono	Laboratory Scientist	Federal Ministry of Health
Mr. Gideon Tokkit	Medical Laboratory Scientist	Specialist Hospital Gwagwalada
Ahamed . A. Musa	Laboratory Scientist	Maiduguri General Hospital
Mrs Mogagi. N .O	Chief Medical Laboratory Scientist	University of Lagos Teaching Hospital, Ikeja
Mr Abdulrazak . H	Laboratory Scientist Kano State	Murtala Muhammed specialist Hospital Kano.
Alkime Alh Dauda	Medical Laboratory Scientist	Damaturu General Hospital, Yobe State
Mr Adeyemi Olufemi	Medical Laboratory Scientist	Utokpo General Hospital ,Benue State
Mr. N.A. Fasina	Virologist	Dept. of Virology ,University College Hospital, Ibadan

Kyle Bond	Laboratory Scientist	Div. of AIDS, STIs & TB US Centre for Disease Control & Prevention Atlanta
Kim Lewis	Laboratory Scientist	US Centre for Disease Control & Prevention Atlanta
Mrs Agnes Ina	Medical Laboratory Scientist	Wuse General Hospital, Abuja
Mr Adejumo Akeem	Medical laboratory Scientist	General Hospital, Wuse, Abuja
Mrs. Dupe Anifowuse	Haematologist	Dept. of Haematology, University College Hospital, Ibadan
Mr Auwalu Usman	Medical laboratory Scientist	National Hospital, Abuja
Mr M. Maude	Medical laboratory Scientist	National Hospital, Abuja
Mrs. Perpetua O. Agbi	Epidemiologist	Federal Ministry of Health
Mr Alex Onwuchekwa	Scientific Officer	Federal Ministry of Health
Mr Akinbiyi.O.A	Environmental Health Officer	Federal Ministry of Health
Njoku Lawrence N.	Microbiologist	Federal Ministry of Health

DATA MANAGEMENT

Prof. E. E. Ekanem	Consultant Epidemiologist/Biostatician	Dept. of Community Medicine, College of Medicine, University of Lagos
Dr. N. Sani-Gwarzo	Deputy Director	Federal Ministry of Health
Dr M.Y. Mukhtar	Senior Medical Officer	Federal Ministry of Health
Kimberley Mash	Epidemiologist	US Centre for Disease Control & Prevention
Mr. Akpan Raphel	Data Analyst	CDC-GAP Nigeria
Mrs Perpetua O. Agbi	Epidemiologist	Federal Ministry of Health
Mr. Gabriel O. Ikwulono	Laboratory Scientist	Federal Ministry of Health
Mr Alex Onwuchekwa	Scientific Officer	Federal Ministry of Health
Mr Akinbiyi.O.A.	Environmental Officer	Federal Ministry of Health
Njoku Lawrence N.	Microbiologist	Federal Ministry of Health
Ata-Ekong J. A.	Senior Clerical Officer	Federal Ministry of Health
Reginald Okpulor	Microbiologist	Federal Ministry of Health
Ms. Chigozie Alozie	Scientific Officer	Federal Ministry of Health
Ms. Anukam Philomena	Environmental Health Officer	Federal Ministry of Health
Salihu M.Yusuf	Clerical Assistant	Federal Ministry of Health
Ndioho Ibiangake	Scientific Officer	Federal Ministry of Health
Dr. Niyi Ogundirian	NPO	WHO, Nigeria

CENTRAL SUPERVISORS

Dr. E.A. Abebe *mni*	Federal Ministry of Health
Dr. N. Sani-Gwarzo	Federal Ministry of Health
Prof. T. Harry	University of Maiduguri Teaching Hospital
Prof. E. E. Ekanem	Dept. of community medicine, Lagos University Teaching Hospital
Mr. M. A. Momoh	Dept. of Health Services MFCT, Abuja
Dr. G. Okafor	Dept. of Immunology University of Nigeria Teaching Hospital, Enugu
Dr. M. Y. Mukhtar	Federal Ministry of Health
Mr. S. A. Egbwwunmi	69 Sholanke Street, Akoka Yaba, Lagos
Dr. Toyin Jolayemi	National Project Team (NPT)
Dr. M. Ekpo	Federal Psychiatric Hospital Calabar
Mr. Idris Saliu	Dept. of Haematology University College Hospital Ibadan
Dr. Joseph Nnorom	CDC GAP-Nigeria
Kim Lewis	CDC Atlanta
Dr. Hazel Dean	CDC Atlanta
Kyle Bond	CDC Atlanta
Kim Marsh	CDC Atlanta
Txema J.M. Calleja	WHO Geneva
Dr. K. Sabitu	Dept. of community medicine, Ahmad Bello University Teaching Hospital, Zaria
Dr. Niyi Ogundirian	WHO Nigeria

ZONAL SUPERVISORS

Dr Sani Gwarzo	Federal Ministry of Health
Dr .I . Dalhatu	State House Clinic, Abuja
Dr. T. Odusote	United State Agency for International Development
Pastor Zacch Akinyemi	Society for Family Health
Dr M. Y. Mukhtar	Federal Ministry of Health
Dr. Tony Eloike	Ministry of Health ,Enugu
Dr Ibrahim A. Umar	Ministry of Health Minna
Elder A. U. Udofia	Ministry of Health ,Uyo
Dr A. Okesola	Ministry of Health, Ibadan
Mr. Gabriel O. Ikwulono	Federal Ministry of Health
Mrs Perpetua O. Agbi	Federal Ministry of Health
Mr Alex Onwuchekwa	Federal Ministry of Health
Mr Akinbiyi.O.A.	Federal Ministry of Health
Njoku Lawrence N.	Federal Ministry of Health
Dr. C. Okeh	Ministry of Health, Port Harcourt
Dr. Pat Matemilola	Network of People Living with HIV/AIDS

STATE FIELDWORKERS

ADAMAWA

NAME	DESIGNATION	SITE
Kwatri T. Futules	State AIDS Programme Coordinator	Federal Medical Centre, Yola
Mrs. Julie Miadala	Cent. Lab. Scientist	Federal Medical Centre, Yola
Dr. Haeuna Aliyu	Medical officer	Federal Medical Centre, Yola
Mrs. Confort Fada	Laboratory Technician	Federal Medical Centre, Yola
Mrs. Biatrice B.F.Tangwami	Nurse	Federal Medical Centre, Yola
Mrs.Lucy D. Ishaku	Nurse	Federal Medical Centre, Yola
Miss. Lensu Audu	Laboratory Scientist	Federal Medical Centre, Yola
Dr. Pius Tizhe	Medical officer	General Hospital Mubi
Alfred Vandu	Laboratory Scientist	General Hospital Mubi
Fadimatu Thaddaws	Nurse	Gen. Hospital Mubi
Rahimatu Yuguda	Nurse	General Hospital Mubi
De E. K. Sini	Medical officer	Cottage Hospital Hong
Ishaya Gaya	Laboratory Technician	Cottage Hospital Hong

BAUCHI

NAME	DESIGNATION	SITE
Danladi Abdu M.	State AIDS programme Coordinator	Ministry of Health, Bauchi
Malam Mahhmood Yelwa	State Laboratory Scientist	Ministry of Health, Bauchi, Bauchi State
Dr. Waziri Sule	Medical officer	Specialist Hospital Bauchi
Dr.Agbese O. George	Medical officer	Federal Medical Centre Azure
Titus Dauda	Laboratory Technician	Specialist Hosp. Bauchi
Ali. Gwaram.	Laboratory Scientist	Specialist Hosp.Bauchi
Dr. Mai-Unsuwa	Laboratory Scientist	Gen. Hosp. Shira/Yana
Dr. Karos Philip	Medical officer	Shira Yana
Onuc S. P. Andrew	Laboratory Technician	FMC Azare
Kemi Peters	Nurse	FMC Azare
Hanna Apeh	Nurse	Specialist Hosp. Bauchi
Mrs.Martina J. Ogun	Nurse	Specialist Hosp. Bauchi
Laraba Ayuba Ryaghan	Nurse	Urban Maternity Azare

ZAMFARA

Mustafa Marafa	State AIDS Programme Coordinator	Zamfara State
Bala Isa	Laboratory Scientist	Zamfara State
Sunday Magi	Laboratory Scientist	Zamfara State
Dr. Ayeidun T.	Medical officer	Federal Medical Centre Gusau
Ladi	Nurse	Federal Medical Centre Gusau
Baucisu	Nurse	Federal Medical Centre Gusau
Rabe Maunman	Laboratory Technician	FMC Gusau
Ibrahim M.	Head K .I. C	Primary Health Care
Laraba M.	Nurse	
Saliu	Laboratory Technician	General Hospital,Tanga

OYO

Dr. Okesola A. O.	State AIDS Programme Coordinator	Oyo State
Dr. N.O. Ladoye	Medical officer	
Dr. A. O.Adesanya	Medical officer	Children's Specialist Hospital,

		Ibadan
Dr. F. O. Oni	Medical officer	
Mrs. O.O.Taiwo	Medical Laboratory Scientist	
Mrs. F.I.Oyedirean	Medical Laboratory Scientist	
Mr. E.O.Majaor	Medical Laboratory Scientist	
Mr. A.K. Borge Da siliva	Medical Laboratory Scientist	
Mr. A.A. Adeleke	Medical Laboratory Scientist	
Mrs. B.B. Tomari	Nurse	
Mrs. V.K.Oyediji	Nurse	
Mrs. D.T. Onifado	Nurse	
M.O. Adebayo	Nurse	
Mrs. R.A. Alade	Nurse	
Mrs. D. Ayanlola	Nurse	

JIGAWA

Ibrahim Almajiri	State AIDS Programme Coordinator	Jigawa State
Dr. Kabir Ibrahim	Medical officer	URBAN
Amina Manu	Nurse	Dutse
Fatima Abulcadir	Nurse	Dutse
Mustafar Bello	Laboratory Scientist	Dutse
Dr. Haruna Usman	Medical officer	Hadejia
Azuma A. Saleh	Nurse	Hadejia
Unma Imam	Nurse	Hadejia
Ismaila Ibrahim	Laboratory Scientist	Hadejia
Kabiru Abubakar	Head of rural Site	Malammadri
Harira Yakubu	Nurse	Rural
Ojo Oyekunle	Laboratory Scientist	Dutse
Miss. Akan-Imo Ukpe	Laboratory Scientist	Dutse

TARABA

Dr. Madaki M. M	State AIDS Programme Coordinator	Taraba State
Paul R. Yunana	Laboratory Scientist	Specialist Hospital Jalingo
Dr. Garba Danjuma	Medical officer	Specialist Hospital Jalingo
Mr. Tanko Urise	Laboratory Scientist	Specialist Hospital Jalingo
Mrs. Elizabeth Joshua	Laboratory Scientist	Specialist Hospital Jalingo
Dr. Abe N. Agbu	Medical officer	General Hospital Zing
Mrs. Bridget L.Audu	Nurse	Specialist Hospital Jalingo
Alh. Isa A. Sambo	Nurse	Specialist Hospital Jalingo
Mr. Nnadi Godwin O.	Laboratory Scientist	General Hospital Zing
Mrs. Esther Jackson	Nurse	General Hospital Zing
Abigail Obidas	Nurse	General Hospital Zing
Mrs. Lilian Clement	Nurse	Rural Site
Mr. Babashonyu Boniface	Laboratory Technician	Rural Site

KANO

Dr. Bashir Abba	State AIDS Programme Coordinator	Murtala Muhammed Specialist Hospital
Dr. Mukhtar Hamsza	Medical officer	Murtala Muhammed Specialist Hospital
Abdulrazar H. Yahya	Laboratory Scientist	Murtala Muhammed Specialist Hospital
Sani Abdu Fagge	Laboratory Scientist	Murtala Muhammed Specialist Hospital

Aishatu Sabo	Nurse	Murtala Muhammed Specialist Hospital
Hannatu Abdullahi	Nurse	Murtala Muhammed Specialist Hospital
Dr. Saidu Muhammad	Medical officer	Rano Gen. Hospital
Abubakar Ahmad	Nurse/DeputySAPC	Murtala Muhammed Specialist Hospital
Halima Dayyabu	Nurse	Rano Gen. Hospital
Auwalu Rivuwai	Laboratory Technician	Rano Gen. Hospital
Dr. Idris S.Abubakar	Medical officer	Aminu Kano Teaching Hospital
Suwaiba M.Sani	Nurse	Aminu Kano Teaching Hospital
Auwalu Idris	Nurse	Aminu Kano Teaching Hospital
Nasiru M.Sadiq	Laboratory Scientist	Aminu Kano Teaching Hospital
Dr. Onyia Charles	Medical officer	Tudun-Wada Comprehensive Hospital
Mariya Musa	Nurse	Tudun-Wada Comprehensive Hospital
Suleiman Muhammad	Laboratory Technician	Tudun-Wada Comprehensive Hospital

KOGI

Hajiya Hajiya Ajana	State AIDS Programme Coordinator	State Ministry of Health, Lokoja
Dr. Fache K. A.	Medical officer	Federal Medical Centre, Lokoja
Mrs. Itodo Grace	Laboratory Scientist	Federal Medical Centre, Lokoja
Mr. Asalaka Moses	Laboratory Scientist	Federal Medical Centre, Lokoja
Mr. Teidi Abdulraham	Laboratory Scientist	Federal Medical Centre, Lokoja
Mrs. R.R.Wambebe	Nurse	Federal Medical Centre, Lokoja
Mrs. M.O.Abdulsalam	Nurse	Federal Medical Centre, Lokoja
Dr. Ebiloma Y.A.	Medical Officer	General Hospital, Ankpa
Chirstian Amodu	Site Laboratory Scientist	General Hospital, Ankpa
Mrs. Sarah Afawodi	Nurse	General Hospital, Ankpa
Mrs. Mary Attah	Nurse	General Hospital, Ankpa
Dr. Akune Jude	Medical officer	True Rural Site
Mrs. Osahon Janet	Laboratory Scientist	True Rural Site

ANAMBRA

Dr.J.Ijezie	State AIDS Programme Coordinator	State Ministry of Health, Awka
Mrs. G.O.Emelife	Central Laboratory Scientist	General Hospital, Awka
Mrs. J.Ezeagba	Laboratory Scientist	General Hospital Awka
Dr. Uyanwune	Medical officer	General Hospital Awka
Mrs. Rose Adirika	Laboratory Scientist	General Hospital Awka
Mrs. Okakpu	Nurse	General Hospital Awka
Dr. Anazodo	Medical officer	General Hospital, Onitsha
Mr. R.A Mgbakogu	Laboratory Scientist	General Hospital, Onitsha
Mrs. Iwuanoge	Nurse	General Hospital, Onitsha
Mr. Udoka Chukwu	Nurse	General Hospital, Onitsha
Dr. Mrs. Onyekonwu	Medical officer	General Hospital, Ekwulobia
Mr. Sam E.Orji	Laboratory Scientist	General Hospital, Ekwulobia
Mrs. A.Ilonzo	Medical officer	Rural Site Enugwu Ukwu
Mr. Eugene Okpala	Laboratory Scientist	Rural Site Enugwu Ukwu
Mrs. R.O.Nnadi	Nurse	Rural Site Enugwu Ukwu

EKITI

Mrs. Longe S.O.	State AIDS Programme Coordinator	State Ministry of Health, Ado- Ekiti
Mrs. E.A. Mogaji	Laboratory Scientist	State Specialist Hospital Ado-Ekiti
Dr. Adetoye O.R	Medical officer	State Specialist Hospital Ado-Ekiti
Mr. Abiodun Ojo	Laboratory Scientist	State Specialist Hospital Ado-Ekiti
Mrs. Adebowale	Nurse	State Specialist Hospital Ado-Ekiti
Mrs. Ibukun	Nurse	State Specialist Hospital Ado-Ekiti
Dr. D.K.Aina	Medical officer	State Specialist Hospital Ikole
Mr. Gbenga Olabiyi	Laboratory Scientist	State Specialist Hospital Ikole
Mrs. Oluwasola Tunrinde	Nurse	Health Centre Ipao Ekiti

ENUGU

Dr. H.O.Agbo	State AIDS Programme Coordinator	State Ministry of Health, Enugu
Dr. C.O.Umeayo	Medical officer	Park Lane Specialist Hospital, Enugu
Mr. E.E.Osum	State Chief Lab. Scientist	Park Lane Specialist Hospital, Enugu
Mr. C.E. Obiora	Laboratory Scientist	Park Lane Specialist Hospital, Enugu
Mr. C.G.Egbe	Assistance Lab. Scientist	Park Lane Specialist Hospital, Enugu
Mrs. C.N. Akpa	Staff Nurse	Park Lane Specialist Hospital, Enugu
Mrs. F.N.Okite	Staff Nurse	Park Lane Specialist Hospital, Enugu
Dr. N.M.Uzor	Medical officer	General Hospital, Nsukka
Emma S.Ngwu	Laboratory Scientist	General Hospital, Nsukka
Mrs. Augustine Nebedi	Nurse	General Hospital, Nsukka
Mrs. Anthonia Ugwu	Nurse	General Hospital, Nsukka
Dr. P.O.Ossuji	Medical officer	Joint Hospital, Achi
Rev. Sr. Gladus Ubaka	Laboratory Technician	Joint Hospital, Achi
Rev. Sr. Callista Iwuji	Staff Nurse	Joint Hospital, Achi
Mrs. Comfort Obiajulu	Staff Nurse	Joint Hospital, Achi
Mrs. Rosaline Eze	Matron	True Rural Site
Miss. Judith Ibekwe	Laboratory Scientist	True Rural Site

OGUN

Mrs.B.A. Gbadamosi	State AIDS Programme Coordinator	State Ministry of Health, Abeokuta
Mr. J.A. Adedeji	Laboratory Scientist	State Hospital, Abeokuta
Dr. A.O. Eweje	Medical officer	State Hospital Ijaiye, Abeokuta
Dr. A.E. Ayinde	Medical officer	State Hospital, Ijebu-Ode
Mrs. O.O.Oladeji	Nurse	State Hospital, Abeokuta
Mrs. P.A.Ogunnowo	Nurse	State Hospital, Ijebu-Ode
Mrs. F.O.Oluyinka	Nurse	Oba Aemola Maternity Hospital, Abeokuta
Mrs. B.T.Odebiyi	Nurse	Family Health Centre, Ayetero
Akinlalu R.T	Laboratory Scientist	General Hosp. Ayetero
Akintunde C.O	Laboratory Scientist	General Hosp. Abeokuta
Mrs. M.A.Sewoniku	Nurse	State Hospital Ijebu-Ode
Mrs.I.A.Rahim	Asst. Coordinator HIV/AIDS	Mini. of Health Abeokuta

Mrs.G.O.Adeniyi	M&E Officer	Min. of Health Abeokute
Mr. P.Aba	Laboratory Scientist	State Hospital Ijebu-Ode

RIVERS STATE

Dr. C. Okeh	State AIDS Programme Coordinator	State Ministry of Health, Port Harcourt
Dr. D.S.Briggs	Medical officer	Port Harcourt Site BMH
Mr. S.Jaja	Laboratory Scientist	Port Harcourt Site BMH
Mr. Godwin Nebe	Laboratory Scientist	Port Harcourt Site BMH
Mrs. Kalio	Nurse	Port Harcourt Site BMH
Mrs. Justina Amadi	Nurse	Port Harcourt Site BMH
Dr. O.A.Chu	Medical officer	Bonny Site
Mr. Fynefsce Ezigbo	Laboratory Scientist	Bonny Site
Mrs. C.V.Brown	Nurse	Bonny Site
Mrs. S.Ate	Nurse	Bonny Site
Dr. L.C.Kua	Nurse	Bori Site
Mr.Barineka	Laboratory Scientist	Bori Site
Mrs. Walker	Nurse	Bori Site
Mrs. Opurum	Nurse	Bori Site
Dr. Peter Ajala	Medical officer	Rural Site Ihuowo
Mr. Friday Moses	Laboratory Scientist	Rural Site Ihuowo
Miss. Peace Ejila	Nurse	Rural Site Ihuowo

ONDO STATE

Dr. A.A. Adegbulu	State AIDS Programme Coordinator	State Ministry of Health, Akure
Mr.Kola Oloye	Laboratory Scientist	State Specialist Hospital Akure
Mr.Oke Moses	Laboratory Scientist	State Specialist Hospital Akure
Mrs AbimbolAkinsowon	Nurse	State Specialist Hospital Akure
Mrs. Olaiya Bukola	Nurse	State Specialist Hospital Akure
Dr.O.O.Akinsete	Medical officer	State Specialist Hospital Akure
Dr. P.O.Osho	Medical officer	State Specialist Hosp Ondo
Mr. A.Abifarin	Laboratory Scientist	State Specialist Hospital Ondo
Mrs. J.O.Akinrinbola	Chief Nursing Officer	State Specialist Hospital Ondo
Mr. O.Oladenika	Nurse	State Specialist Hospital Ondo
Mrs. B.O.Sule	Nurse	Basic Health Centre IJU
Mrs.O.W.Osore	Nurse	Basic Health Centre IJU

LAGOS

Dr. Lookman O Alli	State AIDS Programme Coordinator	Lagos State Ministry of Health.
Mrs. N.O.Mogaji	Laboratory Scientist	Lagos State University Teaching Hospital, Ikeja
Dr. O.G.Aihonsu	Medical officer	Lagos State University Teaching Hospital, Ikeja
Mrs. M.B.Oloko	Nurse	Lagos State University Teaching Hospital, Ikeja
Mrs. Olayinka Aregbe	Nurse	Lagos State University Teaching Hospital, Ikeja
Mr. Laner Jenrola	Laboratory Scientist	Lagos State University Teaching Hospital, Ikeja

Dr.A.A. Akinyemi	Medical officer	General Hospital Surulere Lagos.
Mrs.O.N.Aiyepe	Nurse	General Hospital Surulere Lagos.
Mrs. V.O.Iwobi	Nurse	General Hospital Surulere Lagos.
Mrs.A.K.O.Farri	Laboratory Scientist	General Hospital Surulere Lagos.
Dr. B.E.Umeh	Medical officer	Lagos Island Maternity Hospital Lagos
Mrs. A.O.Ojo	Nurse	Lagos Island Maternity Hospital Lagos
Mrs. A.F.Sogunro	Nurse	Lagos Island Maternity Hospital Lagos
Mr. Okunnu B.	Laboratory Scientist	Lagos Island Maternity Hospital Lagos
Dr.E.G.Ogunleye	Medical officer	General Hospital, Epe
Mrs. W.O.Orekoya	Nurse	General Hospital, Epe
Mrs. F.O.Dawudu	Nurse	General Hospital, Epe
Mr.S.O. Aturaka	Laboratory Scientist	General Hospital, Epe
Mrs. F.M. Oyefisayo	Nurse	General Hospital Agbowa
Mr. G.O.Faponmile	Laboratory Scientist	General Hospital Agbowa
Dr. B.A.Akinlade	Medical officer	General Hospital Badagry
Mrs. S.A. Shutti Bello	Nurse	General Hospital Badagry
Mrs. G.B.Adelusi	Nurse	General Hospital Badagry
Mrs. Yomi Newton	Laboratory Scientist	General Hospital Badagry

OSUN

Pastor I.O.Oguntunde	State AIDS Programme Coordinator	State Ministry of Health, Osogbo
Mrs.A.A.Akinbolade	State Medical Lab. Scientist	State Laboratory (Central Blood Bank)
Mrs.I.A.Isamot	Laboratory Scientist	State Laboratory (Central Blood Bank
Dr. E.O.Ajewole	Medical officer	General Hospital, Ilesa
Mrs. R.O.Abe	Nurse	General Hospital, Ilesa
Mrs. Olaniyi	Nurse	General Hospital, Ilesa
Mr.J.A.Afolabi	Laboratory Scientist	General Hospital, Ilesa
Dr. O.A.Adetuye	Medical officer	General Hospital Osogbo
Mrs. E.O.Adeyeye	Nurse	General Hospital Osogbo
Mrs. F.O.Odebiyi	Nurse	General Hospital Osogbo
Mr.L.O.Oladogun	Laboratory Scientist	General Hospital Osogbo
Mr.T.O.Orisatova	Nurse	Iragberi (Rural)
Mrs.F.O.Oyewale	Nurse	Iragberi (Rural)

DELTA

Dr. Tobi Majoroh	DPHC/DC	Ministry of Health Asaba
Mrs. B.O.Irobo	State AIDS Programme Coordinator	Ministry of Health Asaba
Dr. L.O.Oyeye	ANC Doctor	Central Hospital Warri
Dr. J.Chiazor	Principal Medical Officer	Central Hospital Agbor
MrsR.N.Ohiomo	Chief Nursing Officer	Central Hospital Agbor
Mrs.G.C.Ogode	Chief Nursing Officer	Central Hospital Agbor
Miss. Gloria Akpati	Laboratory Scientist	Central Hospital Warri
Mr. Clement Isibor	Laboratory Scientist	Central Hospital Agbor
Miss. B.Idede	Staff Nurse/Midwife	Okpara Inland PHCC
Miss. Monica Ogun	Staff Nurse/ Midwife	Okpara Inland PHCC
Mrs.V.Ugiomoh	Chief Nursing Officer	Central Hospital Warri
Mr. Emma Ogbor	Laboratory Scientist	Central Hospital Warri
T.A.Gbinotse	Chief Nursing Officer	Central Hospital Warri

EBONYI

Dr. G.O.Onwe	State AIDS programme Coordinator	Ebonyi State
Mr. Jude Ugwu	Laboratory Scientist	Ebonyi State University Teaching Hospital, Abakaliki
Mr. Ugama Aloysius	Laboratory Scientist	Ebonyi State University Teaching Hospital, Abakaliki
Dr. Ike Dimegjesi	Medical officer	Ebonyi State University Teaching Hospital, Abakaliki
Mrs. Eke Patience	ANC Nurse	
Mrs. Vegina Ugwu	ANC Nurse	
Mrs. Ugwu Emilia	Laboratory Technician	
Dr. Ukanwoke	Medical officer	
Theresa Akpelu	ANC Nurse	
Okogori Salomey	ANC Nurse	
Benedict Ugwu	Laboratory Technician	
Nwokocha Agnes	Nurse	

BENUE

Mrs. Grace A.Wende	State AIDS Programme Coordinator	State Ministry of Health, Makurdi
Mr. Audu Fred Anebi	Laboratory Scientist	Federal Medical Centre, Makurdi
Dr. J.U.Kwaghtsule	PMO 1/C	FSP Clinic
Mr. P.K.Tsav Chimbiu	MLT	FSP Clinic
Mrs. Regina Ejale	Nurse	FSP/MCH Clinic
Mrs. Bridget Ahungwa	Nurse	FSP/MCH Clinic
Mrs. Ada Eronini	Laboratory Scientist	Federal Medical Centre, Markurdi
Dr. P.A.Okoh	Medical officer	General Hospital Otukpo
Mr. A.O.Adeyemo	MLT	General Hospital Otukpo
Mrs. G.Obekpa	Nurse	General Hospital Otukpo
Mr. Godwin Adagache	Nurse	General Hospital Otukpo
Dr. S.O.Ochenjele	Nurse	General Hospital, Okpoga
Mr. Leonard Udeh	Med. Laboratory Scientist	General Hospital, Okpoga
Dr. Sunday Elikwu	Medical officer	St.Thomas Hospital Ihugh
Mrs. Christiana Ewaoche	Nurse	St.Thomas Hospital Ihugh
Mr. Godwin Udende	Laboratory Technician	St.Thomas Hospital Ihugh

YOBE

Fati Abba	State AIDS Programme Coordinator	Ministry of Health, Damaturu
Alikinle A. Daudu	Laboratory Scientist	Damaturu General Hospital
Mohammed A.Abdullahi	Laboratory Scientist	Damaturu General, Hospital
Dr. Ibrahimn Kurumi	Medical officer	Damaturu General, Hospital
Mairo Abba Mohammed	Laboratory Scientist	Damaturu General, Hospital
Fati Madaki	Nurse	Damaturu General, Hospital
Hamsatu Molid Jakusko	Nurse	Damaturu General, Hospital
Dr. Muna M.B.	Medical officer	General Hospital, Potiskum
Bukar M. Burah	Laboratory Scientist	General Hospital, Potiskum
Laraba Tzra	Nurse	General Hospital, Potiskum
Hajara Yagana	Nurse	General Hospital, Potiskum
Dr. Sani Abdulrahim	Medical officer	Gediam General Hospital
Cletus Igbarumah	Laboratory Scientist	Gediam General Hospital

Ahmed Shettima	Nurse	Gediam General Hospital
Fati M .Bukar	Nurse	Gediam General Hospital
Bulama Bitiri	Nurse	True Rural Site
Yerima A. Sabo	Laboratory Technician	True Rural Site

BORNO

Hajja Aishatu Mohid Goni Arfo	State AIDS Programme Coordinator	State Ministry of Health, Maiduguri
Ahmed Alhaji Musa	Laboratory Scientist	
Dr. Kidah I.A.	Medical officer	
Dr. Dikka Ndahi	Laboratory Technician	
Nana Alhaji Audu	Laboratory Scientist	
Goni Ali	Laboratory Technician	
Mamuda B.	Laboratory Scientist	
Abubahar Musa	Laboratory Scientist	
Zamdai Ndas	Nurse	
Halima (Hajja)	Nurse	
Yagana Abba	Nurse	
Bintu Musa	Nurse	
Hauwa Aryhel	Nurse	

KWARA

Dr. J.A.Oyeniyi	State AIDS Programme Coordinator	State Ministry of Health, Ilorin
Me J.F. Olarewaju	Laboratory Scientist	Children's Specialist Hospital, Ilorin
Mr. Lasisi Funsoho	Laboratory Scientist	Children's Specialist Hospital, Ilorin
Dr. S.O.Abidoye	Medical officer	Specialist Hospital Ilorin.
Mr. A.T.Salman	Laboratory Scientist	Specialist Hospital Ilorin
Mrs. A.I. Kareem	Nurse	Specialist Hospital Ilorin
Mrs. K.U. Olarenwaju	Nurse	Specialist Hospital Ilorin
Mr. Jiyah Yahaya	Laboratory Scientist	Patigi General Hospital
Mrs. E.A. Gana	Nurse	Patigi General Hospital
Dr. W.A.Ajetunmobi	Medical officer	General Hospital Offa
Mr.L.D.Abdulrahaman	Nurse	General Hospital Offa
Mrs. M.O. Olanipakun	Nurse	General Hospital Offa
Mrs. W.A. Keji	Nurse	General Hospital Offa
Mrs.Sarat Funke Jatto	Nurse	Collaborating Centre Abogunnugun Clinic Offa.
Mrs. M.S. Bakare	Laboratory Scientist	Collaborating Centre Abogunnugun Clinic Offa.

KADUNA

Dr. M.D. Anthony	State AIDS Programme Coordinator	State Ministry of Health, Kaduna
Dr.J.Adze	Medical officer	General Hospital, Kaduna
Dr. P.T. Everton	Medical officer	General Hospital Kafanchran
Mr. J.Habakkuk	Laboratory Scientist	General Hospital, Kaduna
Dr. Saeed E.M.	Medical officer	General Hospital, Zaria
Mary A.O.Ako	Laboratory Scientist	General Hospital, Kaduna
Mrs. Safiya Magaji	Nurse	General Hospital, Zaria
Amina U.F. Ladan	Nurse	General Hospital, Zaria
Esther Ibrahim	Nurse	General Hospital, Kafanchan
Agnes Anga	Nurse	General Hospital, Kafanchan
Banda Jim M	Laboratory Scientist	General Hospital, Kafanchan

Ruth Audu	Nurse	General Hospital, Kaduna
Tabitha Isiyaku	Nurse	General Hospital, Kaduna
Chima E.A.	Laboratory Scientist	General Hospital, Kaduna
Idris M.Chori	Laboratory Scientist	General Hospital, Zaria
Dr. G. J. Gajere	Medical officer	True Rural site, Kwoi
Phoebe K.Sialor	Nurse	TRUE RURAL SITE, KWOI

FEDERAL CAPITAL TERRITORY

Dr. Tali G Butkap	State AIDS Programme Coordinator	FCT
Mr. Gideon Tokkit	Laboratory Scientist	Gwagwalada Specialist Hospital
Mrs. Ina Agnes E.O.	Laboratory Scientist	Wuse General Hospital
Dr. Freeman Miri	Medical officer	General Hospital, Nyanya
Mr. Imadiyi S.Osagie	Laboratory Scientist	General Hospital, Nyanya
Mrs. Habiba Audu	Nurse	General Hospital, Nyanya
Mrs. Blessing J.K.Babe	Nurse	General Hospital, Nyanya
Dr. Daniel Ali	Medical officer	General Hospital ,Wuse
Mr. Adejumo A.Akeem	Laboratory Scientist	General Hospital ,Wuse
Lami kaikeh (Mrs.)	Nurse	General Hospital ,Wuse
Azhimicelo Juliana (Mrs)	Nurse	General Hospital ,Wuse
Dr. F ..M.Bunza	Medical officer	Gwagwalada Specialist Hospital
Mrs. Murna A. Binan	Laboratory Scientist	Gwagwalada Specialist Hospital
Mrs.F. Aman	Laboratory Scientist	Gwagwalada Specialist Hospital
Mrs. Naomi Mgbami	Laboratory Scientist	Gwagwalada Specialist Hospital
Mr. U. Ekpenyong	Laboratory Scientist	Bwari Health Facility
Mrs. Fati Z. Tanko	Nurse	Bwari Health Facility
Dr. F. Obadofin	Head	Bwari Health Facility

ABIA

Uduma Uka Chukwuemeka	State AIDS Programme Coordinator	State Ministry of Health, Umuahia
Jimoh Raifu F	Laboratory Scientist	Federal Medical Cenre Umuahia
Nnabuihe Favour V.C	Laboratory Scientist	Federal Medical Centre Umuahia
Dr. Chigbu B	Medical officer	General Hospital, Aba
Emuchay C.I	Laboratory Scientist	General Hospital, Aba
Okafor C.A	Nurse	General Hospital, Aba
Obieke S.N	Nurse	General Hospital, Aba
Dr. Onyeaso	Medical officer	Federal Medical Centre, Umuahia
Okutu Chimaobi M	Laboratory Scientist	Federal Medical Centre, Umuahia
Iheke J.O	Nurse	Federal Medical Centre, Umuahia
Nwoko B.U	Nurse	Federal Medical Centre, Umuahia
Kalu S.O	Head of Facility	True Rural Site
Nnenna Omechara	Nurse	True Rural Site

AKWA IBOM

Elder U.A. Udofia	State AIDS Programme Coordinator	State Ministry of Health, Uyo
Dr. Anthony L. Unwana	Medical officer	
Dr. Olujimi A. Sofoluwu	Medical officer	
Dr. Isaiah U. Edeheudim	Medical officer	
Mrs. Imelder G. Etuk	Nurse	
Mrs. Josephen Umoh	Nurse	
Mrs. Ekaette S. Umoh	Nurse	
Mari-goretti nalumaga	Nurse	
Mrs. Mercy Akpaideh	Nurse	
Mrs. Iboro Uzoh	Nurse	

Mr. Emmanuel E. Ntokekpo	Laboratory Scientist	
Mrs. Ekatte Etuk	Laboratory Scientist	
Michael A. Iseyen	Laboratory Scientist	
Anthony Dixson-Umoh	Laboratory Scientist	

KEBBI

Dr. S. Kago	State AIDS Programme Coordinator	Ministry of Health, Birnin Kebbi
Dr. Mus Alh-Mohammed	ANC Doctor	Birnin Kebbi General Hospital
Jaafar Mohammed	Laboratory Scientist	Birnin Kebbi General Hospital
Drladi Karatu	Laboratory Scientsit	Birnin Kebbi General Hospital
Nuradeen Mohammed	Laboratory Scientist	Birnin Kebbi General Hospital
Dr. Mohammed U.	ANC Doctor	Birnin Kebbi General Hospital
Hajia Ladi	Nurse	Arugungu General Hospital
Umar Mairuwa	Laboratory Scientist	Arugungu General Hospital
Dr. Musa	ANC Doctor	Arugungu General Hospital

SOKOTO

Dr. Abdullahi D. Lialaehmu	Medical officer	General Hospital, Sokoto
Alh. Bello A. Tsoho	Laboratory Scientist	General Hospital, Sokoto
Hajia Mutia Dikko	Nurse	General Hospital, Sokoto
Mallam Sani Y. Mohammed	Laboratory Scientist	General Hospital, Sokoto
Dr. Bello Ahamed	Medical officer	General Hospital, Dogon Daji
Mallam Muhammed Suleiman	Laboratory Scientist	General Hospital, Dogon Daji
Hajia Fati Muhammed	Nurse	General Hospital, Dogon Daji
Mallam Mohammed Umar	Nurse	Bawa True Rural Site
Nawa Abdullahi	Nurse	Bawa True Rural Site
Mallam Muhammed A.	Nurse	Bawa True Rural Site

NIGER

Dr. Chindo B.	State AIDS Programme Coordinator	Ministry of Health, Minna
Adamu Baba	Laboratory Scientist	General Hospital Minna
Dr. James E	Laboratory Scientist	General Hospital Minna
Audu Wakili	Laboratory Scientist	General Hospital Minna
Mrs. Asabe Abubakar	Nurse	General Hospital Minna
Mrs. Zainab Garba	Nurse	General Hospital Minna
Dr. Joseph J.R	Medical officer	General hospital Wushishi
Alhaji Abdul Shaheed		
Hawa Bitrus		
Elizabeth Ogubah		
Grace Echidda		
Jumai Barde		
Habib Abubakar		

NASSARAWA

Mrs. Naomi Adgidzi	State AIDS Programme Coordinator	Ministry of Health, Lafia
Kyan S.H		Federal Medical Centre Lafia
James Kigbo		Federal Medical Centre Lafia
Blessing Adamu		Federal Medical Centre Lafia
Raehael I. Audu		Federal Medical Centre Lafia
Dr. Abinubu P.P	Medical officer	Federal Medical Centre Lafia
Dr. Amoior Solomon	Medical officer	
Audu E. Rachel		

Florence H. Bori		
Mrs. Magret M. Odeh		
Kigbu J.A		
Murgo Park A.A		
Ayiuwhu .J. Clement		
Justina J. Bahah		

GOMBE

Dr. Ibrahim Hassan	State AIDS Programme Coordinator	Ministry of Health, Gombe
Lilian S. M.	Laboratory Scientist	Federal Medical Centre Gombe
Dr. Jim Dilla(JP)	Medical officer	Federal Medical Centre Lafia
Dr. S. Subi E.A	Medical officer	General Hospital Kaltungo

BAYELSA

Dr. B.Z. Avah	State AIDS Programme Coordinator	Ministry of Health, Yenogoa
Solomon E.A	Laboratory Scientist	General Hospital Yeanogo
Dr. Francis Damilola U	Medical officer	General Hospital Yeanogo
Dr. Oworodo I.A	Medical officer	Sagbama General Hospital

PLATEAU

Bala M. Rumtong	State AIDS Programme Coordinator	Ministry of Health, Jos
Dadik T. Jelpe	Laboratory Scientist	
Dr. Bitrus Matala	Medical officer	
Dr. Sani Benjamin G.	Medical officer	

IMO

Dr. J.C. Okeagu	State AIDS Programme Coordinator	Ministry of Health, Owerri
Mr. Iheyi M.O	Asst. State AIDS Programme Coordinator	Ministry of Health, Owerri
Mr. H.E.O. Madumere	Laboratory Scientist	Owerri General Hospital
Mr. U.N. Akazi	Laboratory Scientist	Orlu General Hospital
Mr. Innocent Opurum	Laboratory Scientist	Owerri General Hospital
Dr. E.C. Achunine	Medical officer	Owerri General Hospital
Dr. I.O. Manuba	Medical officer	Orlu General Hospital
Dr. C.K. Ike	Medical officer	Aboh Mbaise hospital
Mrs. E.E. A. Akpaka	Nurse	Owerri General Hospital
Mrs. Onye Peggy N.	Nurse	Owerri General Hospital
Mrs. E. Okoye	Nurse	Orlu General Hospital
Miss. L. C. Metu	Nurse	Orlu General Hospital
Mrs. A.C. Njoku	Nurse	Aboh Mbaise

EDO

Mrs. Titilayo Doadu	Laboratory Scientist	General Hospital Benin City
Dr. Odiko O.A.D	Medical officer	General Hospital Benin City
Dr. Omoz Oikeh	Medical officer	General Hospital Ekpoma

CROSS RIVER

Dr. S. Omini	State AIDS Programme Coordinator	Ministry of Health Calabar
Dr. B. E. Ihe	Medical officer	

Dr. Richard Neku	Medical officer	
Mr. Ogban I. Eni	Laboratory Scientist	
Mr. Eni John Eka	Laboratory Scientist	
Martins Bikag	Laboratory scientist	
Dr. Kuna	Medical officer	
Utom Obong Ime		
John Ndem		
Josephise Atiumeye		
Mary Kufreh		
Edu	Nurse	
Matron Theresa		
Rev. Sister	Nurse	Ikom Site

SURVEY SECRETARIAT

Dr. M.Y. Mukhtar	Federal Ministry of Health
Mr. Alex Onwuchekwa	Federal Ministry of Health
Mrs. Agbi Perpetua O.	Federal Ministry of Health
Mr. Gabriel O. Ikwulono	Federal Ministry of Health
Mr. Akinbiyi A.O	Federal Ministry of Health
Njoku Lawrence N.	Federal Ministry of Health
Mr. John A. Ata-ekong	Federal Ministry of Health
Mr. Saliu Mohammed	Federal Ministry of Health