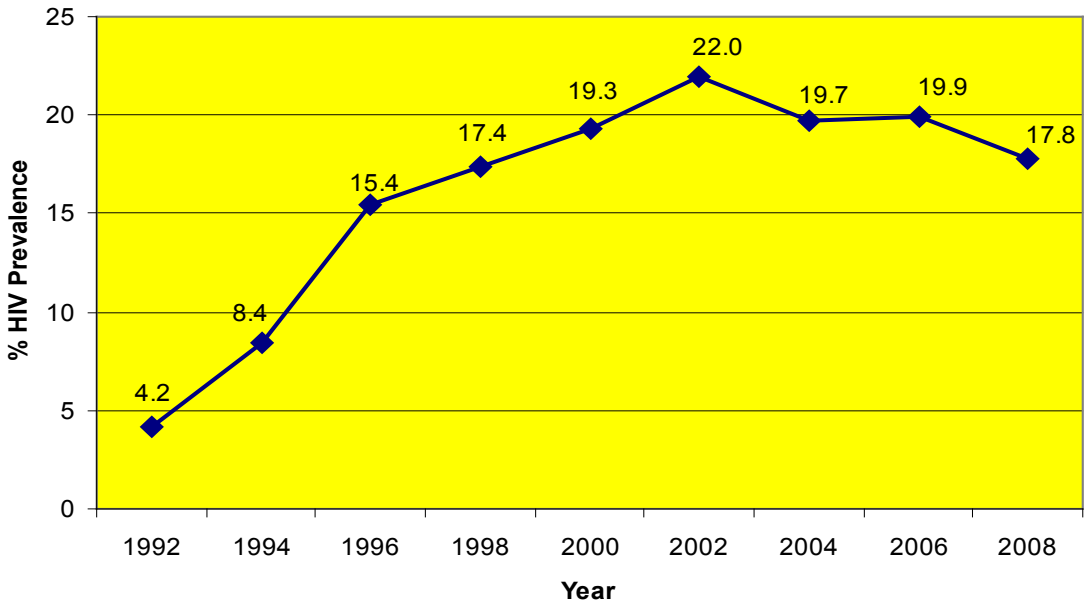
Republic of Namibia

Ministry of Health and Social Services

Report on the 2008 National HIV Sentinel Survey

HIV Prevalence rate in pregnant woman, biannual survey 1992-2008, Namibia



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Ministry of Health and Social Services

Report of the 2008 National HIV Sentinel Survey

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FOREWORD

HIV/AIDS remains a critical issue for development in Namibia. The scale of HIV infections, the number of deaths that will occur mainly in the main productive population, the rising number of orphans and the burden on the productive and social sectors continues to increase. AIDS affects all socio-economic groups and all sectors, ranging from impoverished subsistence farmers, informal and domestic workers to top managers, professionals, civil servants and politicians. HIV/AIDS increases poverty, hampers development and threatens our nation's future.

The Government of the Republic of Namibia has given the fight against HIV/AIDS top priority in all its development undertakings. It has adopted a multi-sectoral approach that calls for committed participation of all stakeholders in the fight against HIV/AIDS. In addition, the increasing funding and commitment to fighting the HIV/AIDS pandemic, coupled with the availability of affordable drug regimens and effective care prolong and improve the lives of thousands of Namibias living with HIV/AIDS. At the same time this situation presents policymakers, programme planners and service providers with the challenge of rapidly scaling up institutional and community based services in a context of weakened infrastructures and human capacity.

This 2008 National HIV Sentinel Survey is the 9th such study completed since Namibia's independence. It has now been expanded to cover all Namibia's health districts and therefore present very valuable information for all of us engaged in the fight against the pandemic.

The National Response Monitoring and Evaluation System established by the Directorate of Special Programmes over the past five years will continuously supply timely and relevant information needed to track changes, improve programmes and services, plan effectively and ensure accountability.

The support and contributions from development partners such as UN organizations, SADC, United States of America Government, EC, GTZ, DFID, JICA, the private sector, civil society organizations, line ministries and regional and local authorities and many others is fully acknowledged. We must continue to be vigilant with a view to reduce the HIV/AIDS burden in Namibia and work closely together to respond effectively to the epidemic.

Dr. Richard N. Kamwi, M.P.
Minister

PREFACE

Every two years, the Ministry of Health and Social Services conducts a sentinel survey on HIV prevalence in pregnant women throughout the country. HIV testing is completed on blood samples collected from pregnant women attending ante-natal clinics. Blood samples are stripped of any personal identifying information prior to HIV testing so there is no way that the HIV status of a particular woman can become known during this process and hence there is no possibility of stigma against her. This standardized methodology is recommended by the World Health Organization (WHO) as the most suitable way for countries to monitor the trend of HIV infection in different geographical areas and age groups.

The report gives the history and context of sentinel surveillance in Namibia. It defines the survey objectives and the methodology used. The sampling techniques are described in detail. The report elaborates on the procedure used for quality assurance, data and specimen collection. Adherence to high ethical standards is clearly articulated. The report presents and analyses the results of the sentinel surveillance. Finally, the report makes some recommendations.

Sentinel surveillance among pregnant women began in Namibia in eight health facilities in 1992. Since 1994, the number of sites continued to increase from 14 in 1994 to 29 in 2006 respectively. In 2008 all health districts were included to improve representativeness.

Although the 2008 survey results show a decrease in overall HIV prevalence, we still have a long way to reduce infections below the epidemic threshold. Therefore, we must not relax but further increase our efforts. After all, the report demonstrates that HIV infection continues to be transmitted widely in Namibia. The Ministry of Health and Social Services will continue to monitor the epidemic through strengthening of surveillance efforts and ensuring the timely dissemination of information for proactive action.

Data from other HIV/AIDS programmes such as PMTCT, syphilis surveillance and VCT have also been used to enhance confidence and explanatory power of the sentinel surveillance findings. Additional information from other surveys that measure both sero-prevalence and risk behaviour is needed to complement the sentinel surveillance so that explanatory power of findings can be further enhanced.

The Ministry wishes to commend the Directorate of Special Programmes, development partners, NIP and staff members in the regions and specifically at the health facilities where the survey was carried out for the commitment and excellent dedication they have demonstrated in making this survey a success.

K.S.M. Kahuure
Permanent Secretary

ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Clinic
CMO	Chief Medical Officer
DSP	Directorate of Special Programmes
ELISA	Enzyme linked immunosorbent assay
GRN	Government of the Republic of Namibia
HIS	Health information System
HIV	Human Immunodeficiency Virus
ISF	Individual Survey Form
MoHSS	Ministry of Health and Social Services
NIP	Namibia Institute of Pathology
PMO	Principal Medical Officer
QC	Quality Control
RM&E	Response Monitoring and Evaluation
RPR	Rapid Plasma Reagent
STI	Sexually Transmitted Infection
TWG	Technical Working Group
UNAIDS	Joint United Nations Programme on HIV/AIDS
WHO	World Health Organization
NTD	National testing Day

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EXECUTIVE SUMMARY

Since 1992, Namibia has been monitoring the prevalence of the HIV epidemic on a 2 year basis through anonymous unlinked sentinel surveillance of pregnant women attending antenatal clinics.

The general objective was to estimate the prevalence of HIV-infection in pregnant women aged 15-49 years, to identify geographic and socio-demographic characteristics associated with higher prevalence, and to monitor infection trends over time.

The 2008 sentinel survey was conducted in 34 health districts. A total of 8,174 pregnant women attending antenatal clinics participated in the survey. Unlinked anonymous blood samples were collected from March 17 to July 31, 2008; and tested for HIV antibodies at the Namibia Institute of Pathology (NIP) in Windhoek.

Sexually Transmitted Infections data represented by Rapid Plasma Reagent (RPR) test results for syphilis diagnosis from the same facilities was aggregated and analyzed at the end of the survey period.

The 2008 report focuses on HIV sero-prevalence data and some limited programme service data. It is an endeavor to examine data from various sources in order to augment the explanatory power of sentinel survey data.

Data from other HIV intervention programmes were also analyzed and triangulated with the sentinel surveillance data. These included programme data from PMTCT and syphilis surveillance.

Overall HIV prevalence in the country was determined to be 17.8%. HIV prevalence is similar in urban (17.8%) and rural (17.8%) areas. The prevalence has increased from 1992 to 2002, and then stabilized at 22%.

The highest age-specific prevalence rate is observed among those aged 30-34 years. While the prevalence in adult age groups appears to be increasing, the prevalence in the younger age groups, (15-19, 20–24 years) is decreasing from 11 to 5.1% and 22 to 13.9% respectively between 2002 and 2008.

The epidemic appears to be centered on three geographic pockets where mobile populations are most likely to take temporary residence such as mining areas, tourist areas, and entry and exit points.

The HIV prevalence rate from sites that offered PMTCT corroborate with the HIV prevalence rate from the HIV sentinel surveillance collected during the same survey period. This suggests that PMTCT data have potential for use in the future in monitoring HIV prevalence trends. However, this should not replace but complement ANC HIV sentinel surveillance.

Based on the results above, the following recommendations are made:

- Intensify HIV/AIDS intervention programmes especially among the youth so as to continue to reduce HIV prevalence in this age group.

- Explore possibilities to investigate new HIV infections in the country.
- Enforce a policy whereby every development project should be accompanied by clearly defined HIV/AIDS interventions especially in mining and tourist areas.
- Surveillance surveys should include behavioural studies so as to allow proper linkage with biological data.
- There is a need for extensive community mobilization for increased patronage of voluntary counseling and testing services.
- Data sources for sexually-transmitted infections, and AIDS mortality should be strengthened to allow for in-depth analyses of syndromic and etiological trends coinciding with sentinel survey rounds.
- The Programme for Anti-retroviral Therapy should be prepared to meet the needs of the impending maturing epidemic since the number of AIDS cases is likely further to rise.
- PMTCT service coverage and data quality and completeness should be strengthened so that prevalence measure among PMTCT clients can be compared to sentinel surveillance data in the future.
- Strengthen NIP capacity in implementing surveillance surveys.
- Strengthen the Health Information System (HIS) to collect quality health programme data.

1 BACKGROUND

Namibia is heavily affected by the HIV/AIDS pandemic. In order to curb the epidemic, the Government of Namibia (GRN) has mounted an aggressive and tireless campaign against the disease including surveillance, prevention, treatment, care and support, and impact mitigation.

At national level, the MoHSS operates the National AIDS Coordination Programme, managed by the Directorate of Special Programmes (TB, Malaria and HIV/AIDS) which was established in 2004. The Directorate is responsible for providing assistance to all sectors in the development and implementation of sector-related HIV/AIDS activity plans in accordance with sectoral obligations as contained in the Third Medium Term Plan on HIV/AIDS (MTP3).

1.1. History and Context of Sentinel Surveillance

The first case of AIDS in Namibia was identified in 1986. Since then, the spread of HIV infection continued to rise in the country. From the first sentinel surveillance in 1992, where the HIV prevalence was 4.2%, the prevalence rose to 22% in 2002. First decline to 19.7% was observed in 2004 and a slight increase in 2006.

For its sentinel surveillance, the Ministry of Health and Social Services follows a standardized methodology recommended by the World Health Organization (WHO) as the most suitable way for countries to monitor the trend of HIV infection in different geographical areas. HIV testing is completed on blood samples collected from pregnant women attending ante-natal clinics. Blood samples are stripped of any personal identifying information prior to HIV testing so there is no way that the HIV status of a particular woman can become known during this process. Hence there is no possibility of stigma against her.

Surveillance forms a critical element in the expanded national response as it allows identification of the geographic and demographic population groups that are most affected by the virus so that prevention and treatment programmes can be targeted to these groups. In addition, surveillance activities permit the government to monitor HIV trends in various groups and thus evaluate the effectiveness of policies and programmes.

The Medium Term Plan III has put in place strategies to prevent the spread of HIV/AIDS and mitigate the impact of the disease in the population. As part of this plan the government must continue to monitor the trends and measure the impact of the epidemic on the population, including conducting sentinel surveillance, special surveys, and program evaluation.

Other information that complements ANC sentinel surveillance includes information collected on HIV diagnosis reported by the Namibia Institute of Pathology (NIP), HIV and STI prevalence among blood donors collected by the Namibia Blood Transfusion Services, HIV testing data from the National Prevention of Mother-to-Child Transmission programme, VCT, HIV mortality, morbidity, STI syndromic management and treatment of HIV positive patients.

1.2. Sentinel Surveillance and HIV/AIDS Services

Provision of HIV/AIDS services, including anti-retroviral therapy (ART), prevention of mother-to-child transmission (PMTCT), and voluntary counselling and testing (VCT), remains a high priority of the Namibian government. Public health facilities began rolling out PMTCT in 2002, ART in 2003, and VCT services in 2004. Sentinel surveillance provides cardinal information used to direct service delivery roll-out and programme development and allows estimation of the needs of these programmes for universal national coverage.

National Guidelines on the Prevention of Mother to Child Transmission were introduced in 2000 with the pilot PMTCT programme guidelines. These policies set standards for HIV testing and counselling as a routine part of antenatal care using an "opt-out" strategy of consent for testing. In 2002, two of the 21 sentinel surveillance sites provided PMTCT services; while during the 2008 surveillance round all of the sites were providing PMTCT services.

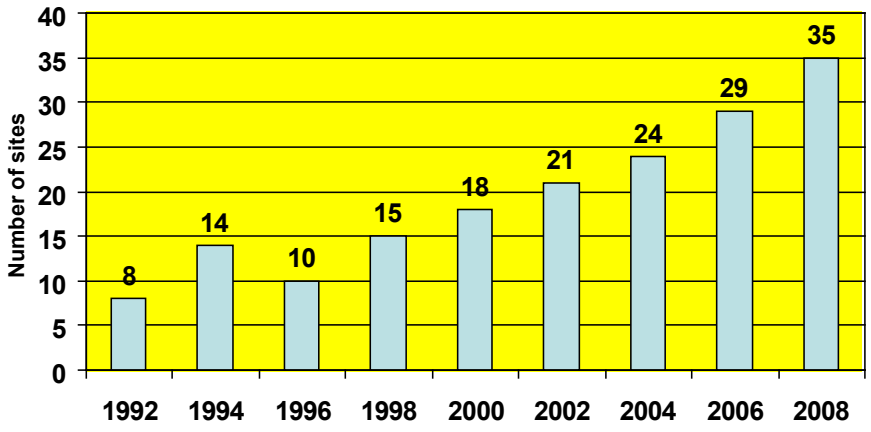
Rapid HIV testing is currently being rolled out at PMTCT sites to increase the proportion of women receiving their results by eliminating the need to return to the clinic after results are received from the district or national laboratory. Pre- and Post-test counselling is provided according to the draft national PMTCT guidelines.

ANC surveillance is currently the key data source for all HIV estimates in the country. The surveillance data provide inputs for the models which estimate and project national HIV prevalence, HIV incidence, estimated number of people living with HIV, ART estimated needs, estimates of pregnant women who are living with HIV, and is thus essential for programme planning and evaluation.

1.3. Participating Sentinel Sites

In Namibia, sentinel surveillance sites have been chosen based on regional coverage, geographic location (whether urban or rural) and the volume of antenatal clinic (ANC) attendees at each site. Beginning with eight health facilities in 1992, the number of sites was increased to fourteen in 1994 and to twenty-four by 2004. Since 2004 the selected sentinel sites cover all thirteen regions of the country. The 2006 sentinel sites included 79 health facilities in 29 sites with both urban and rural characteristics representing the regional and population diversity of the country. In 2008, all 34 districts, 35 main hospital sites and a maximum of 9 supporting satellite sites (health centers and clinics) per main site were covered.

Figure 1. Number of participating Sentinel Surveillance main sites since 1992



2. SURVEY OBJECTIVES

2.1. General Objective:

The general objective of the 2008 National HIV Sentinel Survey was to estimate the national prevalence of HIV-infection in pregnant women aged 15-49 year country wide, to identify geographic and socio-demographic characteristics associated with higher prevalence, and to monitor prevalence trends over time.

2.2. Specific Objectives:

The following were the specific objectives of the 2008 survey:

1. To estimate the current burden of HIV in Namibia by site, age group, gravidity, and by rural/urban residence.

2. To monitor trends over time in HIV prevalence amongst pregnant women nationally, by site, and by age group.

3. To compare and validate programme data from prevention of mother-to-child transmission (PMTCT), blood transfusion, HIV mortality, morbidity, STI, and ART with sentinel surveillance results.

4. To estimate the prevalence of syphilis among pregnant women by site and age group.

5. To measure progress in achieving the overall target of reducing HIV prevalence to below the epidemic threshold.

6. To disseminate and utilize the information provided by sentinel surveillance and to advocate and plan for more effective services for prevention, treatment, support and care.

7. To provide essential input parameters for models, estimates and project national HIV prevalence.

8. To bank specimens for other HIV surveillance related activities including drug resistance survey and subtypes of HIV in the country.

3. METHODOLOGY

3.1. Sampling

3.1.1. Sampling overview

The sampling scheme was convenient consecutive sampling of women attending ANC services based on WHO Guidelines for Conducting HIV Sentinel Surveys among Pregnant Women and Other Groups. All the pregnant women that met the eligibility criteria were included until the sample size requirement was met. Specimens were obtained for routine testing of syphilis. After syphilis testing, the left over specimen was then unlinked by removal of all identifiers. This specimen was then used for HIV testing.

3..1.2. Sentinel Site Selection

The first site selection strategy was to maintain 2006 sentinel surveillance sites so that HIV trends can be monitored over time. The second strategy was to collect data which will permit estimation of HIV and syphilis prevalence in all geographical regions and health districts of the country using sites which met the following selection criteria:

- Blood is routinely collected from clients.
- A laboratory for processing of specimens and transport to the laboratory that will be conducting HIV testing in place
- The site is accessible to surveillance staff.
- On-site staff members are cooperative and trained.
- Ability to recruit adequate clients for the required sample size.
- Availability of on-site counselling and testing services or referral to such services.

Five new sites were included in the 2008 survey to better represent the geographic population. The new sites are: Okongo, Aranos, Okakarara, Tsandi and Okahao resulting in 100% health districts covered by the survey, (See figure 1).

Several main sites also had some satellite sites, which helped the main site in the effort to reach the target sample size (appendix 8). These satellite sites were mainly clinics that are in the vicinity of the main site, i.e. district clinics rendering ANC services. Data from these satellite sites was pooled with those from the main site (sample sizes from individual satellite are too small for analysis). The selection criteria for the satellite sites that were used to supplement the main site were:

- Main site and satellite sites are servicing the overall health district populations;
- Consistent satellite sites were used over survey rounds;
- Staff at satellite site received the same training as the main site staff;
- Supervision included the main as well as the satellite site.

Each main and satellite site were allocated their own bar coded stickers. A total of 89 satellite sites contributed to the targeted sample size attained by the 35 sentinel surveillance main sites (appendix 8).

3.1.3. Sampling Population

The population for the HIV surveillance included pregnant women attending ANC services during the period of sample collection at health facilities designated as sentinel sites.

Inclusion criteria: The 2008 Sentinel Survey included women attending ANC with the following characteristics:

- 15-49 years of age attending ANC for the first time during the current pregnancy;
- The woman must agree to a routine blood draw for syphilis screening;
- The woman must not have been referred from another health facility.

Exclusion criteria: Women attending ANC with the following characteristics were excluded from the 2008 Sentinel Survey:

- Pregnant women who have previously visited any ANC during the current pregnancy
- Pregnant women younger than 15 years and older than 49 years of age

3.1.4. Sample size determination

For the 2008 Sentinel Surveillance in Namibia, sample sizes were calculated for all the respective participating sites based on WHO Guidelines taking into consideration previous prevalence estimates. The regional median for the previous survey round were used to derive the targeted sample size for the new sites of Okongo, Tsandi, Aranos, Okakarara and Okahao.

3.2. Survey Duration

The maximum sampling duration was 16 weeks from the 17th of March through to 31st July 2008. If a site achieved the site-specific maximum sample size in a period less than this, sampling was stopped at that site.

3.3. Pre-Survey Training

The DSP RM&E Subdivision organized and coordinated a two day and a three-day pre-survey training for National Technical Working Group (TWG) and regional level supervisors, and included focal persons (laboratory technicians) from half of the district laboratories located at each sentinel site. Members of the surveillance TWG were the resource persons for the training. The following week, the national and regional level supervisors went to their respective sites where they conducted trainings to instruct the site-level survey implementers on how to conduct the survey. Site-level trainings included half of the laboratory focal persons who did not attend the national training. These site-level survey implementers included Regional Chief Medical Officers (CMOs), District Principal Medical Officers (PMOs), Matrons from the participating districts, nurses working in the ANC clinics or providing these services in other health settings such as general clinics or health centres, laboratory technicians, and staff from the satellite clinics.

3.4. Data and Specimen Collection

The individual survey forms were used to collect socio-demographic information on each participating woman on-site. An unlinked anonymous testing approach for data collection was used. All required data elements for the survey were extracted from the Antenatal Care Records (ANC patient passport & ANC register) and logged onto a self-carbonizing individual survey form.
This form included the following information:

- Bar coded sticker (Unique Identification)
- Date of ANC visit
- Woman's age
- Gravidity
- Town of residence
- ART participation
- Initial of the person completing the form.

Prior to the survey, materials and equipment that were needed for the survey were provided to the main sites as well as the satellite sites.The supplies included were not limited to Individual Survey Form books (ISF), patient identification barcodes, reporting forms, patient laminated copy of HIV sentinel survey clinic and laboratory flow chart, cool boxes, etc. The unique field barcode numbers were appended on the individual survey form and on the 10 ml red top tube containing the blood specimen and the remaining four stickers were sent to the local NIP together with the specimen (see appendix 3). At the end of each day, the ISF was checked alongside the blood samples by nurses for accuracy and completeness and labeling in the case of the blood specimens. The original copy of the ISF was submitted to the national level and the copy was retained at the site.

3.5. Laboratory Procedures

3.5.1. Preparation of specimens

At the participating specimen collection sites, the 10 ml red top tube was marked with the 2nd bar-coded sticker provided specifically for the survey. All tubes were sent to the local NIP district laboratory and centrifuged, after which at least 3 ml of serum was separated in a 5 ml red top tube. A 3rd bar-coded sticker was affixed to the 5 ml red top tube and refrigerated prior to being transported to the NIP in Windhoek for HIV testing. The remaining sticker affixed to the 10 ml tube was blackened out while the name of the patient remained on it for syphilis testing. This process completed the delinking of the patient information from the survey. The HIV result thus can not be linked to specific patient.

Cold chain was maintained during specimen transportation from sites to the local laboratory as well as from the local laboratory to the central laboratory. This was done by monitoring the cool box ambient temperature on arrival by NIP laboratory staff through measuring the temperature of the water contained in the bottle packaged with the specimen in the cool box.

A shipping/results form (see appendix 4) for each site was designed to record the unique ID, the individual data, and the local HIV testing results for each specimen. The fourth bar code sticker was attached to this shipping/results form by the local laboratory staff. This form and the specimens were shipped to the NIP central laboratory for HIV testing. When the HIV test was completed, the results was recorded next to the respective bar-coded sticker. Result forms were then forwarded to DSP:

RM&E Subdivision for data entry.

3.5.2. Testing procedure

For HIV testing, each sample was tested using the Abbott AxSYM System (Abbott Laboratories, Abbott Park, Illinois, USA) to detect HIV infection (HIV-1/2). The Abbott AxSYM System has been reported as 100% sensitive and > 99.87% specific to HIV in blood samples (Fierz W, Erb P. 10th Conference on Retroviruses and Opportunistic Infections, 2003). All reactive samples were re-tested to confirm infection and to assess if they contain HIV-1, HIV-2, or both types. This procedure utilized the SD-Bioline. At the end of the testing, 10% of randomly selected samples were retested by an external independent laboratory for quality assurance purposes.

3.5.3. Recording and transmission of results

All HIV testing occurred at the NIP National Reference Laboratory in Windhoek, with results being entered on a Shipping/Results form. Results were forwarded to the DSP RM&E Subdivision on a weekly basis where they were entered into a database by DSP/RM&E using EPI info version 3.3.2 as a data entry application.

3.6. Syphilis Testing

Syphilis screening among pregnant women is a universal practice in Namibia, even outside the sentinel surveillance survey. Data on syphilis serology is therefore available. Syphilis test results for each woman attending ANC during the survey period were collected in the normal way where the results were entered into the NIP database and reported back to the woman.

The syphilis results for women collected during the survey period were extracted from the NIP database without identifying details for trend and spatial analysis.

3.7. Quality Assurance

3.7.1. National level

A technical working group (TWG) was formed with representatives from DSP: RM&E Subdivision (Secretariat), other MoHSS Directorates, NIP and development partners. The TWG as identified was responsible for the overall quality assurance of the survey.

The TWG conducted regular site support visits as scheduled as well as on need basis. A quality assurance tool (see appendix 6) as recommended by the WHO guidelines was completed during each supervisory visit and forwarded to the DSP: RM&E Subdivision for subsequent analysis and action.

3.7.2. Field Level

The Primary Heath Care (PHC) supervisors, the regional Chief Health Programme Administrator (CHPA), Senior Health Programme Administrator (SHPA) for Special Programmes as well as Family Health were acting as supervisors whose duties were to consistently monitor the collection,

transportation, and delivery of blood samples and collecting and submitting data forms during the entire data collection period at each site. The supervisors completed these forms and submitted them to the Reponse Monitoring and Evaluation subdivision on a weekly basis. In addition, to maintain quality, onsite training was conducted as and where problems were identified.

3.7.3. Laboratory

All surveillance activities in the laboratory were supervised by the Laboratory supervisor of the National Reference Laboratory. Logistical aspects were handled by the technologist assigned to the survey team at the National Reference Laboratory according to the existing routine arrangement.

NIP officers (mainly Technologists/Technicians in charge) at district laboratories were checked that blood samples and completed data collection forms for every ID and for every shipment batch received.

Routine quality assurance procedures are maintained by NIP in line with ISO 17025 and/or 15189 standard. These included daily internal quality assurance using known quality control materials supplied by the manufacturer (Abbott) and monthly external quality assurance. The laboratory supervisors verified all the results before recording them on the data form.

3.8. Data Management

The national TWG, Regional supervisors and site teams were trained on how to use the data collection tools. All data collection forms were first checked for completeness and accuracy in the field by the site supervisor on a daily basis. These forms were also checked by the regional supervisor at least once per month. Missing or inconsistent data identified by regional supervisors were corrected while the inconsistencies identified at the national level were corrected only during the support visit as there was no way to link data to a specific pregnant woman. For missing or inconsistent data discovered, the supervisors trained the on site survey teams on how to avoid such occurrences in future.

Completed forms were sent as a weekly batch via NIP to DSP: RM&E Subdivision which was responsible for the creation of databases in Epi Info statistical software. Forms were received by data clerks at the DSP and organized into binders for storage purposes. Data entry was done in the offices of the DSP: RM&E subdivision by data clerks under the supervision of the Head of the Subdivision. Data were electronically entered using Epi Info version 3.3.2 (Centers for Disease Control and Prevention, Atlanta, Georgia, USA). Digital entry was completed twice by different data entry clerks to create two independent files from the same hard copy data. These two files were then electronically compared and discrepancies identified. All discrepancies identified between the two separate data files were then rectified by consulting the original data and a cleaned master analytic file was created. Statistical Package for Social Sciences version 9.0 (SPSS) was used for data analysis.

Two different age groupings were created for the analysis. The first, and more detailed of these, was used for cross sectional and trend analyses. Trend analyses were completed separately by site. A second age grouping was created by grouping into two groups, a younger group (15-24 years of age) and an older group (25-49 years of age). The rationale for this second set of age groups is to make site/age-specific trend comparisons more reliable.

HIV Prevalence with 95% confidence limits was then calculated for the following groupings of the sample: national crude and median prevalence, by age group (more detailed age categories), by site, by urban/rural, by age group within site (using the less specific age groupings), and gravidity. In order to measure trends, the same analyses were performed by year of survey (using identical age groupings). Similar analyses as those for HIV results were applied to the syphilis results.

In addition, HIV overall and by site prevalence was compared to syphilis results, and prevalence in women participating in the PMTCT and VCT services to see how well HIV prevalence in PMTCT participants resembles that obtained in the sentinel survey. Likewise, sentinel surveillance estimates overall, by site, and by age group were compared to prevalence in VCT clients (New Start and Government).

3.9 Ethical Considerations

This HIV sentinel sero-survey was conducted by means of unlinked anonymous testing of blood samples obtained for routine diagnostic purposes. Coded blood samples without information related to the identity of the person from which the blood was drawn were tested by NIP at the National Reference Laboratory in Windhoek. The unlinked anonymous results were compiled and analysed by MoHSS: Directorate Special Programs Division: Response Monitoring and Evaluation in collaboration with the TWG.

All patients were managed according to national guidelines relevant to the specific health condition that particular client/patient group. Field visits were conducted before the survey to ensure the availability of trained staff, adherence to guidelines for surveillance as well as confidentiality.

Means to protect the rights of participants were considered during the planning and implementation of the survey. Procedures applied and personnel training both aimed to minimize the probability that a woman could experience any kind of negative consequence from her participation or non-participation. No personal identifying information was collected with the survey blood sample. All women were informed of voluntary counselling and testing services they may utilize should they desire to know their HIV status. Furthermore, sample and data collection were both completed via routine clinical procedures to avoid women feeling stigmatized or in a way excluded from available services such as PMTCT, based on their inclusion in the survey.

3.10 Dissemination and data use of the Results

A comprehensive report of the survey was prepared by the DSP: RM&E Subdivision in collaboration with the TWG and submitted to the Permanent Secretary for comment and approval. The survey report was officially launched at the World AIDS Day event on 1 December 2008. User friendly pamphlets were developed to ensure that the wider community obtain access to the information.

The surveillance data generated through this survey will be used to:

- Plan roll-out services for prevention and care to the most affected areas in the country;
- Estimate trends and impact in various age groups and regions;
- Produce national models to project the magnitude of the epidemic over time;
- Advocate for resource mobilisation (financial, human etc.)
- To make well informed and evidence-based decisions.

4 RESULTS

4.1. Completeness of Information

As per table I blow, a total of 8 174 women seeking first ANC services were enrolled in the 2008 survey. A total of 8024 suitable blood specimens which constituted 98.2% of all sample taken were tested for HIV. The remainder of the specimens was excluded from the analysis for various reasons such as missing results and non suitable specimens. In this latter case, a specimen would have been presented at the laboratory but found to be in a state that was not suitable for testing (haemolysis, etc).

Table 1: Enrolment and Completeness of Information, 2008 HIV Sentinel Surveillance among Pregnant Women, Namibia

Site	Base sample	Total Women enrolled	Coverage in Percent	Number of Specimen			Percent Suitable
				Suitable	Unsuitable	Missing results	
ANDARA	300	264	88.0	247	2	15	93.6
ARANOS	190	106	55.8	102	0	4	96.2
EENHANA	290	260	89.7	258	2	0	99.2
ENGELA	330	309	93.6	309	0	0	100.0
GOBABIS	145	145	100.0	145	0	0	100.0
GROOTFONTEIN	265	261	98.5	260	0	1	99.6
OSHAKATI INTERME-DIATE HOSPITAL	400	400	100.0	397	2	1	99.3
KARASBURG	300	164	54.7	164	0	0	100.0
KATUTURA STATE HOSPITAL	300	300	100.0	295	4	1	98.3
KEETMANSHOOP	260	246	94.6	237	3	6	96.3
KHORIXAS	190	148	77.9	147	0	1	99.3
KATIMA MULILO	420	420	100.0	416	1	3	99.0
LUDERITZ	300	180	60.0	174	3	3	96.7
MARIENTAL	170	168	98.8	166	0	2	98.8
NANKUDU	220	212	96.4	210	0	2	99.1
NYANGANA	180	176	97.8	174	2	0	98.9
OKAHAO	300	296	98.7	292	3	1	98.6
OKAHANDJA	265	262	98.9	261	1	0	99.6
OKAKARARA	260	180	69.2	175	4	1	97.2
OKONGO	320	209	65.3	169	0	40	80.9
OMARURU	230	159	69.1	158	0	1	99.4
ONANDJOKWE	310	312	100.6	311	1	0	99.7
OPUWO	140	140	100.0	139	1	0	99.3
OSHIKUKU	300	299	99.7	295	4	0	98.7
OTJIWARONGO	245	223	91.0	223	0	0	100.0
OUTJO	190	180	94.7	178	0	2	98.9
OUTAPI	285	280	98.2	280	0	0	100.0
REHOBOTH	210	209	99.5	208	0	1	99.5
RUNDU	275	275	100.0	266	7	2	96.7
SWAKOPMUND	250	250	100.0	246	1	3	98.4
TSANDI	305	243	79.7	239	4	0	98.4
TSUMEB	330	327	99.1	322	3	2	98.5
USAKOS	230	121	52.6	118	2	1	97.5
WALVISBAY	300	300	100.0	295	2	3	98.3
WINDHOEK CEN-TRAL HOSPITAL	150	150	100.0	148	2	0	98.7
NAMIBIA	9155	8174	89.3	8024	54	96	98.2

4.2 HIV Prevalence Rate

Figure 2: HIV Prevalence rate of pregnant women, biannual surveys 1992-2008

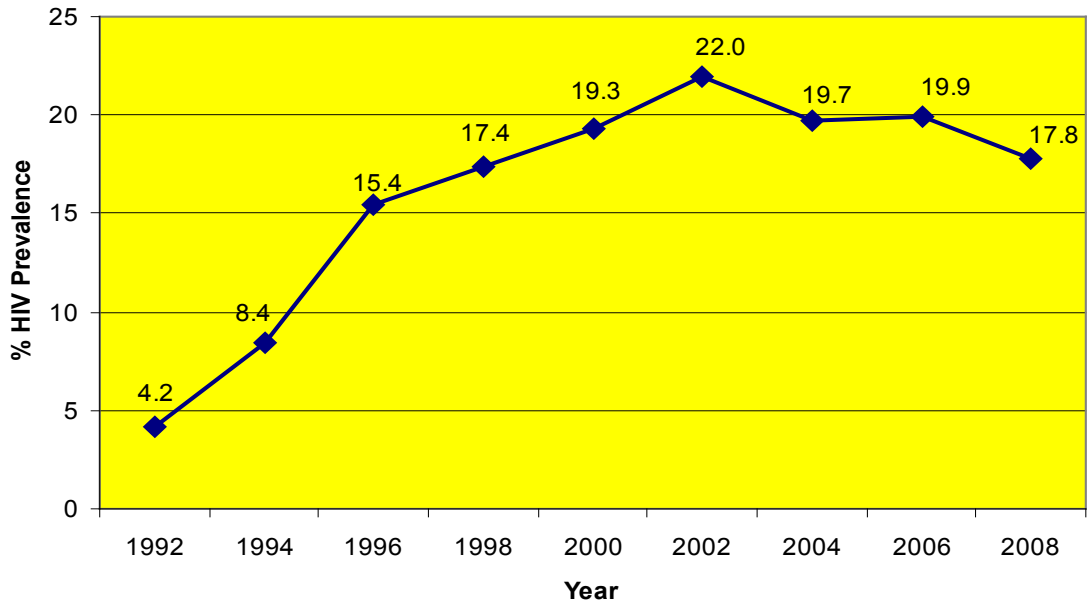


Figure 2 above indicates the average HIV prevalence rate overtime. The HIV prevalence curve had a precipitous positive gradient from 1992 to 1996 with a moderate increase to 22% in 2002. This was followed by a moderate decline in 2004 to 19.7% and apparent stabilization to 19.9% in 2006. The 2008 National HIV Sentinel Survey measured an overall national HIV prevalence among pregnant women of 17.8% which represents a clear decrease.

Table 2: HIV prevalence rate by age group, 2008 HIV Sentinel Surveillance, Pregnant women, Namibia

Age group	Number of women aged 15-49 years		% HIV Prevalence Rate
	Total Tested for HIV	Tested Positive	
15-19	1505	77	5.1
20-24	2424	339	14.0
25-29	1873	445	23.8
30-34	1204	327	27.2
35-39	741	193	26.0
40-44	248	44	17.7
45-49	29	4	13.8
Namibia	8024	1429	17.8

Figure 3: HIV prevalence rate by age group, 2008 HIV Sentinel Surveillance, Namibia

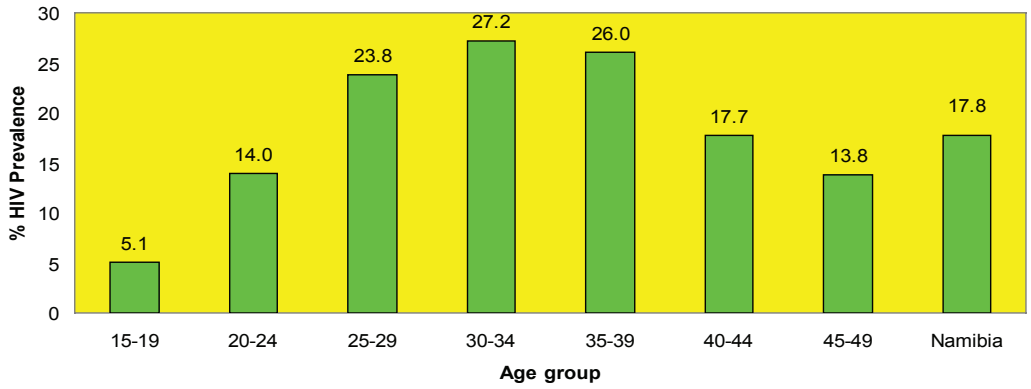


Table 2 and Figure 4 show that out of all pregnant women attending ANC, 2424 women aged 20-24 years were tested for HIV and yielded an HIV prevalence rate of 14 percent. The survey result indicate that HIV prevalence peaks in the age group of 30-34 years with 27 percent. The lowest rate of 5.1% was measured among women aged 15-19 years.

Table 3: Number of women enrolled by gravidity , 2008 HIV Sentinel Surveillance, Namibia

Age group	Number enrolled	Prima Gravida		Multi Gravida	
		Number	Percent	Number	Percent
15-19	1541	1240	46.1	301	5.5
20-24	2462	1029	38.3	1433	26.1
25-29	1915	324	12.0	1591	29.0
30-34	1223	71	2.6	1152	21.0
35-39	753	20	0.7	733	13.4
40-44	251	5	0.2	246	4.5
45-49	29	1	0.0	28	0.5
Total	8174	2690	100.0	5484	100.0

Table 3 signifies that more than 2600 out of 8000 women reported during the first pregancy (prima gravidas), which constitutes 33% percent of all women enrolled at ANC clinics country wide. Four in five women aged 15-24 reported having at least one child already (multi gravida).

Table 4: HIV prevalence rate by ANC Sentinel Site, 2008 HIV Sentinel Surveillance, Namibia

Site	Number of women aged 15-49 years				95% CL	
	Tested for HIV	Tested Negative	Tested Positive	% HIV Prevalence Rate		
ANDARA	247	212	35	14.2	10.0%	19.0%
ARANOS	102	96	6	5.9	2.2%	12.4%
EENHANA	258	228	30	11.6	7.9%	16.1%
ENGELA	309	247	62	20.1	15.8%	25.1%
GOBABIS	145	126	19	13.1	8.1%	19.7%
GROOTFONTEIN	260	216	44	16.9	12.6%	22.0%
OSHAKATI INTERMEDIATE HOSPITAL	397	308	89	22.4	18.6%	27.0%
KARASBURG	164	134	30	18.3	12.7%	25.1%
KATUTURA STATE HOSPITAL	295	231	64	21.7	16.8%	26.4%
KEETMANSHOOP	237	207	30	12.7	8.6%	17.4%
KHORIXAS	147	131	16	10.9	6.4%	17.1%
KATIMA MULILO	416	284	132	31.7	27.3%	36.4%
LUDERITZ	174	139	35	20.1	14.2%	26.4%
MARIENTAL	166	148	18	10.8	6.6%	16.6%
NANKUDU	210	188	22	10.5	6.7%	15.4%
NYANGANA	174	140	34	19.5	13.8%	25.9%
OKAHAO	292	212	80	27.4	22.1%	32.6%
OKAHANDJA	261	222	39	14.9	10.8%	19.8%
OKAKARARA	175	155	20	11.4	7.0%	16.7%
OKONGO	169	134	35	20.7	14.9%	27.6%
OMARURU	158	139	19	12.0	7.4%	18.1%
ONANDJOKWE	311	243	68	21.9	17.4%	26.9%
OPUWO	139	128	11	7.9	4.0%	13.6%
OSHIKUKU	295	231	64	21.7	16.9%	26.5%
OTJIWARONGO	223	189	34	15.2	10.8%	20.6%
OUTJO	178	146	32	18.0	12.6%	24.4%
OUTAPI	280	225	55	19.6	15.2%	24.8%
REHOBOTH	208	195	13	6.3	3.4%	10.5%
RUNDU	266	216	50	18.8	14.2%	23.7%
SWAKOPMUND	246	211	35	14.2	10.3%	19.4%
TSANDI	239	177	62	25.9	20.2%	31.5%
TSUMEB	322	267	55	17.1	13.1%	21.5%
USAKOS	118	97	21	17.8	11.2%	25.5%
WALVISBAY	295	232	63	21.4	17.0%	26.7%
WINDHOEK CENTRAL HOSPITAL	148	141	7	4.7	1.9%	9.4%
NAMIBIA	8024	6595	1429	17.8	16.9%	18.6%

Figure 4: HIV prevalence rate by site, 2008 HIV Sentinel Surveillance, Namibia

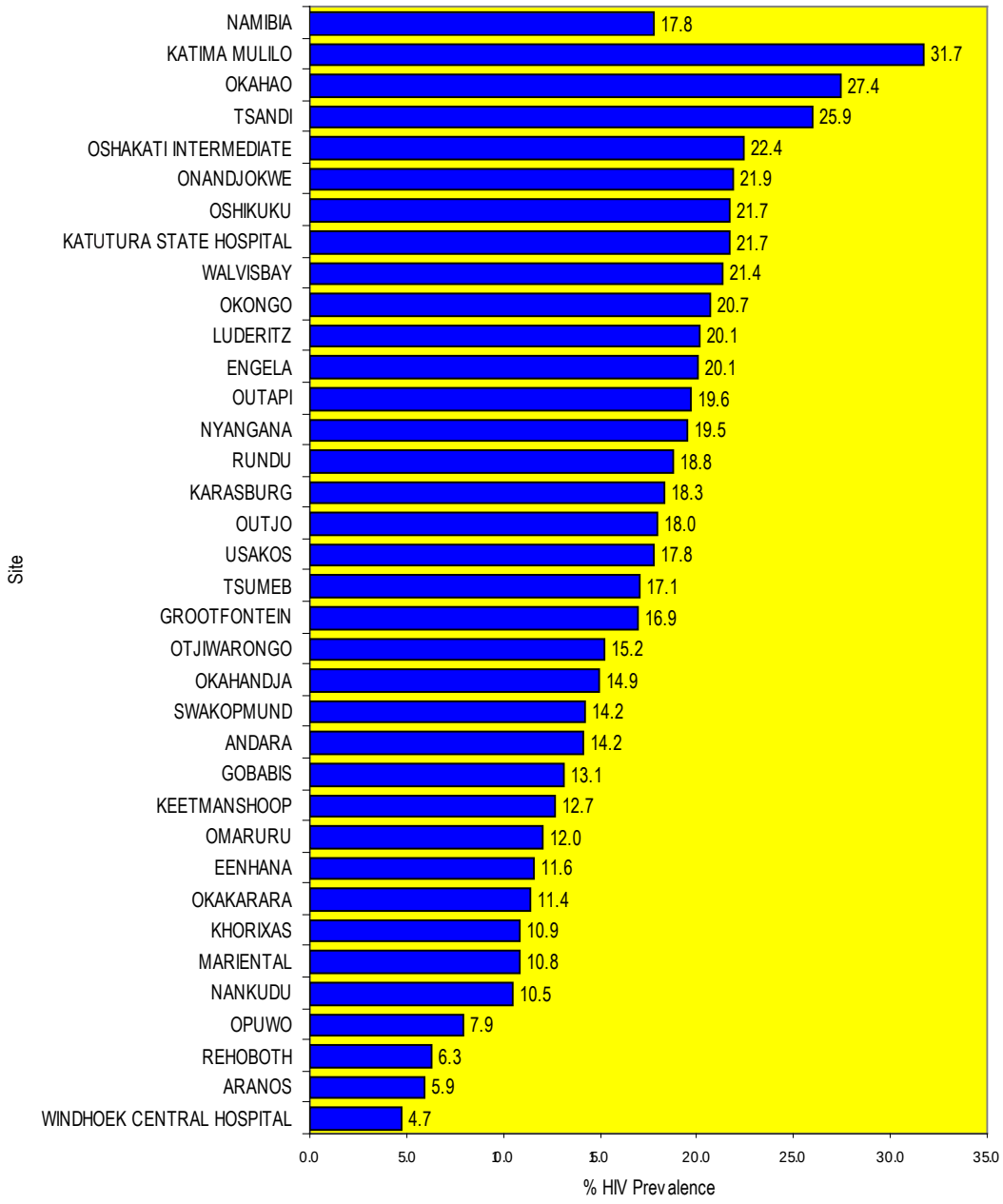
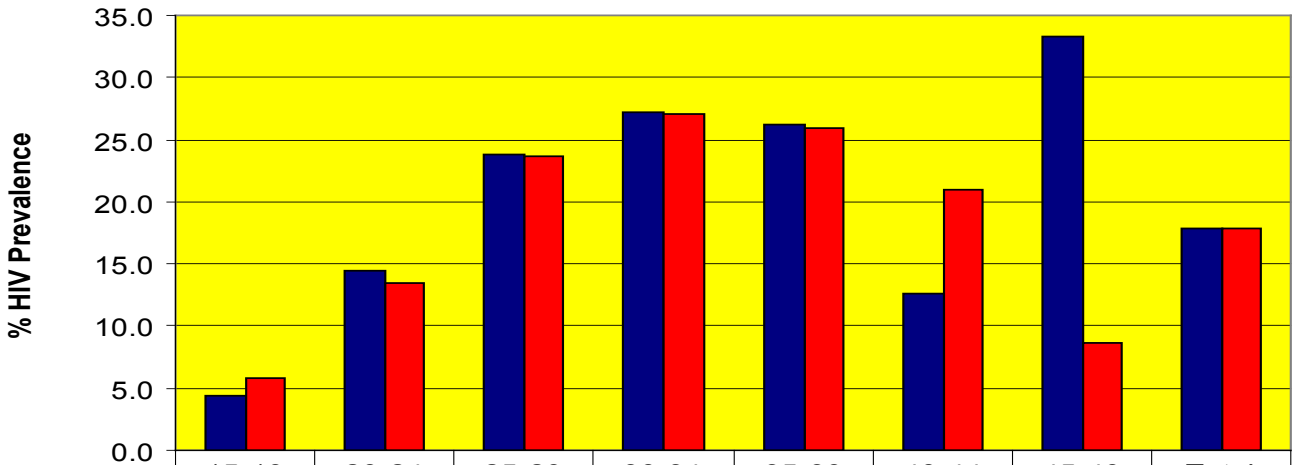


Table 4 illustrates the HIV prevalence rate by site among pregnant women visiting ANC sites country wide. It shows that more than a quarter of pregnant women attending ANC in Katima Mulilo, Okahao and Tsandi during the survey period were HIV positive. The lowest HIV prevalence rate is observed among pregnant women attending ANC at Windhoek Central Hospital. Figure 4 presents the sites from the highest to lowest prevalence.

Table 5: HIV prevalence rate by urban and rural residence and age group, 2008 HIV Sentinel Surveillance, Namibia

			Number of Specimen						95% CL	
Area	Age group	Total Women enrolled	Suitable	Unsuitable	Not recorded	Negative	Positive	% HIV Prevalence Rate		
Urban	15-19	718	705	7	6	674	31	4.4	3.1	6.3
	20-24	1174	1165	9		996	169	14.5	12.5	16.6
	25-29	904	888	6	10	676	212	23.9	20.9	26.6
	30-34	589	587	1	1	427	160	27.3	23.6	31.0
	35-39	334	328	4	2	242	86	26.2	21.6	31.3
	40-44	95	95	0	0	83	12	12.6	6.6	20.6
	45-49	6	6	0	0	4	2	33.3	4.3	77.7
	Total	3820	3774	27	19	3102	672	17.8	16.5	19.
Rural	15-19	823	800	3	20	754	46	5.8	4.3	7.6
	20-24	1288	1259	11	18	1089	170	13.5	11.7	15.5
	25-29	1011	985	8	18	752	233	23.7	21.0	26.4
	30-34	634	617	2	15	450	167	27.1	23.5	30.6
	35-39	419	413	2	4	306	107	25.9	21.7	30.3
	40-44	156	153	1	2	121	32	20.9	14.5	27.7
	45-49	23	23	0	0	21	2	8.7	1.1	28.0
	Total	4354	4250	27	77	3493	757	17.8	16.6	18.9
Namibia	15-19	1541	1505	10	26	1428	77	5.1	4.1	6.4
	20-24	2462	2424	20	18	2085	339	14.0	12.6	15.4
	25-29	1915	1873	14	28	1428	445	23.8	21.7	25.6
	30-34	1223	1204	3	16	877	327	27.2	24.6	29.6
	35-39	753	741	6	6	548	193	26.0	22.9	29.3
	40-44	251	248	1	2	204	44	17.7	12.9	22.6
	45-49	29	29	0	0	25	4	13.8	3.9	31.7
	Total	8174	8024	54	96	6595	1429	17.8	16.9	18.6

Figure 5: HIV prevalence rate by urban/rural residence and age group, 2008 HIV Sentinel Surveillance, Namibia



	15-19	20-24	25-29	30-34	35-39	40-44	45-49	Total
Urban	4.4	14.5	23.9	27.3	26.2	12.6	33.3	17.8
Rural	5.8	13.5	23.7	27.1	25.9	20.9	8.7	17.8

Table 5 and Figure 5 show that the HIV prevalence rate among women who reported their residential status as rural, are at a similar level as of those residing in urban areas. The same pattern can be observed among women in various age groups except those aged 15-19 years where rural areas are slightly more infected than urban areas. The opposite pattern of HIV prevalence can be seen among those aged 20-24 years where the prevalence is slightly higher in the urban areas.

4.3 HIV Trends Over Time

Table 6: HIV prevalence rate by age group and year of survey

Age Group	Year							
	1994	1996	1998	2000	2002	2004	2006	2008
15-19	6	11	12	12	11	10	10.2	5.1
20-24	11	18	20	20	22	18	16.4	14.0
25-29	9	17	22	25	28	26	26.9	23..8
30-34	9	18	19	21	27	24	29.5	27.2
35-39	3	8	12	15	21	24	24.1	26.0
40-44	1	12	14	9	16	12	16.9	17.7
45-49	12	1	13	8	12	13	9.1	13.8

Figure 6: Trends of HIV prevalence by age group and by year of survey

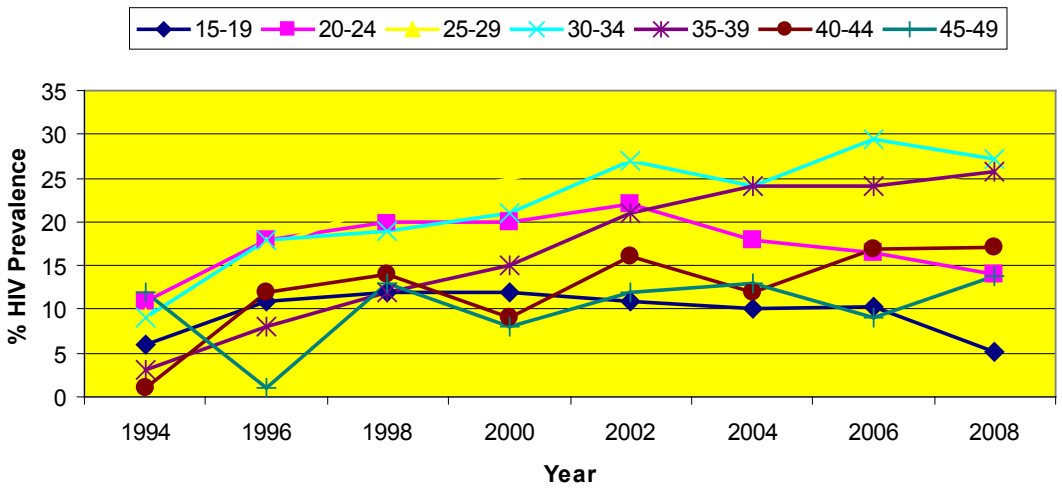


Table 6 and Figure 6 show that HIV prevalence decreased in most age group between 2006 and 2008. The exceptions are those belonging to the 35-39, 40-44 and 45-49 years age group respectively. The 20 to 24 year age group which had the highest prevalence in 1994 showed a substantial decrease in 2008 compared to other age groups. The 15 to 19 year age group demonstrates a decrease to 5 percent, which is blow the 1994 level of 6 percent.

Table 7: HIV prevalence trend by Youth and Adult age groups.

Site	% HIV Prevalence Rate					
	15-24			25-49		
	2004	2006	2008	2004	2006	2008
ANDARA	12.4	19.0	7.4	26.9	27.6	24.5
ARANOS*			8.5			2.3
EENHANA		14.6	6.1		28.4	17.5
ENGELA	11.7	18.9	10.1	24.5	37.6	29.2
GOBABIS	11.6	10.3	8.8	15.3	3.7	18.5
GROOTFONTEIN	23.7	13.4	9.8	31.6	24.8	24.2
OSHAKATI INTERMEDIATE HOSPITAL	24.1	20.1	8.3	26	34.5	32.8
KARASBURG		17.6	5.9		27.1	27.1
KATUTURA STATE HOSPITAL	16	11.8	12.5	27	36.5	28.0
KEETMANSHOOP	7.1	11.0	11.1	23.8	27.1	14.2
KHORIXAS*			5.5			16.2
KATIMA MULILO	38.9	30.9	24.1	47.4	49.4	40.3
LUDERITZ	11.9	14.8	10.4	28.2	28.9	26.2
MARIENTAL	7.1	5.8	9.0	15.6	14.9	13.0
NANKUDU	17.2	12.5	6.3	20.7	15.7	16.7
NYANGANA	11.9	6.8	10.6	19.7	15.9	28.1
OKAHAO		16.1	18.5		29.1	34.6
OKAHANDJA		10.1	9.2		25.2	20.6
OKAKARARA*			10.0			12.9
OKONGO*			13.7			26.0
OMARURU*			9.8			15.2
ONANDJOKWE	16.7	15.7	6.3	25	33	32.6
OPUWO	10	6.5	4.6	7.6	9.9	10.8
OSHIKUKU	16.9	13.4	12.5	34.3	31.6	29.6
OTJIWARONGO	9.5	11.5	9.6	23.7	27.2	21.1
OUTJO*			7.8			32.0
OUTAPI	11.4	7.8	9.1	20.7	32.3	27.7
REHOBOTH	10.8	12	6.8	19	15.9	5.6
RUNDU	21.7	18.1	12.4	18.5	23.3	27.4
SWAKOPMUND	20.3	10.8	8.6	33.6	20.7	19.2
TSANDI*			23.7			28.0
TSUMEB	6.3	16.2	5.2	25.8	17.6	28.1
USAKOS*			11.9			23.7
WALVISBAY	19.1	15.9	15.4	30.6	26.5	26.1
WINDHOEK CENTRAL HOSPITAL	7.5	7.3	1.4	11.8	14	7.7
NAMIBIA	15.2	14.2	10.6	23.9	26.5	24.7

** New sites*

Table 7 indicates the HIV prevalence rate for youth aged 15-24 years and for adults of, 25-49

years. Among the youth, it is noted that Windhoek Central Hospital has the lowest prevalence rate (1.4%) followed by Opuwo with 4.6% while the highest youth HIV prevalence rate of 24.1% was recorded in Katima Mulilo. It is worth noting that most sites experienced a fall in HIV prevalence among the youth, except Katutura State Hospital, Keetmanshoop, Mariental, Nyangana, Okahao and Outapi. The results also show that Katima Mulilo has recorded the highest prevalence rate among the adult age group at 40%, followed by Okahao, Oshakati, Onandjokwe and Outjo which each measured more then 30 percent HIV prevalence.

Figure 7: HIV prevalence rate by Youth, Adult age groups and year.

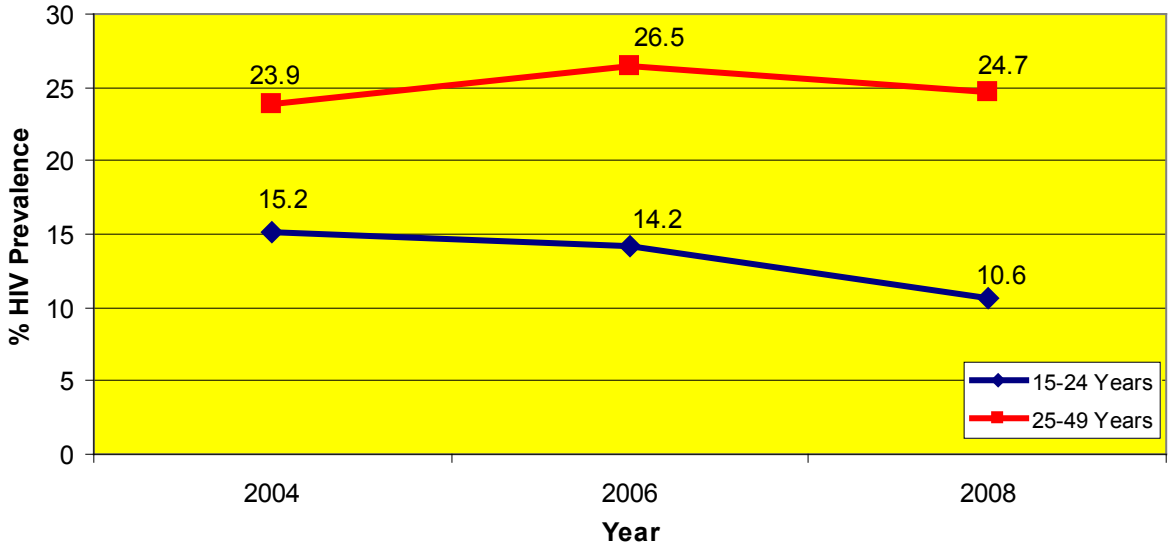


Figure 7 shows the HIV prevalence rate among youth and adult age groups since 2004. It indicates that HIV prevalence among adult women peacked in 2006 (26.5%) and decreased gradually (24.7%) in 2008, while the rate among the youth has come down considerably over 4 years to 10.6 percent in 2008.

Table 8: HIV prevalence trends by site and year, 1992-2008

Sentinel site	1992	1994	1996	1998	2000	2002	2004	2006	2008
Andara Hospital		2	11	16	15	21	18	22.7	14.2
Aranos*									5.9
Eenhana								21.4	11.6
Engela		7	18	17	23	19	19	27	20.1
Gobabis	1			9	9	13	13	7.9	13.1
Grootfontein		9				30	28	19.3	16.9
Karasburg								22.7	18.3
Katima Mulilo	14	25	24	29	33	43	42	39.4	31.7
Katutura State Hospital	4	7	16	23	31	27	22	21.7	21.7
Keetmanshoop Clinic	3	8		7	17	16	16	18.5	12.7
Khorixas*									10.9
Luderitz							22	22.5	20.1
Mariental					10	12	11	10.2	10.8
Nankudu				13	18	16	19	13.9	10.5
Nyangana Hospital		6	5	10	16	22	15	10.2	19.5
Okahandja								18.5	14.9
Okahao								22.5	27.4
Okakarara*									11.4
Okongo*									20.7
Omaruru*									12.0
Onandjokwe		8	17	21	23	28	22	23.7	21.9
Opuwo	3	1	4	6	7	9	9	7.9	7.9
Intermediate Hospital Oshakati	4	14	22	34	28	30	25	27.1	22.4
Oshikuku					21	27	27	22.4	21.7
Otjiwarongo	2	9		16	18	25	17	18.7	15.2
Outapi						23	17	20.7	19.6
Outjo*									18.0
Rehoboth		3			9	10	14	13.9	6.3
Rundu		8	8	14	14	22	21	20.1	18.8
Swakopmund	3	7	17	15	22	16	28	17.3	14.2
Tsandi*									25.9
Tsumeb						25	16	17	17.1
Usakos*									17.8
Walvis Bay				29	28	25	26	22.1	21.4
Windhoek Central Hospital.							10	9.1	4.7
Namibia (Crude)	4.2	8.4	15.4	17.3	19.3	22	19.7	19.9	17.8

** New sites*

Table 8 shows the trend of HIV prevalence rate by site since 1992. Overall, all sites are experiencing a decrease in the HIV prevalence rate in 2008, except Katutura State Hospital, Mariental and Tsumeb where prevalence is leveling while two sites namely Nyangana and Okahao have now registered a substantial increase in HIV prevalence.

Figure 8: HIV prevalence trends by selected site, 1992-2008

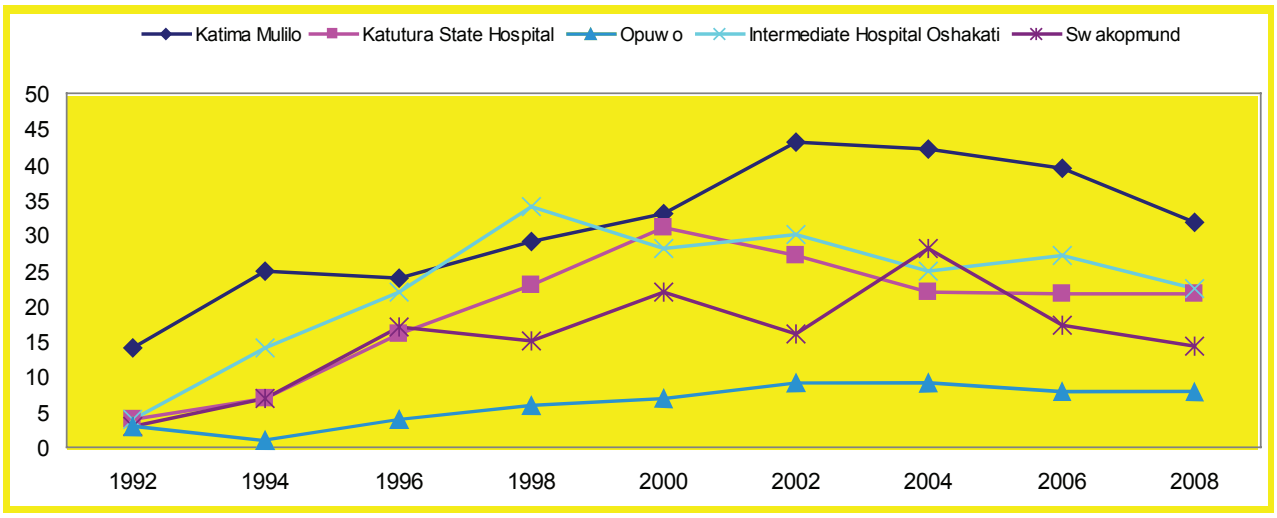
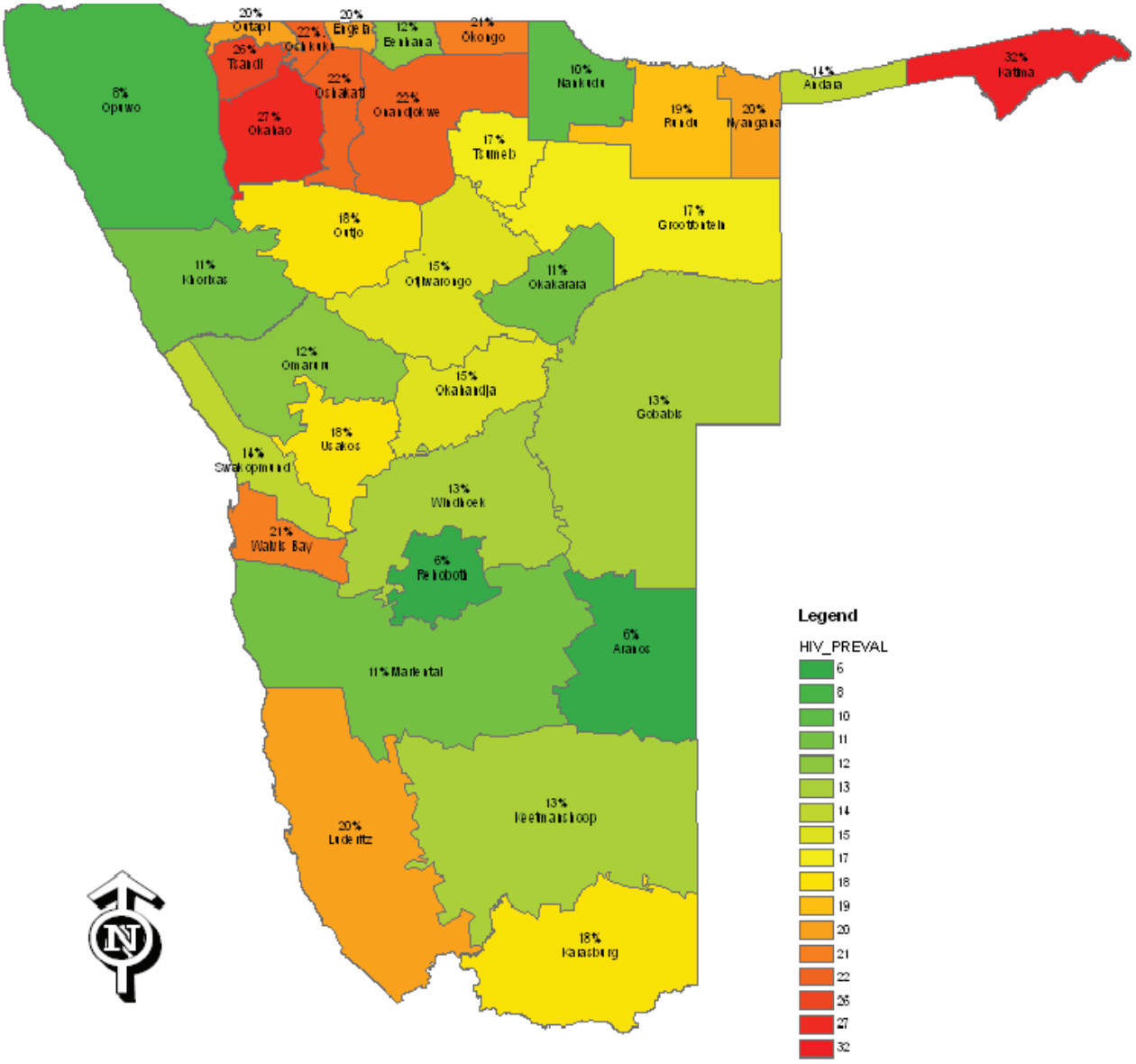


Figure 8 show that since 1992 the HIV prevalence rate for Katima Mulilo has been topmost for all years, except in 1998 where Oshakati experienced the highest rate. Katima Mulilo and Opuwo reached their HIV prevalence peak in 2002 and started leveling as from 2004, while Oshakati and Katutura State Hospital reached their peak in 1998 and 2000, respectively.

Figure 9: HIV Prevalence by Health District, 2008



HIV prevalence is disproportionately distributed in the country. It seems to be high in the following areas: the south (Karasburg, Luderitz), west (Walvis Bay), north (Okahao, Tsandi, Oshakati, Oshikuku, Outapi, Onandjokwe, Engela) and north west (Rundu, Nyangana and Katima Mulilo).

Figure 9 shows the epidemic appear to be centered around four pockets where mobile populations are most likely to take temporary residence such as mining areas, tourist areas, commercial, border entry/exit points.

5 SENTINEL SURVEILANCE AND OTHER DATA SOURCES

Data from other HIV/AIDS programmes such as PMTCT, and routine ANC, syphilis surveillance have been used to enhance confidence and explanatory power of the sentinel surveillance findings. Additional information from other surveys that measure both sero-prevalence and risk behaviour is also required to further complement the sentinel surveillance system in order to further enhance the explanatory power of the findings. It must be noted that the aim of this section is not to compare the HIV sentinel survey result with other HIV data sources but to see if they support the same interpre tations.

5.1 National Testing Day (NTD) and HIV Surveillance data

Namibia conducted its first ever HIV National Testing Day (NTD) in May 2008. This event aimed at contributing to the implementation of the National Scale up Plan for counseling and testing that aims to counsel and test approximately 203,000 people in 2008.

The NTD campaign targeted the 15-49 year old population with specific messages for men, women, and young people. Youth and married couples within that age group in particular were encouraged to go for testing. However, it is important to note that this did not limit access to testing and counseling for those aged above 49 years or for children below 15 years. Importantly, mechanisms were put in place to ensure facilitation of referrals for HIV positive clients, (MoHSS/NTD 2008: i).

Figure 10: Age specific HIV prevalence from 2008 National Testing Day and 2008 HIV Sentinel Survey

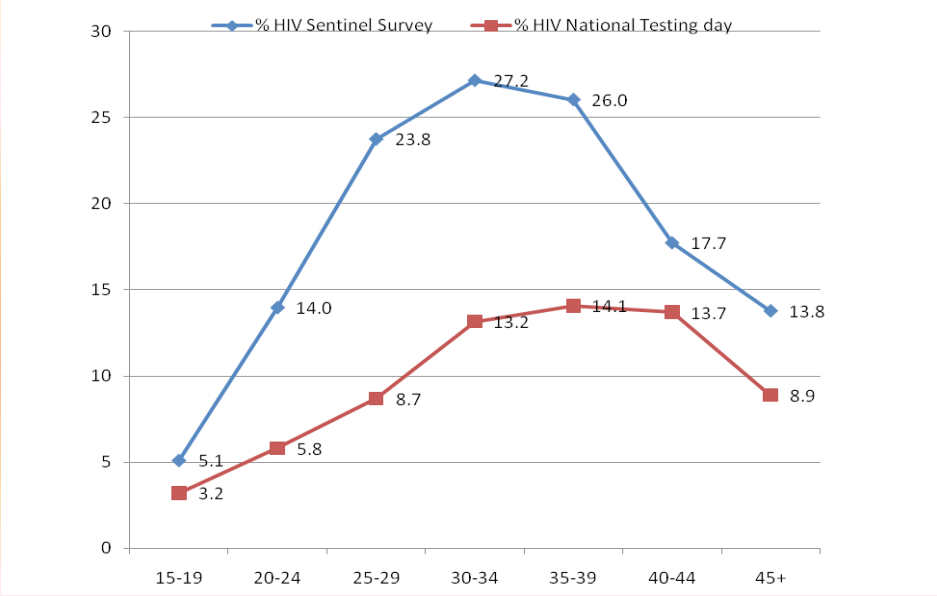


Figure 10 presents the sentinel survey and national testing day results. The HIV prevalence pattern across the various age groups is clearly similar. Both curves reveal that the age specific prevalence is low in the younger age (less than 25 years), high in the middle age (25 to 44 years) and again low in the older age group.

5.2 HIV Prevalence data from PMTCT Programme.

The use of PMTCT programme data under certain conditions for monitoring HIV prevalence has been considered by some. Such an approach has obvious benefits as it allow monitoring of HIV prevalence on a monthly basis as opposed to the biennial frequency of sentinel surveillance.

Table 9: Comparison of data from PMTCT and Sentinel Survey for 2008

District	Total number delivery	PMTCT (number HV+)	Prevalence rate	
			PMTCT	HSS
ANDARA**	0	0	0	14.2
ARANOS	94	7	7.4	5.9
EENHANA	802	165	20.6	11.6
ENGELA	1132	230	20.3	20.1
GOBABIS	497	54	10.9	13.1
GROOTFONTEIN	443	69	15.6	16.9
KARASBURG	143	14	9.8	18.3
KATUTURA STATE HOSPITAL	1918	327	17.0	21.7
KATIMA	959	252	26.3	31.7
KEETMANSHOOP	426	45	10.6	12.7
KHORIXAS	86	13	15.1	10.9
LUDERITZ	172	37	21.5	20.1
MARIENTAL	453	54	11.9	10.8
NANKUDU	476	74	15.5	10.5
NYANGANA	66	10	15.2	19.5
OKAHANDJA	329	41	12.5	14.9
OKAHAO	445	101	22.7	27.4
OKAKARARA	163	15	9.2	11.4
OKONGO	274	48	17.5	20.7
OMARURU	128	22	17.2	12.0
ONANDJOKWE	1266	272	21.5	21.9
OPUWO	217	22	10.1	7.9
OSHAKATI	2254	508	22.5	22.4
OSHIKUKU	818	241	29.5	21.7
OTJIWARONGO	728	112	15.4	15.2
OUTAPI	1106	256	23.1	19.6
OUTJO	91	12	13.2	18.0
REHOBOTH	406	43	10.6	6.3
RUNDU	1647	350	21.3	18.8
SWAKOPMUND	269	38	14.1	14.2
TSANDI	341	72	21.1	25.9
TSUMEB	184	32	17.4	17.1
USAKOS	89	8	9.0	17.8
WALVIS BAY	634	101	15.9	21.4
WINDHOEK CENTRAL	1459	137	9.4	4.7
Namibia	20515	3782	18.4	17.8

PMTCT data from January-June, 2008
SOURCE (of PMTCT data): National Health Information System
** Missing data

Figure 11: Comparison of data from PMTCT and Sentinel Survey for 2008

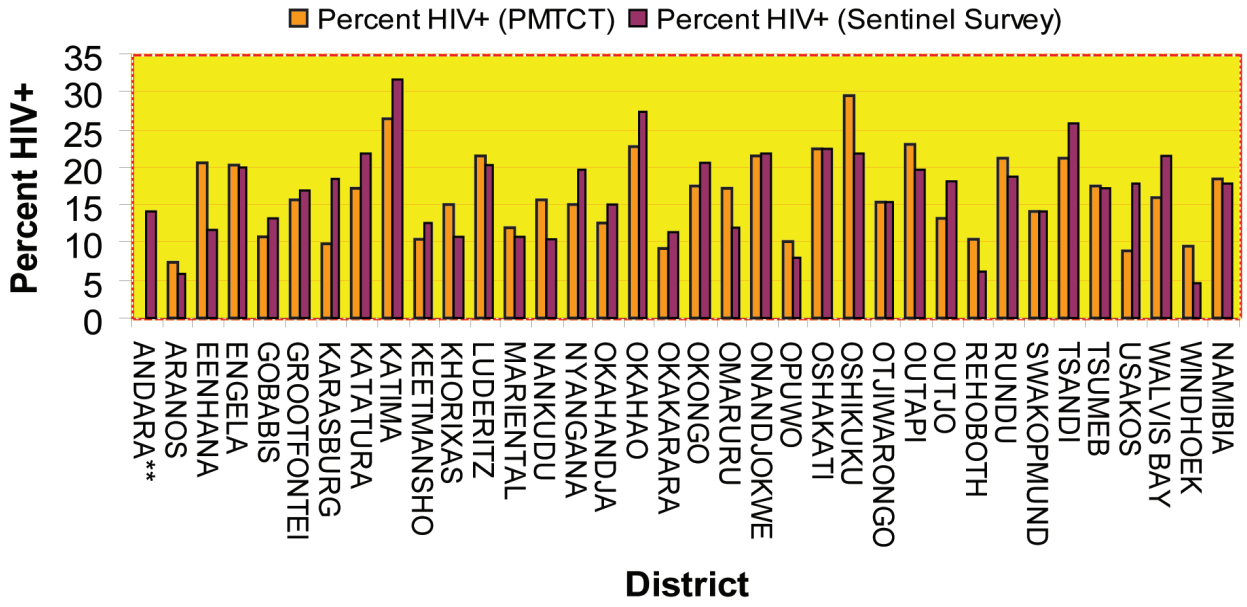


Table 9 and figure 11 show that the national HIV prevalence from PMTCT data in the same districts where sentinel surveillance took place was 18.4% compared to 17.8% from the sentinel survey. The degree of variability however differs greatly by sentinel site. The sites with highest sentinel survey prevalence are confirmed by prevalence measured in PMTCT attendants at the same health facility PMTCT except for Eenhana which registered a considerably high prevalence in PMTCT attandants as opposed to the 2008HSS. This implies that in some sites the 2008 HIV prevalence data matched very well with the PMTCT prevalence data. However, some discrepancies relating to the quality of PMTCT data from other sites have been noted.

5.3 Syphilis Surveillance data from routine laboratory records

All pregnant women in Namibia are routinely offered syphilis testing (RPR testing). Since both syphilis and HIV are sexually transmitted infections, it is possible that a correlation between prevalence of these two infections would be observed if they are being spread through the same sexual networks. Data from syphilis testing were obtained from the Namibia Institute of Pathology and analyzed by district with results presented below in Table 10.

Syphilis prevalence (positive RPR test) in women who had their blood tested for STI ranged from 0.0% to 17.9%. Though some alarmingly high rates were observed in Aronas (17.9%), Usakos (16.9%), Mariental (10.6%), and Gobabis (10.1%), no association was observed with HIV prevalence measured during the 2008 HSS.

Table 10: Syphilis in women aged 15-49 by districts

MAIN SITE	NEGATIVE	POSITIVE	# TESTED	RPR%	HSS%
ANDARA	365	11	376	2.9	14.2
ARANOS	87	19	106	17.9	5.9
EENHANA	1427	15	1442	1.0	11.6
ENGELA	2423	58	2481	2.3	20.1
GOBABIS	773	86	859	10.0	13.1
GROOTFONTEIN	601	15	616	2.4	16.9
KARASBURG	151	2	153	1.3	22.4
KATIMA	72	1	73	1.4	18.3
KATUTURA ANC	1995	24	2019	1.2	21.7
KEETMANSHOOP	466	6	472	1.3	12.7
KHORIXAS	177	0	177	0.0	10.9
LUDERITZ	231	2	233	0.9	31.7
MARIENTAL	499	59	558	10.6	20.1
NANKUDU	498	8	506	1.6	10.8
NYANGANA	516	12	528	2.3	10.5
OKAHANDJA	402	3	405	0.7	19.5
OKAHAO	424	11	435	2.5	27.4
OKAKARARA	199	2	201	1.0	14.9
OKONGO	169	9	178	5.1	11.4
OMARURU	186	5	191	2.6	20.7
ONANDJOKWE	2577	39	2616	1.5	12.0
OPUWO	561	6	567	1.1	21.9
OSHAKATI	2008	46	2054	2.2	7.9
OSHIKUKU	1304	30	1334	2.2	21.7
OTJIWARONGO	1247	20	1267	1.4	15.2
OUTAPI	1532	28	1560	1.8	18.0
OUTJO	202	7	209	3.3	19.6
REHOBOTH	377	12	389	3.1	6.3
RUNDU	2321	40	2361	1.7	18.8
SWAKOPMUND	516	7	523	1.3	14.2
TSANDI	154	9	163	5.5	25.9
TSUMEB	512	12	524	2.3	17.1
USAKOS	64	13	77	16.9	17.8
WALVISBAY	727	13	740	1.8	21.4
WINDHOEK CENTRAL ANC	1008	5	1013	0.5	4.7
NAMIBIA	26771	635	27406	2.3	17.8

Table 11: Syphilis prevalence rate in pregnant women aged 15-49 years who were enrolled during the 2008 sentinel survey period

Age group	Negative	Positive	# Tested	RPR%	HSS
15-19	4302	96	4398	2.2	5.1
20-24	6980	140	7120	2.0	14.0
25-29	5955	153	6108	2.5	23.8
30-34	5334	140	5474	2.6	27.2
35-39	2657	57	2714	2.1	26.0
40-44	1093	33	1126	2.9	17.7
45-49	450	16	466	3.4	13.8
TOTALS	26771	635	27406	2.3	17.8

Table 11 indicates that syphilis prevalence is above 2.1% across all age groups with the highest prevalence found in the age group being 40-49 years; however, this is not statistically significant. The age group 35-39 years had the least representation in the sample of women and the lowest syphilis prevalence.

6. LIMITATIONS

The following limitations apply to the 2008 National HIV Sentinel Survey:

6.1. Only women aged 15-49 who were pregnant during the period of the survey were included in the survey.

6.2. All men were excluded and women younger than 15 years or older than 49 years were not included in this survey.

6.3. Some sites did not reach their targeted sample size as required, while some sites e.g. Okongo lost samples during data collection.

6.4. The data are not comparable to a randomized population-based sample and therefore conclusions cannot be extrapolated to the general population.

6.5. The survey does not provide information on new HIV infections.

6.6. Information on specific high risk group cannot be provided by the sentinel surveillance.

6.8. The survey does not allow direct linkage of biological data to behavioral data. Though aggregate correlation are possible, these are vulnerable to ecologic bias and therefore is weak in providing epidemiological explanatory power on determinants fueling the epidemic.

6.9 During the 2008 sentinel survey, some satellite sites where not easily accessible due to flooding in various regions in the north.

7. CONCLUSION

7.1 HIV remains a major public health problem in Namibia affecting all regions.

7.2 HIV prevalence rate is lowest in Windhoek Central Hospital, Aronos, Rehoboth and Opuwo, while it remains the highest in Katima Mulilo.

7.3 The highest age specific prevalence rate was observed in the 30-34 age group.

7.4 The overall HIV prevalence for the age group 15-24 years is 10.6 percent.

7.5 The MTP III target to reduce HIV prevalence rates among different age groups by 2007 have been achieved in respect of the 15-19 and 20-24 year age groups. For other age groups the target prevalence was not achieved as per below table.

Age group	% HIV prevalence Target (MTP3)	2008 HSS results	Progress towards achievement
15-19	9	5.1	exceeded target
20-24	15	14.0	exceeded target
25-29	21	23.6	Slow
30-34	20	27.1	Slow
35-39	16	25.8	Slow
40-44	14	17.1	Slow

7.6. The epidemic appears to be centered around pockets in the central, north, north east, west and south where mobile populations are most likely to take temporary residence as a rust of mining, tourism, agricultural and fishing activities and border entry/ exit points.

7.7. The high prevalence rates in many sites imply that the number of AIDS cases will continue to increase in future years.

7.8 There is no difference in HIV prevalence between urban and rural areas.

8. RECOMMENDATIONS

8.1. Intensify HIV/AIDS intervention programmes especially among the youth so as to continue to reduce HIV prevalence.

8.2. Explore possibilities to investigate new HIV infections in the country.

8.3. Enforce a policy whereby every developmental project should be accompanied by a clearly defined HIV/AIDS component especially in mining, tourist and other economic activity areas.

8.4. Surveillance surveys should include behavioural studies so as to allow proper linkage with biological data.

8.5. There is a need for extensive community mobilization for increased patronage of voluntary counseling and testing services.

8.6 Data sources for sexually-transmitted infections and AIDS mortality should be strengthened to allow for in-depth analyses of syndromic and etiologic trends coinciding with sentinel survey rounds.

8.7. The Programme for Anti-retroviral Therapy should be prepared to meet the needs of the impending maturing epidemic. The number of AIDS cases is likely to rise further.

8.8. PMTCT service coverage and data quality and completeness should be strengthened so that prevalence from PMTCT can be more readly compared to sentinel surveillance data in the future.

8.9. There is need to strengthen NIP capacity to enhance the implementation of future surveillance surveys in future.

8.10. The result of this survey should be utilized to plan targeted prevention interventions in particular regions/health districts.

9. REFERENCES

1. Ministry of Health and Social Services (MOHSS), 2006: Report of the 2006 National HIV Sentinel Survey.

2. Ministry of Health and Social Services, 2008: HIV Sentinel Surveillance in Namibia: Protocol for sentinel surveillance at antenatal care clinics.

3. Ministry of Health and Social Services (MOHSS), 2008: National Testing Day Report

4. National Planning Commission, 2006: Population Projections, 2001- 2031, National and Regional Figures, Central Bureau of Statistics.

5. UNAIDS/WHO, 2003: Guidelines for Conducting HIV Sentinel Serosurveys among Pregnant Women and other Groups.

6. Fierz W, Erb P. 10th, 2003: Conference on Retroviruses and Opportunistic Infections.

10. APPENDICES

Appendix 1: Checklist for 2008 Survey Training

- ☐ History and Context of Sentinel Surveillance
- ☐ Objectives of the 2008 Survey
- ☐ Methods
- ☐ Site selection

- ☐ Population samples
  - ☐ Inclusion criteria
  - ☐ Exclusion criteria
  - ☐ Sample size

- ☐ Sampling period
- ☐ Over-sampling

- ☐ Blood specimen and data collection
  - ☐ Socio-demographic data collection (Individual Survey Form)
- ☐ Specimen collection and processing

- ☐ Namibia Institute of Pathology (NIP) laboratory procedures
  - ☐ Specimen surveillance bar code
- ☐ Testing procedure
- ☐ Recording and transmission of results
- ☐ De-linking syphilis
- ☐ Syphilis testing

- ☐ Quality Assurance
  - ☐ National level
  - ☐ Field
  - ☐ Laboratory
- ☐ Data Management and Analysis
- ☐ Ethical Consideratens
- ☐ Dissemination of Results

Appendix 2: Sites participating in HIV sentinel survey by year, Namibia 2002- 2008.

Region	Sentinel Site Name	Year of Participation			
		2002	2004	2006	2008
CAPRIVI	1. Katima Mulilo	□	□	□	□
ERONGO	2. Swakopmund	□	□	□	□
	3. Walvisbay	□	□	□	□
	4. Omaruru			□	□
	5. Usakos			□	□
HARDAP	6. Mariental	□	□	□	□
	7. Rehoboth	□	□	□	□
	8. Aranos				□
KARAS	9. Luderitz		□	□	□
	10. Karasburg			□	□
	11. Keetmanshoop	□	□	□	□
KAVANGO	12. Rundu	□	□	□	□
	13. Andara	□	□	□	□
	14. Nyangana	□	□	□	□
	15. Nankudu	□	□	□	□
KHOMAS	16. Katutura	□	□	□	□
	17. Windhoek Central		□	□	□
KUNENE	18. Opuwo Clinic	□	□	□	□
	19. Outjo/Khorixas		□	□	□
	20. Khorixas				
OHANGEWENA	21. Engela	□	□	□	□
	22. Eenhana			□	□
	23. Okongo				□
OMAHEKE	24. Gobabis	□	□	□	□
OMUSATI	25. Tsandi Clinic				□
	26. Outapi	□	□	□	□
	27. Okahao			□	□
	28. Oshikuku	□	□	□	□
OSHANA	29. Oshakati	□	□	□	□
OSHIKOTO	30. Onandjokwe	□	□	□	□
	31. Tsumeb	□	□	□	□
OTJOZUNDJUPA	32. Otjiwarongo	□	□	□	□
	33. Grootfontein	□	□	□	□
	34. Okahandja			□	□
	35. Okakarara				□

** New sites in 2006*

Appendix 3: Individual Survey Form, HIV sentinel survey, Namibia -2008.

Annexure D: Individual survey form

Ministry of Health and Social Services

HIV Surveillance Data Collection Form for Antenatal Clinics

Form Serial # 0 0 0 1

AFFIX BAR CODE
STICKER HERE

1 Date of interview D D / M M / Y Y Y Y

2 Health District code number

3 Name of facility

4 Type of facility
1 =hospital 2=health facility clinic

Take information below directly from the ANC Passport and Register

5 Patient age (in years)

6 Town of residence

7 Gravidity:

8 Patient on ART?
1= yes 2=no

Nurse's initials
(Surname followed by given name)

Appendix 4: Laboratory Shipping / Results Form, 2008 HIV sentinel survey, Namibia

Ministry of Health and Social Services
HIV Surveillance Data Shipping / Results Form

ANC Site Name: _____ Region: _____

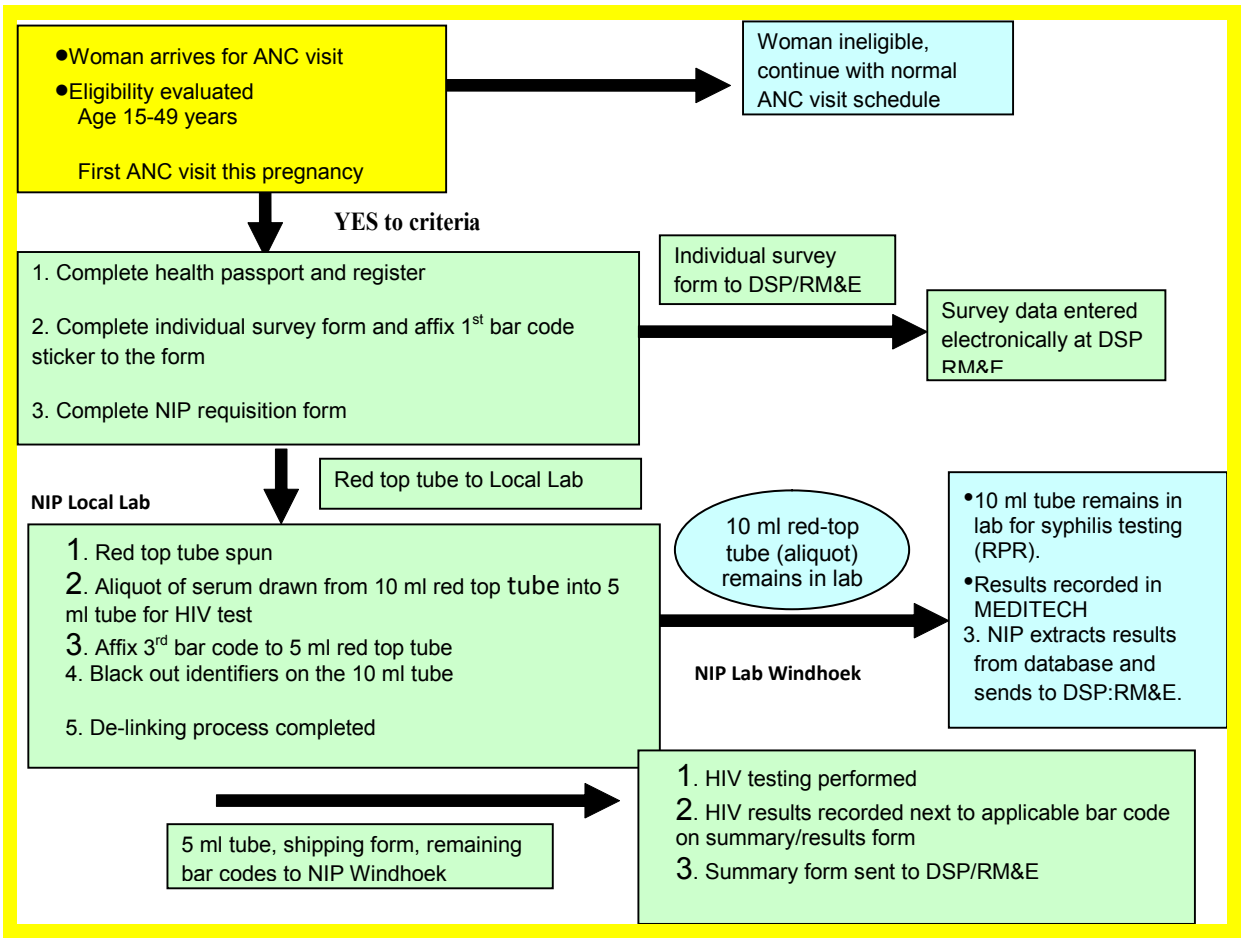
Date sent to NIP:_____

	Bar Code Sticker	Comment	HIV 1 / HIV 2	HIV Results
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Date received: _____ Date sent to DSP: _____

Received By: _____

Appendix 5: Clinic and Laboratory Flow Chart – 2008 HIV Sentinel Survey



Appendix 6: Quality Assurance form, 2008 HIV Sentinel Surveillance, Pregnant women, Namibia

CHECKLIST FOR QUALITY ASSURANCE OF SURVEILLANCE OPERATENS

Supervisory staff: Use the following checklist as you monitor the quality of operatenal activities conducted at the sentinel site during supervisory visits.

Site name: _____ Site Code: _____

SAMPLING

1. Audit records starting from the time ANC surveillance began until the supervisory visit:

Total no. of women visiting ANC for their 1st ANC since surveillance began: _____

Total no. of women sampled since surveillance began: _____

No. blood samples sent since surveillance began: _____

Comments: _____

_____

_____

2. Audit records from the last day that ANC services took place in your facility.

No. of women sampled on this day:

Sampling consecutive? Yes [ ] No [ ]

Comments: _____

_____

_____

3. List any problems your site is experiencing with the sentinel survey (for example, adequate stock of forms, cryovials, and other supplies; recruitment, shipping of samples, forwarding of forms, laboratory, etc,

_____

_____

_____

Site staff (print name): _____ (signature): _____

Support visit team leader (print name): _____ (signature): _____

Date of support visit: _____

Appendix 7: Progress Report Form Sentinel Survey, Namibia, 2008.

WEEKLY PROGRESS HIV SENTINEL SERO-SURVEY 2008

To be sent weekly by the local survey team to the
Directorates Special Programmes (DSP)

Fax: 061-226959

Anna Jonas
Tel: 061-203-2289
Mobile: 0811278945

Efraim Dumeni
Tel: 061-203-2292
Mobile:0813300489

Sentinel site:	Date:
ANC samples collected to date:	
Problems/Challenges encountered:	

Appendix 8: 2008 Sentinel Surveillance Satellite sites

Region	District	Site/Facility Name	Estimated Samples		Region	District	Site/Facility Name	Estimated Samples
CAPRIVI	Katima Mulilo	Katima Mulilo Clinic	420		KARAS	Luderitz	Luderitz Clinic	300
		Mavuluma Clinic					Aus Clinic	
		Ngwezi Clinic					Rosh Pinah Clinic	
		Bukalo Health Centre					Oranjemund Clinic	
		Sibinda Health centre				Karasburg	Karasburg Clinic	300
		Sangwali Clinic					Ariamsvlei Clinic	
ERONGO	Swakopmund	Tamariskia Clinic	250				Noordoewer Clinic	
		Hentiesbay Clinic					Warmbad Clinic	
		Arandis Clinic				Keetmanshoop	Keetmanshoop Clinic	260
	Walvisbay	Kuisebmund Health Center	300				Daan Viljoen Clinic	
		Coastal Clinic					Bethanie Clinic	
		Narraville Clinic					Tses Clinic	
		Walvisbay Clinic					Aroab Heath Center	
		Utuseb Clinic					Koes Clinic	
	Omaruru	Omaruru Clinic	230				Berseba Clinic	
		Omatjete Clinic			KHOMAS		Katutura State Hospital	300
		Uis Clinic				Windhoek	Windhoek Central Hospital	150
		Okombahe Clinic			KUNENE	Opuwo	Opuwo Clinic	140
	Usakos	Hakaseb Clinic	230			Outjo	Outjo Clinic	190
		Sam Nuyoma Clinic					Kamanjab Clinic	
		Otjimbingwe Clinic				Khorixas	Khorixas Clinic	190
		Spitzkoppe Clinic					Fransfontein Clinic	
		Tubuses Clinic					Anker Clinic	
HARDAP	Mariental	Mariental Clinic	170		OHANGWENA	Engela	Engela Clinic	330
		Gibeon Clinic				Eenhana	Eenhana Clinic	290
		Maltahohe Health Center					Epembe Clinic	
		Kalkrand Clinic					Epinga Clinic	
		Stampriet Clinic					Omundaungilo Clinic	
	Rehoboth	Rehoboth Health Center	210				Onambutu Clinic	
		Rehoboth Clinic					OngulaYanetaga Clinic	
		Kein Aub Clinic					Oshandi Clinic	
		Riet Oog Clinic					Oshikude clinic	
		Schilp Clinic				Okongo	Okongo Clinic	320
	Aranos	Aranos Clinic	190				Ekoka Clinic	
		Gochas Clinic					Omboloka Clinic	
KAVANGO	Rundu	Rundu Clinic	275		OMAHEKE	Gobabis	Epako Clinic	145
		Nkarapamwe Clinic						
		Ndama Clinic			OMUSATI	Outapi	Outapi Clinic	285
		Sauyema Clinic					Okahao Clinic	
		Shambyu Health Center				Okahao	Indira Ghandhi Health Center	300
	Andara	Andara Hospital	300				Etilyasa Clinic	
		Divundu Clinic				Oshikuku	Oshikuku Hospital	300
		Bagani Clinic					Okalongo Health Center	
		Omega Clinic					Onheleiwa Clinic	
		Shadikongoro Clinic				Tsandi	Tsandi Clinic	305
		Biro Clinic					Onesi Clinic	
		Manyara Clinic					Iilyateka Clinic	
		Mutjiku Clinic					Okatsyedhi Clinic	
	Nyangana	Nyangana Hospital	180				Ongulumbashe Clinic	
		Katere Clinic					Oshututdha Clinic	
		Mabushe Clinic			OSHANA	Oshakati	Intermediate Hospital Oshakati	400
		Mbambi Clinic			OSHIKOTO	Onandjokwe	Onandjokwe	310
		Barwausoui Clinic						
		Kandjara Clinic				Tsumeb	Lombard Clinic	330
		Karakuta Clinic					Tsumeb Clinic	
		Ndonga Clinic					Oshivelo Clinic	

Appendix 8: 2008 Sentinel Surveillance Satellite sites Continued

Region	District	Site/Facility Name	Estimated Samples		Region	District	Site/Facility Name	Estimated Samples
		Shiyangwe Clinic			OTJOZOND-JUPA	Otjiwarongo	Orwetoveni Clinic	245
	Nankudu	Nankudu Clinic	220			Grootfontein	Poly Clinic	265
		Mpungu Health Center				Okahandja	Nau Aib Clinic	265
		Nkurenkuru Health Center				Okakarara	Okakarara Clinic	260
		Rupara Health Center					Okonjatu Clinic	
		Tondoro Health Center						
		Mbambi Clinic						
		Nzinze Clinic						
		Sikarasompo Clinic						
		Yinsu Clinic			GRAND TOTAL			9155

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