Report on the 2009 Round Antenatal Care Sentinel HIV Surveillance in Ethiopia

Ethiopian Health and Nutrition Research Institute (EHNRI)

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FEDERAL MINISTRY OF HEALTH/EHNRI, ADDIS ABABA, ETHIOPIA

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AIDS	-	Acquired Immunodeficiency Syndrome
ANC	-	Antenatal Care
ART	-	Antiretroviral Therapy
BCC	-	Behaviour Change & Communication
BSS	-	Behaviour Surveillance Survey
CDC	-	United States Centers for Disease Control and Prevention
CI	-	Confidence Interval
CSA	-	Central Statistics Agency
DHS	-	Demographic Health Survey
EHNRI	-	Ethiopian Health and Nutrition Research Institute
EIA	-	Enzyme Immunosorbent Assay
GOE	-	Government of Ethiopia
HAPCO	-	HIV/AIDS Prevention & Control Office
HC	-	Health Center
HIV	-	Human Immunodeficiency Virus
HS	-	Hospital
IEC	-	Information, Education, Communication
MARPs	-	Most at Risk Populations
MOH	-	Ministry of Health
NEQAS	-	National External Quality Assurance Schemes
NRL	-	National Referral Laboratory
PEPFAR		The United States President's Emergency Plan for AIDS Relief
PMTCT	-	Prevention of Mother-to-Child Transmission
RHB	-	Regional Health Bureau
RPR	-	Rapid Plasma Reagin
SNNPR	-	Southern Nations and Nationalities Peoples Region
STI	-	Sexually Transmitted Infections
TWG	-	Technical Working Group
UAT	-	unlinked anonymous testing
UNAIDS	-	Joint United Nations Program on HIV/AIDS
VCT	-	Voluntary Counselling and Testing
WHO	-	World Health Organization

FOREWORD

Sub-Saharan Africa is severely affected by the HIV epidemic, as it constitutes over two-thirds of all people worldwide living with HIV/AIDS. Ethiopia is the second most populous country within Sub-Saharan Africa that has continued to be affected by the HIV/AIDS epidemic. According to the results of this 2009 round ANC-based HIV surveillance survey, the epidemic continued to decline at a slower rate and still remains a significant public health challenge.

The Government of Ethiopia (GOE) and its partners are working together to prevent further spread of HIV and to control the pandemic. The GOE has been focusing on efforts to create an enabling environment by establishing the National HIV/AIDS Prevention and Control policy and has developed several technical guidelines. Some of the guiding documents include the Monitoring and Evaluation of the Multi-sectoral Response, ARV, PMTCT, VCT and the Road Map for accelerated access to HIV/AIDS, prevention, care and treatment. An emphasis is currently being placed on effective leadership, coordination, planning, mobilization of resources and monitoring activities for which different institutional changes have been made.

The Ministry of Health (MOH) has designated the Ethiopian Health and Nutrition Research Institute (EHNRI) to coordinate and implement HIV and related surveillance and survey activities to generate reliable and timely reports for evidence-based decision making, planning, and monitoring and evaluation of HIV/AIDS prevention, care and treatment programs.

The EHNRI sincerely hopes and expects that the Report on the 2009 Round of Antenatal Care Sentinel HIV Surveillance will be a valuable source of information for all partners who would like to contribute in the fight against HIV/AIDS in Ethiopia. This report provides data from a representative sample of ANC attendees at site and regional level with no inclusion of estimates generated from any modelling.

Finally, I would like to take this opportunity to thank all those who participated in the preparation, data collection, and implementation of 2009 ANC surveillance round activities. In particular, I thank CDC-Ethiopia, who generously supported the HIV surveillance program in Ethiopia both technically and financially. My sincere thanks also extend to the EHNRI-CDC surveillance collaborative team that worked relentlessly

on implementation and final generation of this report and also the national HIV surveillance and surveys (TWG) members who provided valuable guidance during the implementation of the 2009 ANC round. Last but not least, I also thank all Regional Health Bureaus (RHBs), the regional testing laboratories and the ANC sentinel surveillance site staff without whom the 2009 ANC round would not have been possible.

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August 2011

EXECUTIVE SUMMARY

This HIV Surveillance Report presents results from the Antenatal Care (ANC) based-Sentinel HIV Surveillance data from the 2009 round. The results refer to the HIV prevalence of ANC clients at the sentinel sites as well as specific to regions classified in urban and rural settings. Unlike previous series of "AIDS in Ethiopia" reports, this report does not include any modelling or national projections.

The 2009 ANC-based HIV Sentinel Surveillance round was unlinked anonymous, where HIV testing was performed on left-over blood collected for routine syphilis testing. Data and specimens were collected at national level from 114 sentinel sites of which 73 were rural and 41were urban. Blood samples were tested using Vironostika HIV Ag/Ab ELISA for screening and all HIV-reactive specimens were re-tested using Murex HIV Ag/Ab ELISA. Testing was done at 20 testing laboratories across all the regions. All positives, indeterminates, and 10% of the negative samples were retested at EHNRI for quality control purpose. A remarkable improvement in data quality was noted during this round compared to the previous ones. An assessment of PMTCT data quality and uptake of HIV testing in PMTCT clinics was done in 43 selected ANC surveillance facilities to see if the data quality is acceptable to be used instead of UAT.

In the 2009 round, a total of 44,945 samples were collected from 114 (73 rural and 41 urban) sentinel sites. Of these, a total of 3,145 specimens were excluded from the national analysis for various reasons including poor specimen quality, special nature of the population (uniformed service and refugees) and those with missing or excluded invalid age range.
A total of 41,800 clients were finally eligible for the national data analysis.

Since the number of sites per region is not comparable, fluctuations in prevalence values were observed. Thus, region to region comparison might be less stable and at times may mislead. For the purpose of national or regional planning, a comprehensive estimate similar to the Single Point HIV Prevalence Estimate (June 2007, MOH) will follow this report.

The national unadjusted HIV prevalence among pregnant women attending ANC clinics in 2009 was 3.0% (urban 5.3% and rural 1.9 %). The adjusted HIV prevalence for the relative urban and rural population size of each region using all the sites together is 2.3%. The HIV

prevalence is heterogeneous among different regions and settings. Gambella reported the highest adjusted regional HIV prevalence (5.4%), while the lowest figure was reported by SNNPR region (1.4%). In urban sites, Amhara region showed the highest unadjusted HIV prevalence (7.8%) while Oromia and SNNPR had the lowest (3.8%). Rural HIV prevalence was highest in Gambella (4.6%) while Harari region with only one site showed the lowest (0.0%).

The HIV prevalence trend at national level on 62 sites (both urban and rural) that had four rounds of consecutive data from 2003 to 2009 showed a considerable decline in prevalence from 5.5% in 2003 to 2.2% in 2009. The trend in urban sites (n=34) has showed marked decline from 11.4% in 2003 to 5.5% in 2009. This is also consistent in rural sites (n=28) which declined from 4.0% in 2003 to 1.4% in 2009. The HIV prevalence trend generated using all the sentinel sites in 2009 also demonstrates similar reduction in prevalence overtime consistent with sites that had four previous rounds consecutive data (Fig 3.5(a) and (b)).

Comparing the 2003 and 2009 data at site level, of the total 62 sentinel sites, 58 (94%) showed absolute decrease of which 31 (50%) sites had statistically significant decline. When 2005 and 2009 rounds data are compared, 51 (82%) of the sites showed absolute decrease of which 24 (39%) was significant decline. However, 10 (16%) of the sites showed an absolute increase none of which was significant. Concerning the comparison of 2007 and 2009 data, 38 (61%) of the sites had shown absolute decrease of which 12 (19%) of the sites showed significant reduction in prevalence.

In 2009 the HIV prevalence among 15-24 years age group was 2.6% while 3.5% in 25-34 years of age. This indicates that HIV prevalence among younger age (15-24) is lower than that of the older age group (25-34) indicating declining trend. The overall trend of HIV prevalence in all age groups has remarkably declined from 2003 to 2009 consistent with the trend described above.

Of the 44,945 specimens, collected for syphilis testing, about 44,104(98%) specimens had properly documented syphilis test result. Out of 44,104 specimens, the national syphilis prevalence (excluding Army, Federal Police and Pynido refugee sites) was 2.3%. By setting, the syphilis prevalence is 2.6% for rural and 1.7% for urban sites, respectively. The prevalence of syphilis was highest (2.8%) among the ANC clients aged 35-49 years (urban

1.8% & rural 3.0%). HIV positive clients were two times more likely to be positive for syphilis than HIV negative ones (3.9% among positives compared to 2.1% among HIV negative clients). HIV positive clients in rural areas had higher syphilis prevalence (6.9%) compared to those in urban areas (1.8%).

The observed decline in HIV prevalence may have resulted from multiple factors including HIV/AIDS control and mitigation efforts such as Behavioural Change Communication (BCC) and Information Education and communication (IEC), community sensitization, widespread implementation and increased uptake of antiretroviral therapy (ART), voluntary counselling and testing (VCT), condom use and other interventions.

Based on the observed HIV prevalence trends and heterogeneity of the epidemic in the regions and sites, the multi-sectoral approach of prevention efforts should be maintained and further strengthened at all levels. Special attention should be given to regional and site settings with disturbingly high HIV prevalence levels like economically dynamic regions. Surveys on most at risk population (MARPs) should also be done to identify those in need of special attention and explain the behavioural and contextual factors driving HIV epidemics in various settings. It is also important to undertake HIV incidence studies to understand the rate of new HIV infections since prevalence figures are less informative in the era of ART scale up. Since assessment of the quality of PMTCT data in ANC/PMTCT sites in Ethiopia is too inadequate to replace the ANC surveillance data at this time, regular assessments should continue with each ANC round to track improvements in PMTCT service data

SECTION 1. BACKGROUND AND INTRODUCTION

Ethiopia's population was estimated to be 77.6 million in mid-2009, and is expected to grow by over 2.3% annually based on the projection from 2007 census. The population is young, with 44 % being under the age of 15 years. Approximately 84% of the population was rural (CSA 2007). Ethiopia has a federal system with nine regions and two Administrative Councils (Addis Ababa and Dire Dawa).

The Federal HIV/AIDS Prevention and Control Office (FHAPCO) was established in 2002 and mandated to coordinate the overall national HIV/AIDS prevention and control program within a broad-based multi-sectoral approach. FHAPCO developed and implemented a five year (2000-2004) national strategic framework as part of the national response to HIV/AIDS. Several priority interventions were implemented and several targets were successfully achieved during this period. The strategic plan for 2005-2008 was also focused on the provision of preventive, care, support and treatment services.

EHNRI is mandated to conduct operational research on public health priority diseases, surveys and surveillance activities related to infectious and non-infectious diseases, nutrition and traditional medicine. The institute is also recently mandated to lead the National Public Health Emergency Response. Because of these, HIV and other National surveillance and survey activities are hosted and led by EHNRI. EHNRI also serves as Ethiopia's National Center of Excellence to perform referral medical laboratory services and is providing highly specialized diagnostic services that cannot be conducted elsewhere in the country. It implements National External Quality Assurance Schemes (NEQAS) for HIV testing.

Ethiopia has utilized ANC-based HIV sentinel surveillance since 1989. ANC-based sentinel HIV surveillance sites have increased from one urban site in 1989 to 144 sites in 2009 (Figure1) with increasing rural representation and data quality. This has been serving as a major planning data source for HIV/AIDS control and prevention. The 2009 Round ANC Sentinel HIV Surveillance report also included trends from several years. This report and similar previous round reports will be available online at the Ethiopian AIDS Resource Center website (www.etharc.org).

Objectives of ANC-based HIV Surveillance

The main objectives of this ANC based HIV surveillance are to:

1. Estimate the magnitude and distribution of HIV in the reproductive age population;
2. Show trends over time;
3. Provide data for advocacy;
4. Provide data for evidence based planning and timely intervention activities; and
5. Assess the impact of HIV/AIDS control programs.

SECTION 2. METHODOLOGY

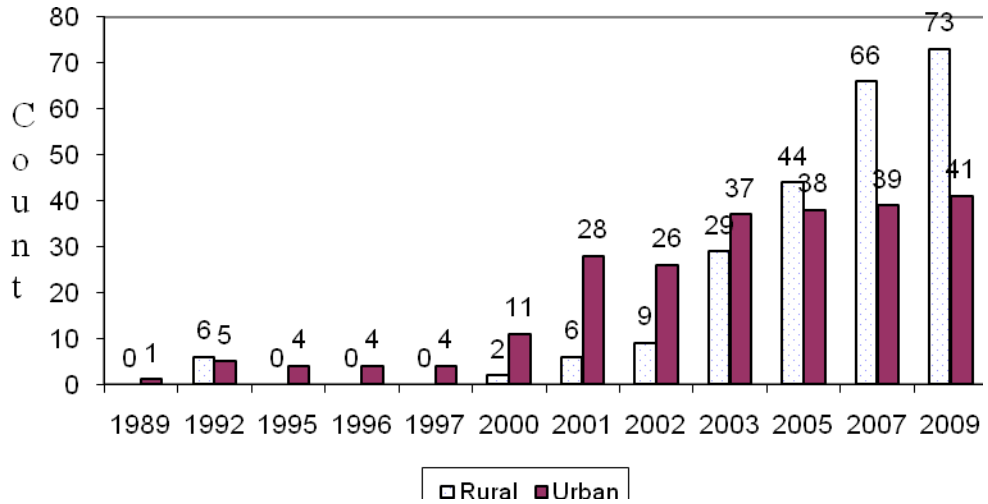
2.1 Site Selection

For the 2009 ANC based sentinel surveillance, a total of 114 sites (105 existing sites and 9 additional new sites to improve population representation) were selected by regions. Of these sites 41 of them were urban and 73 rural sites (Figure 1). In the urban sites, Federal Police and Federal Armed Forces hospitals were included, whereas Pynido Refugee Camp clinic was included in rural sites. Sites were selected based on the following criteria according to the National ANC guidelines:

1. Sustainability of antenatal care.
2. Accessible functional laboratory (adequacy of personnel, equipment and supplies) for the main site.
3. Adequate client volume (first time attendees) for the required sample size – the minimum numbers being:
    a. Rural sites – 60 ANC clients per month
    b. Urban sites – 84 ANC clients per month
4. The health facility should be drawing blood for routine services, such as syphilis testing and/or haemoglobin determination.
5. Sustainable supply of RPR for syphilis screening.
6. For rural sites, special considerations were made, i.e.:
    a. Use of the Central Statistical Agency (CSA) definition to select sentinel sites.
    b. Select areas not on the main roads or highways (at least 25 km away from highways)
    c. Those which are non-commercial centers and/or100 Kilometres away from regional or zonal towns (this may not apply for regions such as Dire Dawa, Harari and Gambella).

The 2009 round of ANC-based HIV Sentinel Surveillance followed the National HIV sentinel surveillance guideline that was revised in February 2009. All Regional Health Bureaus (RHB) and site staff were trained prior to the survey using the standard training manual.

Figure 1: Expansion of ANC Sentinel Surveillance in Urban & Rural sites (1989-2009)



2.2. Sample Size

All sentinel sites were required to collect a minimum of 300 and 400 specimens from urban and rural sites, respectively. The maximum sampling period for urban sites was 12 weeks and 20 weeks for rural sites. Sentinel sites that were unlikely to achieve the target sample size have collaborated with a maximum of 3 nearby health facilities (as satellite sites). The satellite sites were health centers, clinics, or health posts, located nearby the main site. Data and samples from all satellite sites were combined with those from the main sites for analysis.

2.3. Data Collection

All pregnant women attending ANC as part of routine antenatal care were tested for syphilis and/or haemoglobin. Those tested positive for syphilis were treated as per the national guideline. After syphilis testing, left-over blood was centrifuged and the separated plasma was labelled with a surveillance code number. All eligible ANC clients were sampled consecutively during the surveillance period.

Specimens were transported to 20 regional testing laboratories maintaining standard cold chain procedures for HIV testing. HIV testing was done in anonymous and unlinked fashion in testing laboratories. Vironostika HIV Ag/Ab EIA was used for screening and all HIV-reactive specimens were re-tested using Murex HIV Ag/Ab EIA. Test results were recorded on standardized data collection forms. Ten percent of randomly selected HIV negative samples, all HIV-positive and all indeterminate specimens were transported to the National

HIV Reference Laboratory at EHNRI and re-tested using Vironostika and Murex EIA for quality control purposes. Due to poor agreement (less than 95% overall concordance between the Afar regional testing laboratory and the national reference laboratory) in HIV test results, all the samples from Afar region were retested and the results of EHNRI were used for all analysis as per the guidelines.

2.4. Study Population

The population chosen for HIV surveillance included pregnant women seeking ANC at the selected public or nongovernmental organization ANC clinics designated as sentinel sites.

2.5. Inclusion Criteria

Pregnant women attending the ANC sentinel site who were:

1. aged 15 to 49 years, and
2. not previously tested for syphilis during the current pregnancy.

ANC clients were sampled irrespective of whether this is their first or subsequent visit as long as this is their first syphilis test.

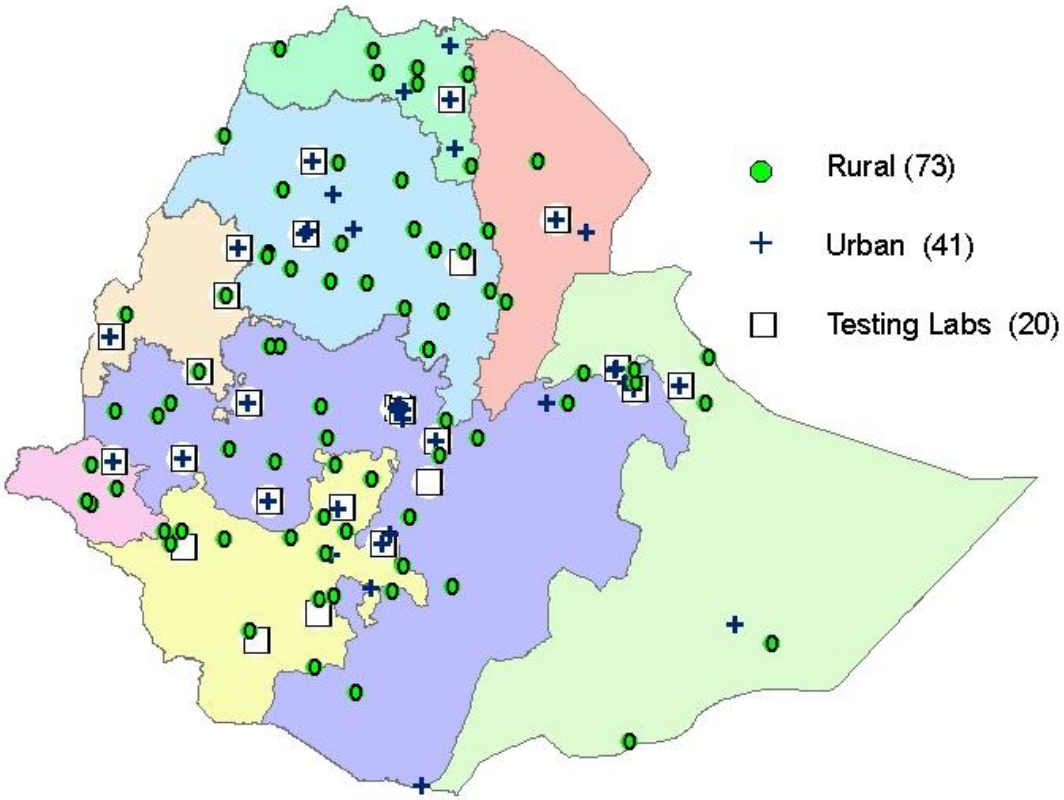
2.6. Exclusion Criteria

Women referred from other health facilities for any reason were not included. This is because they may have already been included for surveillance at another sentinel site and/or may have been referred because of HIV-related complications. Women below the age of 15 years and above the age of 49 years were also excluded.

2.7. Ethical Considerations

Confidentiality was maintained throughout the process. At no time were the names or other personal identifiers of the ANC clients recorded or linked to the HIV test results. ANC clients were either offered HIV testing through existing PMTCT services or were encouraged to receive VCT for HIV where services were available nearby. Transcribed data included routine demographics and syphilis test results.

Figure 2: Map of Sentinel Surveillance Sites & Testing Laboratories in 2009



2.8. Data Management

All copies of the completed data forms were transported to EHNRI–National Referral Laboratory (NRL) for double data entry and cleaning using Epi Info. Data analysis was done using SPSS-version 12.

SECTION 3: ANC-BASED HIV SURVEILLANCE FINDINGS

3.1. Completeness of Information

In the 2009 round, a total of 44,945 samples were collected from 114 (73 rural and 41 urban) sentinel sites. Of these, a total of 3,145 specimen and six sites were excluded from the national HIV prevalence analysis for various reasons: i) Poor data quality (specimen from Tercha Hospital (n= 420) Gimbichu Health Center (n=387) both rural sites from SNNPR, and Kamashi Health Center (n=436), also rural site in Benishagul Gumuz region; ii) Specimen representing special population groups from Addis Ababa (Federal Police Hospital (n=283) and Armed Force General Hospital (n=300) which serve uniformed service population, and 495 specimens from Pynido refuge clinic; iii) 329 specimen with missing age or invalid (outside range of 15-49 years); and iv) 495 samples from rural sentinel sites that had mixed urban population (rural –urban contamination) in Haik and Mekoy Health Centers in Amhara region. A total of 41,800 specimens were finally eligible for the national data analysis.

3.2. ANC-Based Adjusted HIV Prevalence

This section presents national and regional HIV prevalence results adjusted for urban/rural population size from the 2009 ANC-based HIV Sentinel Surveillance data.

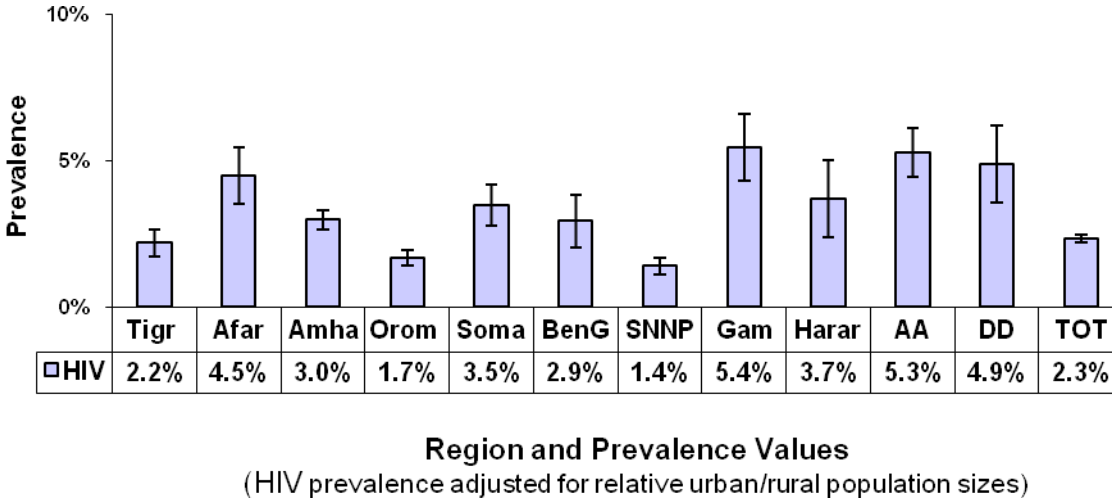
Since the regional prevalence estimates are based on individual sites, when the number of sites per region is not comparable, fluctuations in prevalence values were observed. Thus, region to region comparison might be less stable and at times may mislead. For the purpose of national or regional planning, a comprehensive estimate like the Single Point HIV Prevalence Estimate (June 2007, MOH) will follow this report.

The national HIV prevalence adjusted for the relative urban/ rural population size was 2.3%. The highest regional HIV prevalence was from Gambella (5.4%) followed by Addis Ababa (5.3%) and Dire Dawa (4.9%). Afar and Somali had also showed high HIV prevalence, 4.5% and 3.5%, respectively. In the latter regions, the observed high prevalence figures are presumably due to relatively higher prevalence seen in the rural sites. Although some sites (E.g. Chifra–Afar & Erer-Somali) were initially classified as rural, they are now increasingly urbanized. The HIV prevalence observed at these sites resemble more of urban than rural

settings. Moreover, recent developments in road networks, large scale agricultural activities, mining and related business activities might have enhanced population movement and urbanization; which in turn could contribute to rise in the prevalence.

The lowest adjusted HIV prevalence figures were from SNNPR (1.4%) followed by Oromia and Tigray, 1.7% and 2.2%, respectively (see Figure 3.1). The relatively low prevalence observed in SNNPR is consistent with the findings from previous ANC surveillance rounds, 2.3% and 2.1% in 2005 and 2007 rounds, respectively.

Figure 3.1: Adjusted HIV Prevalence among ANC Attendees by Region, Ethiopia, 2009



3.3. ANC-Based Unadjusted HIV Prevalence

This section presents unadjusted HIV prevalence results from the 2009 round ANC surveillance data. For further detail see Figure 3.2, 3.3 & Table 3.1.

3.3.1 HIV Prevalence by Settings

The overall unadjusted urban prevalence for Ethiopia is 5.3% (Table 3.1). The highest unadjusted Urban HIV prevalence was from Amhara region (7.8%) followed by Gambella (7.3%) and Afar (6.2%). The lowest urban figures are from Oromia and SNNPR each with 3.8% prevalence followed by Somali (4.5 %.)

Regarding rural prevalence figures, Gambella region was the highest (4.6%) followed by Afar (4.1%) and Somali (3.3%). The rural prevalence for Harari regions which had only one rural site was 0%. The next low rural figures were observed in SNNPR (1.0%) followed by Oromia and Tigray regions (1.3% each).

Based on median site prevalence levels, the rural Ethiopia sites showed a median value of 1.3%, while the urban sites showed 4.9% prevalence. The median figure for the whole Ethiopia was 2.3%.

Figure 3.2: Unadjusted HIV Prevalence (%) among ANC Attendees at Urban ANC Clinics, by Region, Ethiopia, 2009

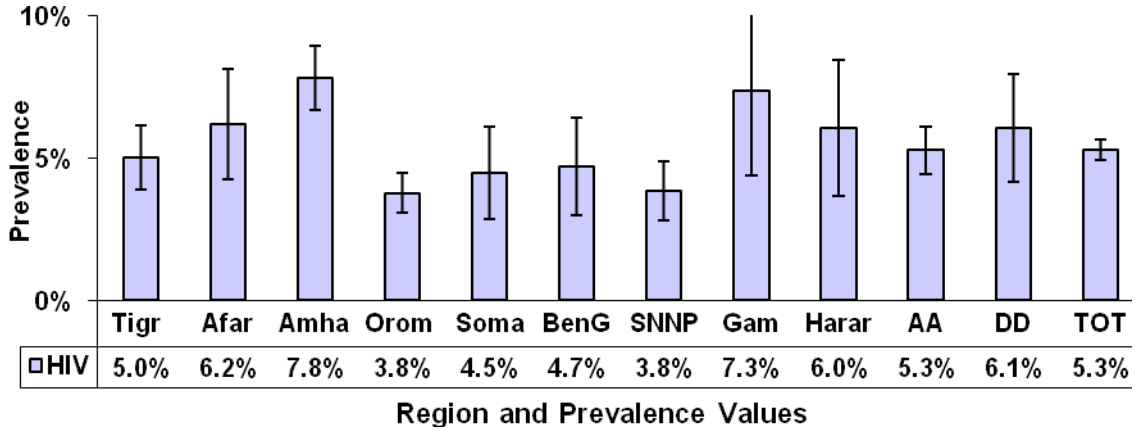


Figure 3.3: Unadjusted HIV Prevalence among ANC Attendees at Rural ANC Clinics, by Region, Ethiopia, 2009

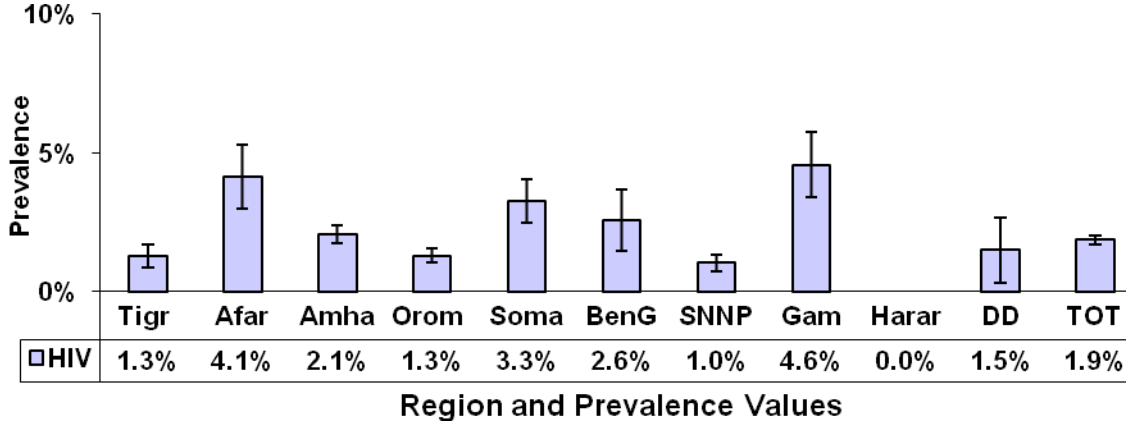


Table 3.1: HIV Prevalence and Confidence Intervals by Region and Setting, 2009

Setting	Region	No. HIV tested	Prevalence (%)		
			Lower 95% CI	Point estimate (%)	Upper 95% CI
Urban + Rural*	Tigray	4,079	1.7	2.2	2.6
	Afar	1,764	3.5	4.5	5.4
	Amhara	9,680	2.6	3.0	3.3
	Oromia	10,226	1.4	1.7	1.9
	Somali	2,657	2.8	3.5	4.2
	Benishangul Gumuz	1,380	2.0	2.9	3.8
	SNNPR	6,264	1.1	1.4	1.7
	Gambella	1,526	4.3	5.4	6.6
	Harari	784	2.4	3.7	5.0
	Addis Ababa	2,754	4.4	5.3	6.1
	Dire Dawa	1,015	3.5	4.9	6.2
	National	42,129	2.2	2.3	2.5
Urban	Tigray	1,400	3.9	5.0	6.1
	Afar	599	4.2	6.2	8.1
	Amhara	2,202	6.7	7.8	8.9
	Oromia	2,843	3.1	3.8	4.5
	Somali	627	2.8	4.5	6.1
	Benishangul Gumuz	597	3.0	4.7	6.4
	SNNPR	1,301	2.8	3.8	4.9
	Gambella	300	4.4	7.3	10.3
	Harari	381	3.6	6.0	8.4
	Addis Ababa	2,754	4.4	5.3	6.1
	Dire Dawa	611	4.2	6.1	7.9
	National	13,615	4.9	5.3	5.7
Rural	Tigray	2,679	0.8	1.3	1.7
	Afar	1,165	3.0	4.1	5.3
	Amhara	7,478	1.7	2.1	2.4
	Oromia	7,383	1.0	1.3	1.5
	Somali	2,030	2.5	3.3	4.0
	Benishangul Gumuz	783	1.4	2.6	3.7
	SNNPR	4,963	0.7	1.0	1.3
	Gambella	1,226	3.4	4.6	5.7
	Harari	403	0.0	0.0	0.0
	Dire Dawa	404	0.3	1.5	2.7
	National	28,514	1.7	1.9	2.0

* Urban + rural values are adjusted for relative regional urban and rural population size.

3.3.2. Unadjusted HIV Prevalence by Site and Setting

The HIV prevalence estimates varied widely across sites in both urban and rural settings. Two rural sites, Semema Health Center (Tigray) and Hasange Health Center (Harari) had 0.0% HIV prevalence in 2009 round which is more or less consistent with previous rounds. However, a higher prevalence figure, 13.1% and 10.0%, was observed in Bahir Dar Hospital and Gonder Health Center, respectively (see Tables 3.2 and 3.3). Despite being in the same town, HIV prevalence from Dahir Dar Hospital and Bahir Dar Health Center varied markedly, 13.1% and 6.2%, respectively. The two facilities had similar prevalence patterns during rounds prior to 2007. The currently observed difference could be due to recent preference of HIV infected clients to attend hospital than the health center for better care. Additional information is required to explain this observation.

Based on median site prevalence levels, the rural Ethiopia sites showed a median value of 1.3%, while the urban sites showed 4.9% prevalence. The median figure for whole Ethiopia was 2.3% (Annex-1).

Table 3.2: Urban 2009 ANC Surveillance Sites with Point HIV Prevalence and Confidence Intervals

Region	Site Name	Sample Size	HIV Prevalence (%)		
			Lower95%CI	Point Estimate (%)	Upper 95% CI
Tigray	Mekele HC	300	3.1	5.7	8.3
	Adigrat Hospital	500	3.3	5.2	7.1
	Maychew Hospital	300	4.1	7.0	9.9
	Abi Adi HC	300	0.4	2.0	3.6
Afar	Asaita HC	300	1.5	3.7	5.8
	Dubti Hospital	299	5.5	8.7	11.9
Amhara	Bahir Dar HC	250	3.7	6.8	9.9
	Estie HC	330	1.8	3.9	6.0
	Gonder HC	421	7.1	10.0	12.8
	Bahir Dar Hospital	458	10.0	13.1	16.2
	Addis Zemen HC	359	1.3	3.1	4.8
	Metema Hospital	384	4.9	7.6	10.2
Oromia	Shashemene HC	415	0.3	1.4	2.6
	Mettu HC	302	1.5	3.6	5.8
	Adama HC	411	4.2	6.6	9.0
	Jimma HC	352	5.6	8.5	11.4
	Nekemtie HC	455	2.2	4.0	5.7
	Chiro Clinic	300	0.8	2.7	4.5
	Alemaya HC	306	0.0	1.3	2.6
	Moyale HC	302	0.0	1.0	2.1
Somali	Jijiga Hospital	310	1.7	3.9	6.0
	Gode Hospital	317	2.6	5.0	7.5
Benish. Gumuz	Assosa Hospital	298	2.3	4.7	7.1
	Pawe Hospital	299	2.3	4.7	7.1
SNNPR	Dilla Hospital	304	2.2	4.6	7.0
	Hossana Hospital	362	0.0	1.1	2.2
	Sodo HC	298	3.6	6.4	9.1
	Awassa HC	337	1.8	3.9	5.9
Gambella	Gambella Hospital	300	4.4	7.3	10.3
Harari	Hiwot Fana Hospital	381	3.6	6.0	8.4
Addis Ababa	Kolfe HC	497	0.9	2.2	3.5
	Kotebe HC	393	1.9	3.8	5.7
	Teklehaymanot HC	304	4.1	6.9	9.8
	Kazanches HC	497	2.6	4.4	6.2
	Higher 23 HC	333	3.0	5.4	7.8
	Gulele HC	310	5.6	8.7	11.8
	Akaki HC	420	4.9	7.4	9.9
Dire Dawa	Diredawa Hospital	306	2.5	4.9	7.3
	Dire Dawa HC	305	4.3	7.2	10.1
Armed Forces	AFTGH	299	3.3	6.0	8.7
Federal Police	Federal Police Hospital	300	1.5	3.7	5.8

Table 3.3: Rural 2009 ANC Surveillance Sites with HIV Prevalence and Confidence Interval

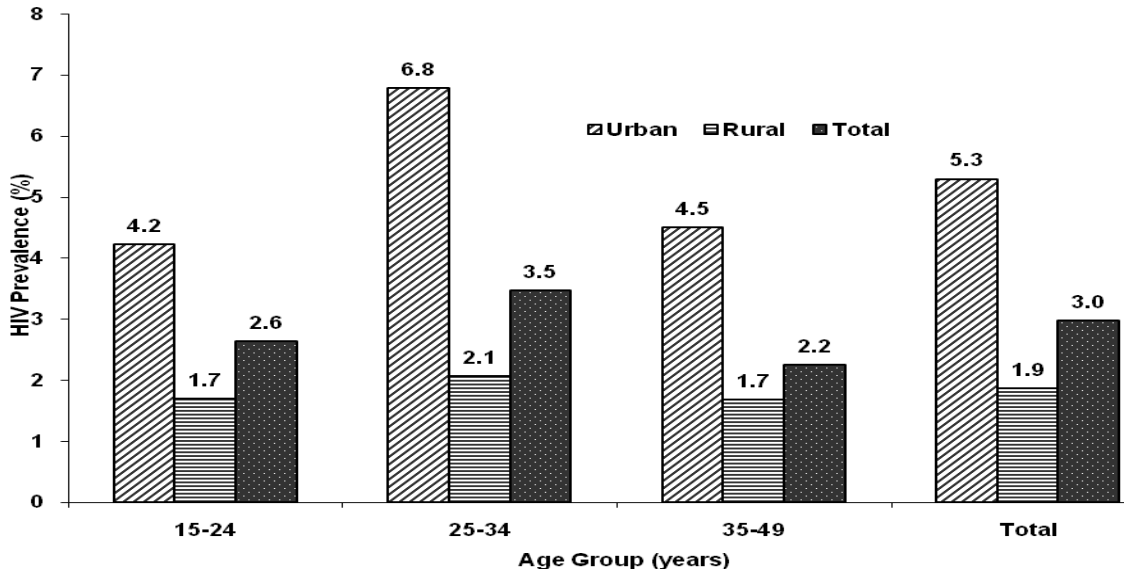
Region	Site Name	Sample Size	HIV Prevalence (%)		
			Lower 95% CI	Point Estimate (%)	Upper 95% CI
Tigray	Edaga Arbi HC	459	0.0	0.4	1.0
	Atsibi HC	401	0.2	1.2	2.3
	Workamba HC	392	0.0	0.8	1.6
	Zana HC	465	0.0	0.9	1.7
	Semema HC	321	0.0	0.0	0.0
	Adigoshu HC	314	0.4	1.9	3.4
	Chercher HC	327	2.1	4.3	6.5
Afar	Chifra HC	399	3.1	5.3	7.5
	Delfage HC	367	2.9	5.2	7.4
	Aboala HC	399	0.6	2.0	3.4
Amhara	Sekela HS	402	0.0	0.2	0.7
	Bibugne HC	363	0.9	2.5	4.1
	Chara Clinic	402	0.0	0.5	1.2
	Enewari HC	465	0.0	0.6	1.4
	Bora HC	441	0.0	0.7	1.4
	Tenta HC	497	2.1	3.8	5.5
	Kone HC	501	0.8	2.0	3.2
	Mertrolemariam HC	436	0.4	1.6	2.8
	Haik HC _Surroundings	314	1.0	2.9	4.7
	Dangla HC _Surroundings	286	0.0	0.7	1.7
	Delgi HC	495	1.1	2.4	3.8
	Jaragedo HC	359	0.0	0.6	1.3
	Mekoy HC	405	1.5	3.2	4.9
	Arerti HC	452	2.7	4.6	6.6
	Kelala HC	417	1.6	3.4	5.1
	Jama HC	423	0.9	2.4	3.8
	Amdework HC	422	0.6	1.9	3.2
	Guhala HC	398	1.0	2.5	4.1
Oromia	Abomsa HC	499	0.2	1.2	2.2
	Limu Seka HC	441	1.7	3.4	5.1
	Gambo Hospital	464	0.0	0.4	1.0
	Ayra Hospital	480	0.3	1.3	2.2
	Gosa Clinic	522	0.2	1.1	2.1
	Daddim HS	400	0.2	1.3	2.3
	Toke HS	407	0.0	0.7	1.6
	Derra HC	399	0.6	2.0	3.4
	Dello HC	417	0.0	0.7	1.5
	Begi HC	499	0.1	1.0	1.9
	Chewaka HC	349	0.0	0.3	0.8
	Amaya Clinic	401	0.0	1.0	2.0
	Mesela HC	403	0.2	1.2	2.3
	Kokosa HC	403	0.0	0.5	1.2
	Amuru Jarite HC	494	1.1	2.4	3.8
	Alem Teferi HC	404	0.0	1.0	2.0

Region	Site Name	Sample Size	HIV Prevalence (%)		
			Lower 95% CI	Point Estimate (%)	Upper 95% CI
	Gida Ayana HC	401	0.6	2.0	3.4
Somali	Awbere HC	410	0.6	2.0	3.3
	Kebribeyah HC	406	0.3	1.5	2.7
	Dolo Odo HC	404	1.3	3.0	4.6
	Kelafo HC	404	2.1	4.0	5.9
	Erer HC	406	3.6	5.9	8.2
Benish. Gumuz	Debate HC	374	2.2	4.3	6.3
	Menge HC	409	0.0	1.0	1.9
SNNPR	Belle HC	434	0.0	0.7	1.5
	Karat HC	456	0.0	0.4	1.0
	Mirab Abaya HC	432	0.0	0.5	1.1
	Attat Hospital	498	0.2	1.2	2.2
	Chiri HC	424	0.0	0.9	1.9
	Sheko HC	431	0.9	2.3	3.7
	Agam HC	449	0.0	0.2	0.7
	Teza HC	497	0.4	1.4	2.4
	Chencha Hospital	422	0.4	1.7	2.9
	Gazer HC	488	0.0	0.8	1.6
	Bechi HC	432	0.1	1.2	2.2
Gambella	Itang HC	313	0.0	1.3	2.5
	Korgang HC	307	1.5	3.6	5.7
	Mettin HC	304	2.2	4.6	7.0
	Pynido HC	302	5.7	8.9	12.2
Harari	Hasange HC	403	0.0	0.0	0.0
Dire Dawa	Biyowale HC	404	0.3	1.5	2.7
Gambella	Pynido Refugee Clinic	495	4.5	6.7	8.9

3.3.3 HIV Prevalence by Age and Setting

The overall unadjusted HIV prevalence among pregnant women attending ANC clinics was 3.0% (urban 5.3%, rural 1.9 %) in 2009. Women in the age group of 25-34 years in both urban and rural areas had the highest prevalence of 3.5% (urban 6.8%, rural 2.1%). For details see Figure 3.4 and Annex 2.

Figure 3.4: Unadjusted HIV Prevalence by Age Group and Site Setting, 2009



3.4. Trends in HIV Prevalence

Overtime, the national HIV prevalence shows a declining trend. Figure 3.5(a) shows the trend in HIV prevalence for selected urban and rural sites with four years of consecutive data. At the national level, HIV prevalence declined from 5.5% in 2003 to 2.2% in 2009 in sentinel sites. The trend in urban sites also showed a marked decline from 11.4% in 2003 to 5.5% in 2009. This is consistent in rural sites which continued to decline from 4.0% in 2003 to 1.4% in 2009 (Figure 3.5(a)). The HIV prevalence trends among all sentinel sites in 2009 also demonstrated similar reductions in prevalence overtime, which is consistent with sites that had four previous rounds of consecutive data (Figure 3.5 (b)).

Figure 3.5 (a): Trends of HIV Prevalence (%) among ANC Clients in Urban and Rural Sites with at least 4 Consecutive Data Points in Ethiopia, 2001-2009

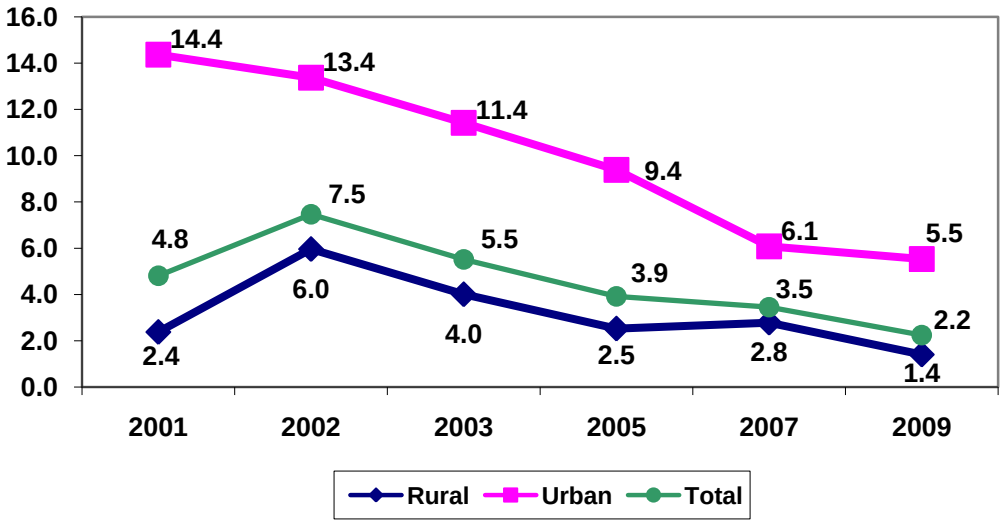
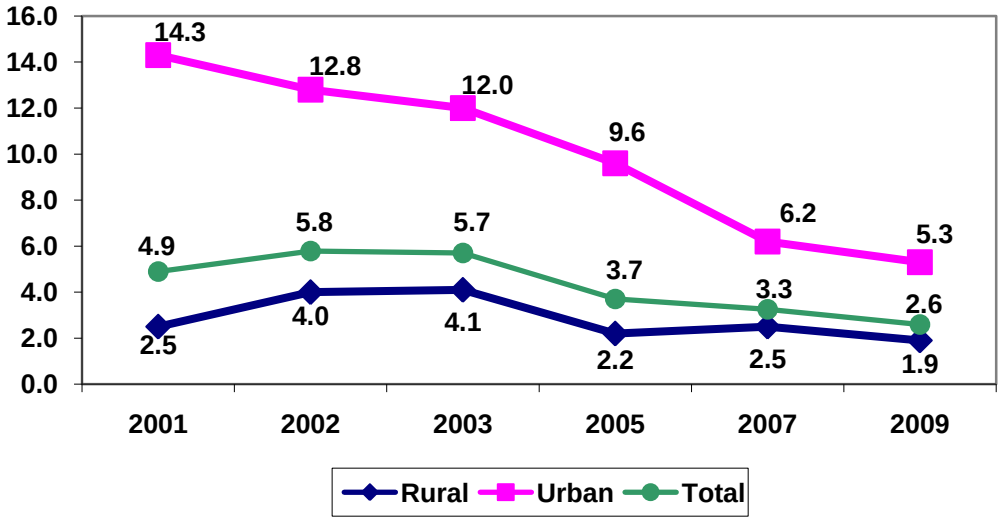


Figure 3.5 (b): Trends of HIV Prevalence (%) among ANC Clients in All Urban and Rural Sites in Ethiopia, 2001-2009



Comparison of absolute and significant changes in prevalence was made on 62 sites that had complete data from 2003 to 2009 survey rounds (Table 3.4). Of the 62 sites, 58 (94%) showed an absolute decrease of which 31 (50%) showed a significant reduction in prevalence. Regarding the 2005 and 2009 data, 51 (82%) sites showed an absolute decrease of which 24 (39%) showed a significant decline; 10 (16%) of the sites showed an absolute increase none of which was significant. Comparing the 2007 and 2009 data, 38 (61%) of the

sites showed an absolute decrease of which 12 (19%) sites showed significant reduction in prevalence.

Table 3.4: Number of Sites and Changes in HIV Prevalence over Different Survey Rounds

Years	Setting	Number of sentinel Sites				% of sites showed Absolute Decreases	% of sites showed Absolute Increases
		Absolute Decreases	Same	Absolute Increases	Total		
2009 vs. 2003	Urban	33	0	1	34	97	3
	Rural	25	0	3	28	89	11
	Total	58	0	4	62	94	6
2009 vs. 2005	Urban	31	0	3	34	91	9
	Rural	20	1	7	28	71	25
	Total	51	1	10	62	82	16
2009 vs. 2007	Urban	19	3	12	34	56	35
	Rural	19	0	9	28	68	32
	Total	38	3	21	62	61	34

Years	Setting	Number of sentinel Sites				% of sites showed Significant Decreases	% of sites showed Significant Increases
		Significant Decreases	No Significant Changes	Significant Increase	Total		
2009 vs. 2003	Urban	20	14	0	34	59	0
	Rural	11	16	1	28	39	4
	Total	31	30	1	62	50	2
2009 vs. 2005	Urban	16	18	0	34	47	0
	Rural	8	20	0	28	29	0
	Total	24	38	0	62	39	0
2009 vs. 2007	Urban	4	30	0	34	12	0
	Rural	8	20	0	28	29	0
	Total	12	50	0	62	19	0

3.4.1 Trends of HIV Prevalence at Urban Sites

Among all 34 urban sites that had HIV prevalence data for four consecutive years (Table 3.4), 31 (91%) showed an absolute decrease of which 16 (52%) sites showed statistically significant reductions in prevalence. Three (10%) sites had an absolute increase in prevalence while the rest of the sites showed no significant change. Comparing 2009 and 2007 data, 19 (56%) of the sites showed an absolute decrease while 12 (35%) showed an absolute increase in HIV prevalence. Significant decrease in prevalence was observed in four

(12%) sites. However, no significant increase in prevalence was observed in any of the other sites. Table 3.5 provides the HIV prevalence trend in all urban sites since 1989.

Table 3.5: Trends of HIV Prevalence (%) at Urban ANC sites, 1989 –2009

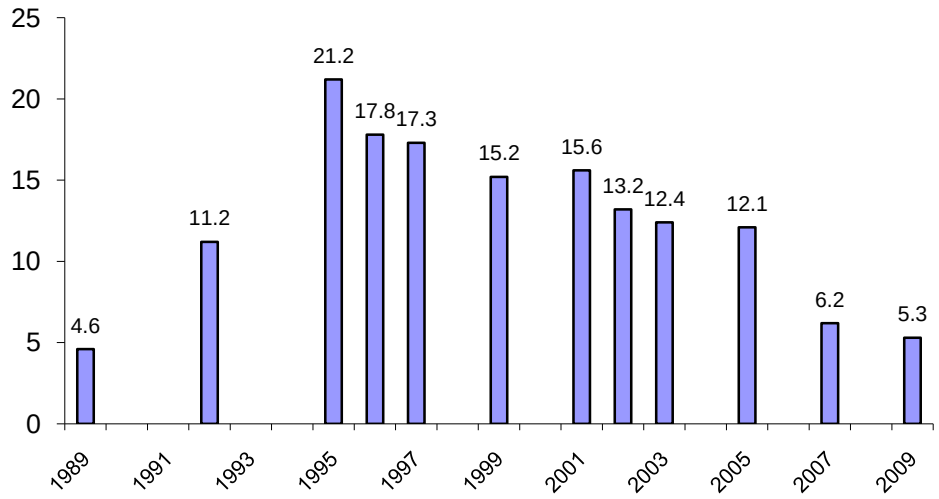
Region	Site Name	1989	92-93	1995	1996	1997	1998	99-00	2001	2002	2003	2005	2007	2009
Tigray	Abi Adi HC									7.7	9.6	10	2.0	2.0
	Adigrat HC								16.2		7.4	8.8	7.2	5.2
	Maychew Hospital								16.8		7.4	14.4	9.6	7.0
	Mekele HC								17.2	16.8	9.3	13.4	9.3	5.7
Afar	Aysaita HC								12.4		11.3	12.5	4.6	3.7
	Dubti Hospital										24	20.9	8.7	8.7
Amhara	Addis Zemen HC									12.6	10.5	4.7	3.7	3.1
	Bahir Dar HC		13					20.8	23.4	20	20.2	13.5	12.2	6.8
	Bahir Dar Hospital								19.9	21	16.9	14	7.7	13.1
	Estie HC							7.3	10.7	8.9	11.7		2.6	3.9
	Gonder HC								15.1	18.3	13.9	10.3	12.6	10.0
	Metema Hospital											15.9	11.7	7.6
Oromia	Alemaya HC									2.5	2.2	1.3	3.0	1.3
	Chiro HC										4.4	5.4	4.3	2.7
	Jimma HC								8.6	16.9	10.2	8.3	6.6	8.5
	Mettu Hospital		10.7					4	10.5	11.6	10.8	7.8	3.0	3.6
	Adama HC								18.7	16	10.8	9	6.5	6.6
	Nekemet HC								9.1	11.3	13	10.4	4.0	4.0
	Shashemene HC							14.3	13.1		8.7	7	2.8	1.4
	Moyale HC											5.1	6.7	1.0
Somali	Gode Hospital									5.6	2.5	1	3.8	5.0
	Jijiga Hospital					12.7			19	15.7	7.3	5.5	4.9	3.9
Beni. G.	Assosa Hospital									13.1	15.4	7.6	2.6	4.7
	Pawe Hospital								8.5		13.2	8.5	5.0	4.7
SNNPR	Awassa HC						14.4	11.5	10	11.1	8.8	9.2	5.0	3.9
	Dilla Hospital						14.5	11.7	9.8	11.5	12.1	9.3	3.2	4.6
	Hossana Hospital						3.6	4.8	5.9	6	12.4	3.1	2.4	1.1
	Soddo HC						9.2	10.7	11.6	12.2	11.2	7.5	7.0	6.4
Gambella	Gambella Hospital					12.7		19	14.6	15.4	18.7	7.5	13.5	7.3

Region	Site Name	1989	92-93	1995	1996	1997	1998	99-00	2001	2002	2003	2005	2007	2009
Harari	Hiywot Fana Hospital								9.4	12.8	7.8	7.5	3.1	6.0
Addis Ababa	Akaki HC										10.9	9.1	7.8	7.4
	Gulele HC					20		18.2	15.8	12.3	12.4	13	6.1	8.7
	Higher 23 HC					14.1		10.7	12.3	10.2	11.8	10.1	5.2	5.4
	Kazanchis HC					16.7		18	17.7	15.1	11.6	16.7	5.7	4.4
	Teklehymanot HC					18.5		14	16.6	15.1	15.1	11.7	6.2	6.9
	Kolfe HC													2.2
	Kotebe HC													3.8
	Total Addis Ababa*	4.6	11.2	21.2	17.8									
Dire Dawa	Diredawa HC								8.5	11.6	7.7	3	6.0	7.2
	Diredawa Hospital		12.3					13.6	15.2	12.1	14.4	11	14.2	4.9
Federal Police Hospital											30.2	24.8	10.7	3.7
Armed Forces Gen. Hospital											15.3	12	10.5	6.0

*Prior to 1997, all Addis Ababa sites were taken together.

Of all of the urban ANC-based HIV sentinel surveillance sites, the Addis Ababa sites have continuous data since 1989 (Figure 3.6 below). The HIV prevalence rate in Addis Ababa has been declining since its peak in 1995. The HIV prevalence in Addis Ababa increased from 1989 to 1995 reaching a maximum prevalence level of 21.2%, at which time HIV prevalence steadily declined to around 12% in 2005. There was a sharp decline from 12.1% in 2005 to 6.2% in 2007 and then to 5.3% in 2009. This trend in prevalence data suggests that the epidemic is stabilising.

Figure 3.6: Trend of HIV Prevalence (%) among ANC Clients in Addis Ababa, 1989-2009



3.4.2 Trends of HIV Prevalence at Rural Sites

Of the 28 sites (Table 3.4) which had data for 2005 and 2009, 20 (71%) showed an absolute decrease of which 8 (29%) sites showed a statistically significant decline in prevalence. On the other hand, 7 (25%) of the sites showed an absolute increase in HIV prevalence that was not statistically significant. Comparison of data from 2009 and 2007, 19 (68%) showed an absolute decrease in HIV prevalence of which 8 (29%) sites showed statistically significant decreases. Even though 9 (32%) of the sites showed an absolute increase, none of the increases were statistically significant. Table 3.6 shows trends in HIV prevalence at rural ANC sites.

Table 3.6: Trends of HIV Prevalence (%) at Rural ANC Sites, 1989 – 2009

Region	Site Name	1989	92-93	1995	1996	1997	1998	99-00	2001	2002	2003	2005	2007	2009
Tigray	Atsbi HC										6	4.2	1.4	1.2
	Edaga Arbi HC										2.8	1	1.5	0.4
	Enda Mariam K.		0											
	Workamba HC										2.1	0.7	1.2	0.8
	Zana HC											0.6	0.9	0.9
	Semema HC											1.5	0.2	0.0
	Adigoshu HC												3.5	1.9
	Chercher HC												4.9	4.3
Afar	Chifra HC										1.7		7.1	5.3
	Abala HC												7.4	2.0
	Dalifage HC													5.2

Region	Site Name	1989	92-93	1995	1996	1997	1998	99-00	2001	2002	2003	2005	2007	2009
Amhara	Bibugne HC										2.7	1.9		2.5
	Bora HC										5.6	2.9	1.9	0.7
	Chara Clinic										6	1.5	2.5	0.5
	Dangla HC (s)									9.6	4.5	2	4.0	0.7
	Enewari HC										11.9	4.3	3.8	0.6
	Haik HC (s)									6.1	6.9	2.5	3.2	2.9
	Kone HC										11.7	3.5	9.7	2.0
	Mertolemar HC (s)									4.9	2.8	4.8	1.4	1.6
	Sekela Clinic										6.6	1.4	0.8	0.2
	Seya Debir HC		1.3											
	Shola Gebeya HC		6.6											
	Tenta HC										11.5	8.1	6.6	3.8
	Delgi HC											2.7	6.5	2.4
	Jaragedo HC											1.7	1.0	0.6
	Mekoy												2.3	3.2
	Arerti HC												4.1	4.6
	Kelela HC												4.6	3.4
	Jama HC												3.0	2.4
	Amdework HC												3.1	1.9
	Guhala HC												5.3	2.5
Oromia	Ayra Hospital							2	2.6	2	0.5	1.5	0.4	1.3
	Ayuba (Arsi)		0.2											
	Begi HC										2.2	0.8	0.9	1.0
	Dadim Clinic								1.7	0.9	1	1.2	1.0	1.3
	Gosa Clinic (Bore)								1.7	0.5	2.5	1.1	0.4	1.1
	Dello HC										8.5	3.2	7.5	0.7
	Derra HC										1.9	3.8	4.9	2.0
	Gambo Hospital							0.7	1.1		0.7	1.1	1.2	0.4
	Ginir Hospital								3.1					
	Raytu (Bale)		1											
	Toke Clinic								4.6		2.2	2.9	2.6	0.7
	Chewaka HC											1.2	0.3	0.3
	Mesela HC											0.6	0.0	1.2
	Amaya HC											3	1.3	1.0
	Kokosa HC											0.5	1.0	0.5
	Amuru Jarte HC												1.6	2.4

Region	Site Name	1989	92-93	1995	1996	1997	1998	99-00	2001	2002	2003	2005	2007	2009
	Alem Teferi HC												0.6	1.0
	Gida Ayana HC												4.5	2.0
	Abomsa HC												1.5	1.2
	Limu Seka HC												1.9	3.4
Somali	Kelafo Hosp									1.8				4.0
	Awbere HC													2.0
	Keberbeyah												1.7	1.5
	Erer HC												6.3	5.9
	Dolo Odo HC													3.0
Beni. G.	Debate HC										5	5	2.9	4.3
	Kamashi HC											4.2	0.6	5.8*
	Menge HC											0.9	0.3	1.0
SNNPR	Agam HC										3.4	1	0.5	0.2
	Attat Hospital						0.8	4	1.5	2.3	1.8	3.5	5.3	1.2
	Beneste		2											
	Chencha Hospital										3.2	1.5	1.9	1.7
	Chiri HC										2.5	1.8	1.1	0.9
	Sheko HC										4.1	2.5	2.1	2.3
	Teza HC										2.3	1.5	1.6	1.4
	Gazer HC											1.7	3.1	0.8
	Bechi HC											1.2	0.7	1.2
	Belle												0.7	0.7
	Tercha												2.5	4.3*
	Karat												0.0	0.4
	Gimbichu												1.4	7.0*
	Mirab Abaya/ Birbir												1.8	0.5
Harari	Hasange HC											0	0.3	0.0
Gambella	Pynido HC											2.8		8.9
	Itang HC													1.3
	Korkang HC													3.6
	Metti HC													4.6
Dire Dawa	Biyowale HC											1	0.6	1.5
Dima Refugee Camp												12.9	17.1	**
Pynido Refugee Clinic														6.7

* sites excluded from national and regional prevalence estimates due to poor data quality

** site closed

3.4.3 Trends of HIV Prevalence by Age Group

The national HIV prevalence among all age groups is declining. Table 3.7 below shows the trend in HIV prevalence in all age groups across survey rounds. HIV prevalence among the 15-24 age group declined from 12.4% in 2001 to 2.6% in 2009. Similarly the HIV prevalence among the 25-34 age group declined from 11.5% in 2001 to 3.5% in 2009. The observed decline was in both urban and rural settings.

The comparison of HIV prevalence in rural sites in 2009 shows 1.7% positivity among 15-24 age group and 2.1% among 25-34 age group. This indicates that prevalence among the youngest 15-24 age group is lower than that of the older age group of 25-34 years. The urban prevalence also followed a similar trend.

HIV prevalence in younger age groups can be a proxy indicator for recent infections. The trend in HIV prevalence among the 15-24 age group was also analyzed to monitor the change in HIV prevalence over the years (Figure 3.7(a)). Comparing the HIV prevalence ratio among 15-24 age group to the 25-34 age group clearly shows the reduction in HIV infection in the younger age group. For further detail see Figure 3.7(b).

Table 3.7 ANC-based HIV Prevalence (%) by Age Group and Year of Survey

Setting	Age group (Years)	HIV Prevalence (%) and Year of Survey					
		2001	2002	2003	2005	2007	2009
Urban + Rural	15 – 24	12.4	11.0	8.6	5.6	3.5	2.6
	25-34	11.5	11.0	8.1	5.4	4.1	3.5
	35-49	8.6	5.8	6.3	3.3	3.3	2.2
	Total	11.7	10.6	8.2	5.3	3.8	3.0
Urban	15 – 24	14.2	12.7	11.9	9.1	5.4	4.2
	25-34	15.0	13.6	12.5	10.6	7.3	6.8
	35-49	11.0	8.5	10.3	7.1	6.3	4.5
	Total	14.3	12.8	12.0	9.6	6.2	5.3
	Ratio of Prevalence of 15-24 against 25- 34	0.95	0.93	0.95	0.86	0.74	0.62
Rural	15 - 24	3.3	4.7	4.3	2.4	2.2	1.7
	25-34	1.8	3.8	3.9	2.2	2.7	2.1
	35-49	2.8	2.0	3.6	1.6	2.3	1.7
	Total	2.5	4.0	4.1	2.2	2.5	1.9
	Ratio of Prevalence of 15-24 against 25- 34	1.89	1.22	1.10	1.10	0.82	0.82

Figure 3.7(a): Trends of HIV Prevalence (%) among 15-24 Age Groups

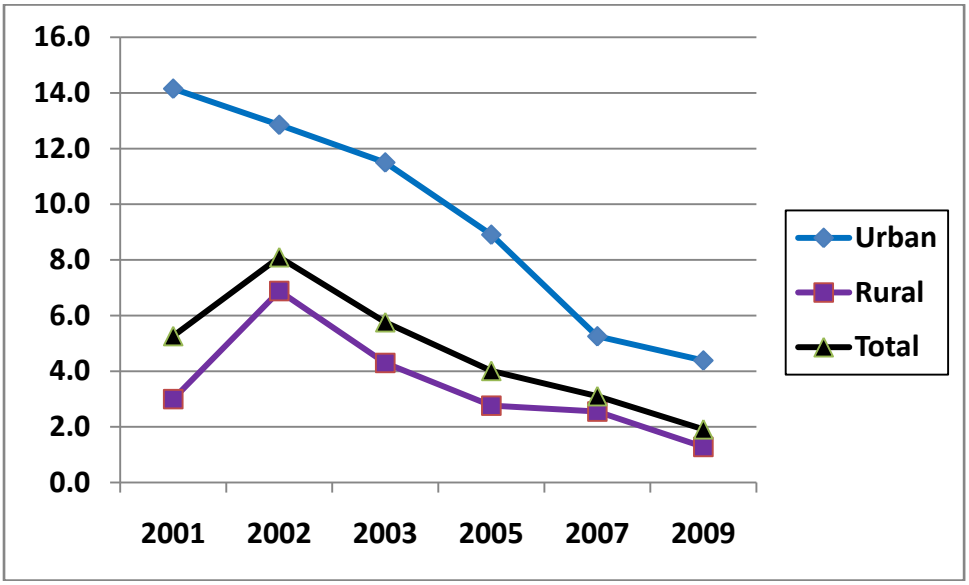
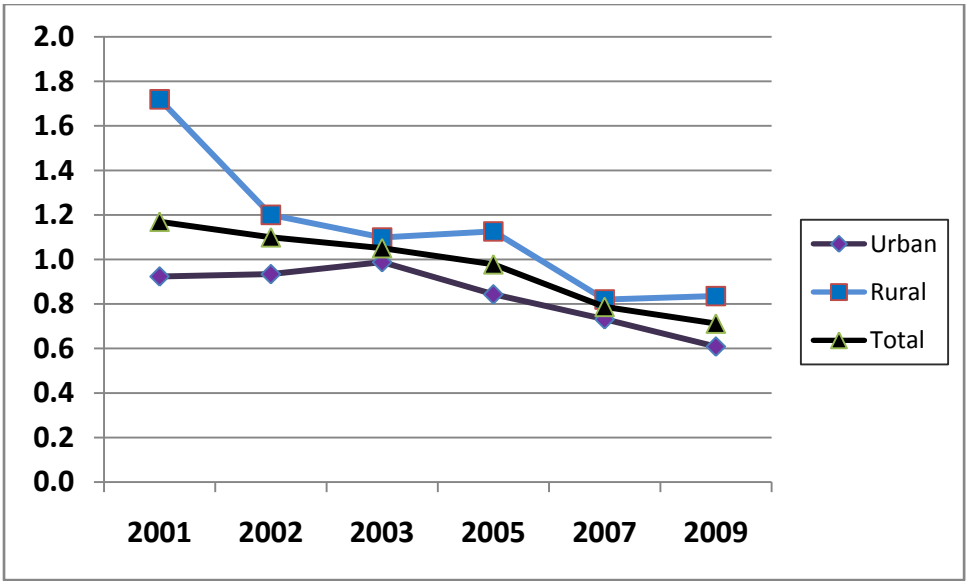


Figure 3.7(b): Trends in Ratio of HIV Prevalence in 15-24 Year to 25-34 Years Age Group



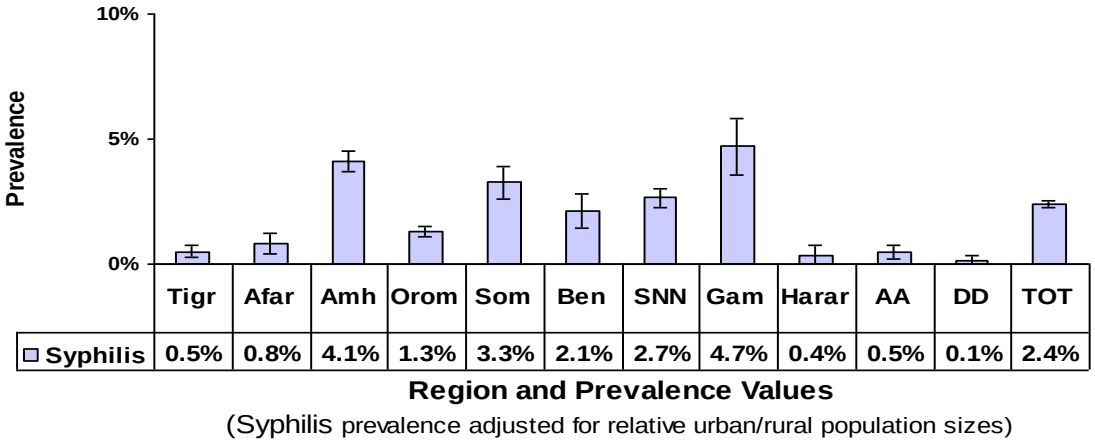
SECTION 4: ANC-BASED SYPHILIS PREVALENCE FINDINGS

4.1. Prevalence of Syphilis by Age and Site Setting

Of the 44,945 specimens, collected for syphilis testing, about 44,104(98%) specimens had properly documented syphilis test result. Of these, 1,068 samples from the Federal Police, Federal Army Hospitals and Pynido refugee Camp clinic were excluded from national and regional analysis. 43,036 of the samples were used for national and regional analysis. Of these, 986 (2.3%) were reactive for Rapid Plasma Reagin (RPR) (2.6% Rural & 1.7% Urban) which is almost the same (2.4%) when adjusted for the relative urban and rural population sizes for each region. The adjusted syphilis prevalence is highest in Gambella region (4.7%) followed by Amhara region (4.1%). The lowest is in Dire Dawa (0.1%) followed by Harari 0.4% (See Figure 4.1%).

The unadjusted HIV prevalence in urban sites is 1.7% of which the highest (4.2%) is noted in Oromia region (Figure 4.2%). The rural Syphilis prevalence is highest (6.7%) in Gambella followed by Amhara region (4.6%) (Figure 4.3). Relatively higher syphilis prevalence was also noted in rural settings (2.7%) compared to the urban (2.0%) in 2007 round. Some of the rural health centers such as Kone, Mekoy, Jama, Guhala, Dolo Odo and Itang showed unexpectedly high syphilis prevalence (See Annex 3, 4 & 5). Although both HIV and syphilis are sexually transmitted diseases, higher syphilis prevalence was observed in rural areas compared to urban areas. This observation is contrary to the higher HIV prevalence observed in urban areas than rural areas. Similar observation was also noted during the 2007 ANC surveillance round. This warrants further studies to fully explain the observation.

Figure 4.1: Adjusted Syphilis Prevalence among All ANC Attendees by Region, Ethiopia, 2009



(Syphilis prevalence adjusted for relative urban/rural population sizes)

Figure 4.2: Unadjusted Syphilis Prevalence among ANC Attendees at Urban ANC Sites, by Region, Ethiopia, 2009

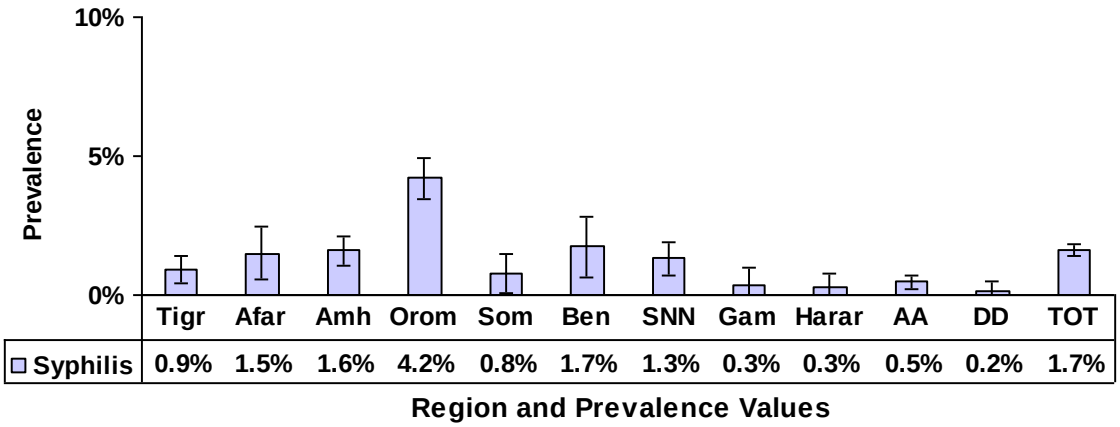
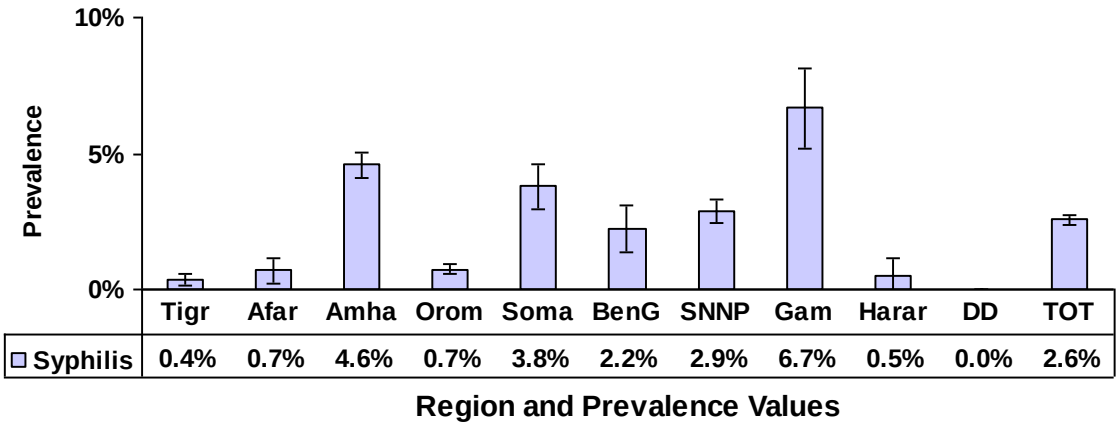
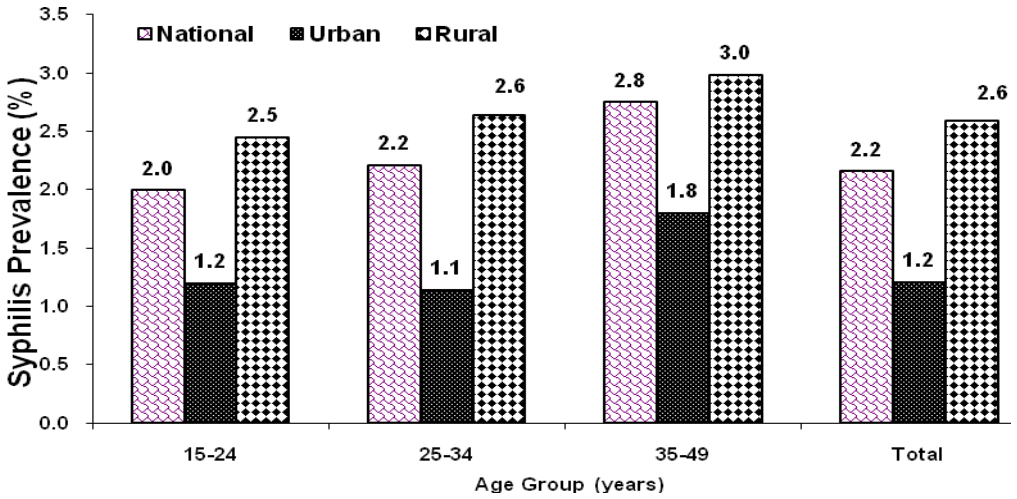


Figure 4.3: Unadjusted Syphilis Prevalence among ANC Attendees at Rural ANC Clinics, by Region, Ethiopia, 2009



In 2009 round, Syphilis positivity was highest (2.8%) among ANC clients aged 35-49 years (urban 1.8% & rural 3.0%). See Figure 4.4 & Annex 6 for further details.

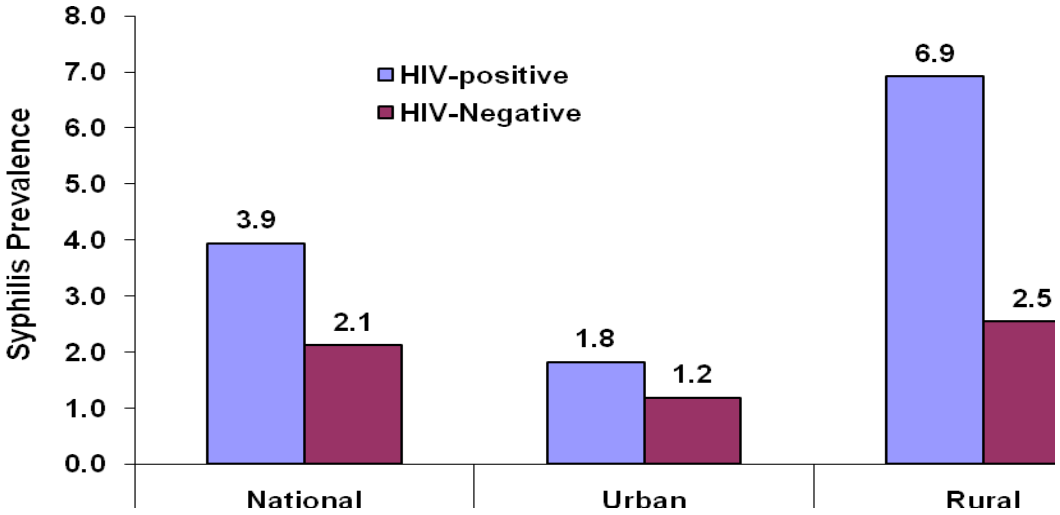
Figure 4.4: Unadjusted Syphilis Prevalence by Age Group and Site Setting, 2009



4.2 Prevalence of Syphilis by HIV Status and Sites Setting

The overall national prevalence of syphilis among HIV positive clients (3.9%) is almost twice that of HIV negative clients (2.1%). Syphilis prevalence (6.9%) was higher for HIV positive clients in rural areas compared to those in urban areas (1.8%) (Figure 4.5 & Annex 7).

Figure 4.5: Syphilis Prevalence (%) by HIV Status and Site Setting, Ethiopia, 2009



SECTION 5: ASSESSMENT OF PMTCT DATA

5.1 Purpose of the Assessment

Included as part of the 2009 ANC sentinel surveillance was a field assessment to determine whether routine PMTCT program data can be used instead of unlinked anonymous testing (UAT) surveys in antenatal clinics to estimate HIV prevalence among pregnant women. This is important in view of increasing availability of PMTCT services following the recent introduction of the opt-out HIV testing approach in Ethiopia. Of the 114 health facilities that participated in the 2009 ANC sentinel surveillance round, 97 (85%) sites provided PMTCT services. The high coverage of PMTCT services in facilities where ANC surveillance is conducted raises ethical concerns whether to continue with UAT or use routine PMTCT data since PMTCT has the advantage of providing HIV test result and opportunity for individual level HIV prevention, care and treatment for the participants. If the PMTCT program data is of high quality (complete and reliable) to be used, then this will also save the costs associated with ANC surveillance implementation since PMTCT program data is routinely available. Therefore, the PMTCT program data was collected to assess the data quality in PMTCT registers and selected parameters over the same period of the 2009 ANC surveillance.

5.2 Methods Used for PMTCT Data Assessment

Data collectors were trained before the field trip. The same inclusion criteria applied to ANC surveillance was used for the PMTCT program data collection. Forty-nine sites with at least 3 years of ANC data were selected based on ease of access. Among collected individual level variables for each site are age, gestation (in weeks), and acceptance of HIV testing (where applicable), HIV test results and whether the results were received. Qualitative site level information on each sentinel including PMTCT approach at the site, number of women with first ANC visit during the 2009 ANC survey period, number of women who had accepted HIV testing within a 12-month reporting period, number of women who had a documented HIV test result, and availability of routine syphilis testing are among others.

5.3 Results

PMTCT program data was successfully collected from 43 (88%) of the 49 planned ANC sites, of which 30 were health centers and 13 were hospitals

PMTCT Program Data Quality: The overall proportion of women enrolled in PMTCT who had documented HIV test results is 75.1, 95% CI (75.1% to 75.8%). At site level, this variable has suffered from inconsistent recording and issues related to satellite sites. At least 25% of the clients lack documentation of HIV test results in the PMTCT registers.

Concerning documentation and availability of syphilis test results of the 43 sites assessed, 15 (35%) did not use routine syphilis testing outside the ANC surveillance period. The syphilis test result is documented on client charts, not on ANC or PMTCT registers.

Based on the individual client level records, information for 14,007 pregnant women was collected. About 4% of the PMTCT clients had missing HIV test result and 1.6% clients had missing age record. More than15% of the clients had missing record of gestation period. Sites used various versions of registers: 15 sites that used new register which provides an option for the proportion who accepted HIV testing. A total of 4664 (91%) of the 5127 pregnant women accepted HIV testing; documentation is missing for 8.4%, while the rest were recorded as refused (0.6%) for testing. One register, used by 31 of the sites with 63% of the records did not give the option to document whether HIV testing is accepted or refused by the PMTCT client. Of the 14,007 clients 86% were documented as 'received test" results while the rest had missing or invalid documentation.

Table 5.1: Completeness of Selected Variables in ANC/PMTCT Register During 2009 ANC Surveillance Round

Variable	Records with valid data in the register
# of women enrolled in PMTCT	14,007
# of women with HIV test result	13,451(96%)
# of women with age	13,785 (98.4%)
# of women with gestation	11,978 (85%)

PMTCT Uptake: PMTCT Uptake was calculated by using the number of women who accepted an HIV test over the total number of women in the ANC register from January 1, 2009 through December 31, 2009 for a full year. The overall PMTCT uptake of testing was 75.1% with 95% CI (74.7 to 75.4%) (Annex-8). The site level values ranged from 2k4.2% at

Higher 23 Health Center in Addis Ababa to 172.2% at Dangla Health Center. At least 3 sites had more than 100% uptake (Dangla Health Center in Amhara region, Shashemenie Health Center (126%) in Oromia, and Edaga Arbi Health Center (102%) in Tigray region. These numbers may not reflect true estimates of PMTCT uptake of testing due to the inconsistencies in transcription of data into the PMTCT and ANC registers. This is due to register data from satellite sites and health posts which offer ANC services but not PMTCT services. The women attending these alternate sites have been registered in their respective ANC log books at their facilities but referred to PMTCT services at the main health center/hospital. These referred women were then registered in the PMTCT register but not registered in the ANC register for the main health center/hospital. Therefore, the denominator for this indicator (number of women in the ANC register) is underestimated creating uptake percentages of over 100 percent. Median uptake was 89% and more than 30% of the sites had less than 70% uptake (Annex-8).

HIV prevalence results: Of the 13,244 clients aged from 15-49 who had properly documented valid HIV test results, 534 (4%) had documented as HIV positive. The site level prevalence ranged from 0.0% to 19.5% with a median of 3.5%. The highest HIV prevalence was 19.5% at Bahir Dar Hospital followed by Dire Dawa Hospital (12.4%) and Hiwot Fana Hospital (9.7%). At least 3 sites including Hasange Health Center (Harari region), Teza Health Center (SNNPR region), and Enawari Health Center (Amhara region) had no positive HIV results recorded in PMTCT data during the survey period.

SECTION 6: DISCUSSION

ANC surveillance is used to monitor the trend of HIV prevalence levels because it is less expensive logistically, easier to conduct, and can be repeated periodically. On the other hand, the use of ANC-based HIV surveillance data has inherent limitations such as exclusion of non-pregnant women, women who are pregnant but not attending ANC clinics, and those attending private health facilities. Additionally, except for proxy information (15-24 years), it is not possible to obtain HIV incidence estimates directly from ANC data.

Ethiopia's ANC-based sentinel surveillance system has improved remarkably over the years. This can be noted from increased sites where the total number of surveillance sites has increased from 82 sites in 2002 to 114 in 2009. To improve representation of rural population, the number of surveillance sites in the rural areas were increased from 9 in 2002 to 73 in 2009.

To ensure better data quality, site readiness assessment was done before the start of the data collection in all regions. This was also supplemented by intensive site supervision to the sentinel sites and regional testing laboratories during the survey period. Despite a few sites such as Tercha Hospital, Gimbichu and Kamashi Health Centers with suspected poor data quality, a progressive increment of overall agreement in HIV test results between regional testing sites and NRL-EHNRI was observed during the three consecutive ANC rounds i.e. 2005 (93.5%), 2007 (94.9%) and 2009 (96.9%). This confirms marked improvement in data quality over time.

Comparing the overall unadjusted prevalence of HIV in 2009 (3.0%) with that of 2007 (3.8%) there is a statistically significantly decline ($P<0.01$). In 2009, the urban epidemic still remains high (5.3%) at national level, although it has significantly declined compared to 2007 of 6.2% ($P\underline{\sim}0.00$). This pattern also holds true for rural prevalence figures.

Several factors may be contributing to the observed decline in prevalence. These include HIV/AIDS control and prevention efforts that led to behaviour change and reduction in transmission. Strengthening of the health sector response has enabled the rapid and massive scale-up of comprehensive HIV/AIDS programs, including prevention, care and treatment

services. For example, the numbers of centers providing ART has increased from 73 in 2006 to 497 in 2009. Similarly the number of sites offering PMTCT services has increased from 408 in 2006 to 1,023 in 2009. Additionally, the impact of low fertility rate among HIV infected women, and the use of other HIV testing programs that may affect the prevalence of HIV among women visiting ANC sites could be contributory. The knowledge of their HIV status among sero-positive women may also discourage them to have additional children.

The unadjusted HIV prevalence varied markedly across regions, from 1.6% in SNNPR to 5.3% in Addis Ababa followed by 5.1% in Gambella. The urban HIV prevalence also varied from 3.8% in SNNPR and Oromia to 7.8% in Amhara region. Even in Addis Ababa, the prevalence varied markedly the HIV sero prevalence is 2.2% in Kolfe Health Center and 8.7% in Gulele Health Center.

Regarding the rural HIV prevalence, it ranged from 0.0% in Harari to 4.6% in Gambella. Afar and Somali had also showed unusually high HIV prevalence, 4.5% and 3.5% unlike the previous years, respectively. The observed high prevalence figures in these regions were mainly due to relatively higher prevalence seen in the rural sites that were classified as rural but resemble more of urban and are increasingly urbanized. Moreover, recent developments in road networks, large scale agricultural activities, mining and related business activities have enhanced population movement and urbanization.

Therefore, data presented here suggest that multi-sectoral approach of prevention, care and treatment efforts should be strengthened and tailored to the needs of each region according to the existing context.

The national syphilis prevalence remained similar to that of the 2007 round at 2.3%. Several sites especially in rural setting have reported interruptions in supply of syphilis screening tests. However, during the survey period, all ANC sentinel sites were provided with syphilis test kits.

Although data abstraction of PMTCT was consistent across sites, the quality of data in PMTCT register varied markedly by sites. The main challenges included different personnel being responsible for filling the register due to high staff turnover, inconsistent interpretations of the indicators, and use of different versions of registers. Several ANC sites had collected

blood specimens from women who had visited satellite sites and health posts for the ANC surveillance. However, most satellite sites did not offer PMTCT services and are not part of ANC PMTCT data assessment. Therefore, women who had been offered ANC services at these sites were referred to the main site associated with the satellite site. This could affect comparability of the ANC and PMTCT data if the women who participated in the ANC survey at these satellite sites did not access PMTCT services at the main site.

SECTION 7. CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

The following conclusions can be drawn from the ANC-Based HIV Sentinel Surveillance data of 2009 round:

- The epidemic appears to remain heterogeneous across regions.
- The adjusted HIV prevalence in pregnant women has declined from 3.6% in 2007 to 2.3% in 2009.
- Both the urban and rural HIV prevalence in pregnant women have declined significantly as compared to previous rounds but still remains a generalized epidemic.
- Compared to 2007, in 2009 about 56% of the sites showed an absolute decrease in HIV prevalence of which 12% of the sites had significant reduction in prevalence.
- Since 2001, HIV prevalence among 15-24 year olds (marker for incidence) has continued to decline in rural and urban areas. The greatest reduction has been in urban settings from 14.2% in 2001 to 4.2% in 2009.
- The HIV prevalence is higher among the 24-34 year old age group in both urban and rural areas.
- The ratio of HIV prevalence in age groups 15-24 and 25-34 is below 1.0% which shows lower prevalence in younger age groups.
- Some regions (Gambella, Addis Ababa and Dire Dawa) still demonstrate high HIV prevalence despite the observed decline across survey rounds.
- Some sites in rural area (Erer, Chifra and Dalifage) reported relatively high HIV prevalence in 2009 round.
- National syphilis prevalence in 2009 remained similar to 2007 round.
- The age group between 35-49 years of age had higher syphilis prevalence.
- Some rural sites (Kone, Jama, Guhala, Dolo Odo and Itang) showed unacceptably high syphilis prevalence. This may warrant confirmatory test.

- The PMTCT uptake of HIV testing at the assessed ANC sites is approximately 75% and still misses 25% of the clients that should benefit from the PMTCT services.
- About 25% of the clients on ANC /PMTCT register did not have documentation of HIV test results.
- The comparability of PMTCT and ANC data is highly compromised by the recording inconsistencies, the influence of the satellite sites used in ANC survey and incompleteness of register.
- The quality of PMTCT data in ANC sites in Ethiopia is too inadequate to replace the ANC surveillance data at this time. Regular assessments are needed to track improvements in PMTCT service data along each ANC survey rounds.

7.2 Recommendations

The ANC-based national HIV sentinel surveillance and programmatic data included in this report suggests the following:

1. Given the overall unadjusted prevalence of 3.0% (adjusted to 2.3% for relative population size of regions), prevention efforts should focus in specific regional settings based on the contextual epidemic patterns to address observed regional heterogeneity.
    a) Younger age groups, particularly in urban areas and regions with comparatively high prevalence should be prioritized.
    b) Efforts to reduce and maintain the current reduction in the trend of the rural epidemic should be in place.
2. It is imperative to undertake an HIV incidence study on subsequent round ANC samples to assess the leading edge of the epidemic. This should be supplemented with inclusion of more socio-demographic information including previous HIV testing, HIV status, and other socio-demographic parameters.
3. Given the observed syphilis prevalence, there is a need to strengthen STI services throughout the country, including rural areas. Routine syphilis screening and treatment at all ANC clinics should also be available throughout the year
4. Regarding PMTCT data assessment:
    a) Provision of appropriate training and monitoring for PMTCT service recoding and documentation is critically needed.

b) The use of uniform registers across all PMTCT service delivering sites is critically needed to ensure uniform documentation of all variables in PMTCT register.
c) The availability of routine screening test for Syphilis should be ensured and the results to be documented in ANC/PMTCT registers at all the sites.
d) Regular assessments of PMTCT data should be done immediately after each of the ANC rounds to track improvements in the PMTCT data documentation and utility.

5. Additional studies needed include:
    a) Conducting surveys in key populations to improve identification and understanding of high risk factors and bridging population groups that fuel the epidemic. Assessment of factors that contribute to urban-to-rural transmission in rural HIV hot spots should be undertaken.
    b) Conduct studies to provide better insights to understand the effect of interventions in the observed decline in HIV prevalence.
    c) Triangulate data from other surveillance sources like TB/HIV surveillance, STI surveillance, ARV resistance surveillance and other behavioural studies.
    d) In depth analysis of HIV epidemic in regions/localities with unusually high HIV prevalence (including Gambella region) is highly required.

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ANNEXES

Annex 1: Median, 25%ile and 75%ile Values of ANC Site HIV Prevalence, 2009

	Minimum (%)	25%ile	Median (%)	75%ile	Maximum (%)
All sites	0.0	1.1	2.3	4.6	13.1
Rural sites	0.0	0.7	1.3	2.5	8.9
Urban sites	1.0	3.7	4.9	7.0	13.1
By Region, RURAL and URBAN sites combined					
Afar	2.0	3.7	5.2	5.3	8.7
Amhara	0.2	1.4	2.5	3.9	13.1
Oromia	0.3	1.0	1.3	2.4	8.5
Somali	1.5	2.5	3.9	4.5	5.9
Benishangul Gumz	1.0	3.5	4.5	4.7	4.7
SNNPR	0.2	0.8	1.2	2.0	6.4
Gambella	1.3	3.6	4.6	7.3	8.9
Harari	0.0	1.5	3.0	4.5	6.0
Addis Ababa	2.2	4.1	5.4	7.1	8.7
Dire Dawa	1.5	3.2	4.9	6.1	7.2
By Region, RURAL sites only					
Tigray	0.0	0.6	0.9	1.6	4.3
Afar	2.0	3.6	5.2	5.2	5.3
Amhara	0.2	0.7	2.2	2.8	4.6
Oromia	0.3	0.7	1.1	1.3	3.4
Somali	1.5	2.0	3.0	4.0	5.9
Benishangul Gumz	1.0	1.8	2.6	3.5	4.3
SNNPR	0.2	0.6	0.9	1.3	2.3
Gambella	1.3	3.0	4.1	5.7	8.9
Harari	0.0	0.0	0.0	0.0	0.0
Dire Dawa	1.5	1.5	1.5	1.5	1.5
By Region, URBAN sites only					
Tigray	2.0	4.4	5.4	6.0	7.0
Afar	3.7	4.9	6.2	7.4	8.7
Amhara	3.1	4.7	7.2	9.4	13.1
Oromia	1.0	1.4	3.2	4.6	8.5
Somali	3.9	4.2	4.5	4.8	5.0
Benishangul Gumz	4.7	4.7	4.7	4.7	4.7
SNNPR	1.1	3.2	4.2	5.0	6.4
Gambella	7.3	7.3	7.3	7.3	7.3
Harari	6.0	6.0	6.0	6.0	6.0
Addis Ababa	2.2	4.1	5.4	7.1	8.7
Dire Dawa	4.9	5.5	6.1	6.6	7.2

Note: Tercha Hospital, Gimbichu health center, Kamashi health center, Armed Forces, Police and Pynido Refugee Camp are excluded from this table.
All values in percent, unweighted. 25%ile: 25 percentile. 75%ile: 75 percentile.

Annex 2: Unadjusted HIV Prevalence by Age Group and Site Setting, 2009

Setting	Age Group	# HIV-Positive	# HIV-Negative	# Total	HIV-Prevalence
Total	15-24	508	18,811	19,319	2.6
	25-34	654	18,223	18,877	3.5
	35-49	81	3,523	3,604	2.2
	Total	1,243	40,557	41,800	3.0
Urban	15-24	304	6,910	7,214	4.2
	25-34	380	5,228	5,608	6.8
	35-49	33	701	734	4.5
	Total	717	12,839	13,556	5.3
Rural	15-24	204	11,901	12,105	1.7
	25-34	274	12,995	13,269	2.1
	35-49	48	2,822	2,870	1.7
	Total	526	27,718	28,244	1.9

Annex 3: Syphilis Prevalence and CI by Region and Site Setting, 2009

Setting	Region	No. RPR tested	Syphilis prevalence (%)		
			Lower 95% CI	Point Estimate (%)	Upper 95% CI
Urban + Rural*	Tigray	4,075	0.3	0.5	0.7
	Afar	1,756	0.4	0.8	1.3
	Amhara	9,893	3.7	4.1	4.5
	Oromia	10,151	1.1	1.3	1.5
	Somali	2,657	2.6	3.3	3.9
	Benishangul Gumuz	1,749	1.5	2.1	2.8
	SNNPR	6,798	2.3	2.7	3.0
	Gambella	1,409	3.6	4.7	5.8
	Harari	784	0.0	0.4	0.8
	Addis Ababa	2,756	0.2	0.5	0.7
	Dire Dawa	1,008	0.0	0.1	0.3
	National	43,036	2.1	2.3	2.4
Urban	Tigray	1,396	0.4	0.9	1.4
	Afar	595	0.5	1.5	2.5
	Amhara	2,174	1.1	1.6	2.1
	Oromia	2,806	3.5	4.2	4.9
	Somali	627	0.1	0.8	1.5
	Benishangul Gumuz	579	0.7	1.7	2.8
	SNNPR	1,294	0.7	1.3	1.9
	Gambella	300	0.0	0.3	1.0
	Harari	381	0.0	0.3	0.8
	Addis Ababa	2,756	0.2	0.5	0.7
	Dire Dawa	604	0.0	0.2	0.5
	National	13,512	1.4	1.7	1.9
Rural	Tigray	2,679	0.1	0.4	0.6
	Afar	1,161	0.2	0.7	1.2
	Amhara	7,719	4.1	4.6	5.1
	Oromia	7,345	0.6	0.7	0.9
	Somali	2,030	3.0	3.8	4.6
	Benishangul Gumuz	1,170	1.4	2.2	3.1
	SNNPR	5,504	2.4	2.9	3.3
	Gambella	1,109	5.2	6.7	8.1
	Harari	403	0.0	0.5	1.2
	Dire Dawa	404	0.0	0.0	0.0
	National	29,524	2.4	2.6	2.8

*Urban + rural values are adjusted for relative urban and rural population size.

Annex 4: 2009 ANC Surveillance Urban Sites Syphilis Prevalence

Region	Site	Sample Size	Prevalence (%)		
			Lower 95% CI	Point Estimate	Upper 95% CI
Tigray	Mekele HC	299	1.3	3.3	5.4
	Adigrat Hospital	499	0.0	0.0	0.0
	Maychew Hospital	298	0.0	1.0	2.1
	Abi Adi HC	300	0.0	0.0	0.0
Afar	Asaita HC	300	0.2	1.7	3.1
	Dubti Hospital	295	0.0	1.4	2.7
Amhara	Bahir Dar HC	250	0.3	2.0	3.7
	Estie HC	316	0.0	0.3	0.9
	Gonder HC	421	0.0	0.2	0.7
	Bahir Dar Hospital	457	2.0	3.7	5.5
	Addis Zemen HC	346	0.0	0.0	0.0
	Metema Hospital	384	1.2	2.9	4.5
Oromia	Shashemene HC	416	0.0	1.4	2.6
	Mettu HC	302	0.0	3.3	5.3
	Adama HC	413	0.0	0.7	1.5
	Jimma HC	352	0.7	2.3	3.8
	Nekemtie HC	415	0.9	2.4	3.9
	Chiro Clinic	299	2.0	4.3	6.7
	Moyale HC	303	0.0	1.7	3.1
Somali	Jijiga Hospital	310	0.0	1.3	2.5
	Gode Hospital	317	0.0	0.3	0.9
Benishangul Gumuz	Assosa Hospital	298	0.0	1.3	2.6
	Pawe Hospital	281	0.4	2.1	3.8
SNNPR	Dilla Hospital	298	0.0	0.0	0.0
	Hossana Hospital	360	0.2	1.4	2.6
	Sodo HC	300	1.8	4.0	6.2
	Awassa HC	336	0.0	0.0	0.0
Gambella	Gambella Hospital	300	0.0	0.3	1.0
Harari	Hiwot Fana Hospital	381	0.0	0.3	0.8
Addis Ababa	Kolfe HC	497	0.0	0.0	0.0
	Kotebe HC	393	0.0	0.0	0.0
	Teklehaymanot HC	304	0.0	0.3	1.0
	Kazanches HC	499	0.2	1.2	2.2
	Higher 23 HC	333	0.0	0.0	0.0
	Gulele HC	310	0.0	0.0	0.0
	Akaki HC	420	0.3	1.4	2.6
Dire Dawa	Diredawa Hospital	299	0.0	0.0	0.0
	Dire Dawa HC	305	0.0	0.3	1.0
Armed Forces	Armed Force Hospital	300	0.0	0.3	1.0
Federal Police	Federal Police Hospital	283	0.0	0.0	0.0

Annex 5: Rural 2009 ANC Surveillance Sites Syphilis Prevalence

Region	Site	Sample Size	Prevalence (%)		
			Lower 95% CI	Point Estimate (%)	Upper 95% CI
Tigray	Edaga Arbi HC	459	0.0	0.0	0.0
	Atsibi HC	400	0.0	0.3	0.7
	Workamba HC	392	0.0	0.0	0.0
	Zana HC	465	0.0	0.2	0.6
	Semema HC	322	0.0	0.0	0.0
	Adigoshu HC	314	0.0	0.0	0.0
	Chercher HC	327	0.8	2.4	4.1
Afar	Chifra HC	399	0.0	1.5	2.7
	Delfage HC	363	0.0	0.6	1.3
	Aboala HC	399	0.0	0.0	0.0
Amhara	Sekela Hospital	402	0.8	2.2	3.7
	Bibugne HC	363	1.7	3.6	5.5
	Chara Clinic	402	0.0	0.5	1.2
	Enewari HC	449	0.0	0.7	1.4
	Bora HC	440	0.0	1.6	2.8
	Tenta HC	469	0.1	1.1	2.0
	Kone HC	502	9.7	12.5	15.4
	Mertrolemariam HC	436	0.0	0.9	1.8
	Haik HC_surr.	272	0.0	0.0	0.0
	Dangla HC_Surr.	280	0.0	0.0	0.0
	Delgi HC	495	0.0	5.3	7.2
	Jaragedo HC	353	0.0	0.8	1.8
	Mekoy HC	404	6.8	9.7	12.5
	Arerti HC	452	4.3	6.6	8.9
	Kelala HC	415	1.1	2.7	4.2
	Jama HC	423	7.5	10.4	13.3
	Amdework HC	422	1.4	3.1	4.7
	Guhala HC	388	15.9	19.8	23.8
Oromia	Abomsa HC	499	0.0	2.0	3.2
	Limu Seka HC	439	0.0	0.2	0.7
	Gambo Hospital	465	0.0	0.4	1.0
	Ayra Hospital	480	0.0	0.0	0.0
	Gosa Clinic	523	0.2	1.1	2.1
	Daddim Hospital	400	0.0	0.0	0.0
	Toke Hospital	393	0.0	0.5	1.2
	Derra HC	400	0.3	1.5	2.7
	Dello HC	417	0.0	0.7	1.5
	Begi HC	498	0.0	2.0	3.2
	Chewaka HC	342	0.0	2.3	3.9
	Amaya Clinic	401	0.0	0.2	0.7
	Mesela HC	404	0.0	0.0	0.0
	Kokosa HC	404	0.0	0.5	1.2
	Amuru Jarite HC	494	0.0	0.4	1.0
	Alem Teferi HC	385	0.0	0.3	0.8
	Gida Ayana HC	401	0.0	0.2	0.7

Region	Site	Sample Size	Prevalence (%)		
			Lower 95% CI	Point Estimate (%)	Upper 95% CI
Somali	Awbere HC	410	0.0	0.2	0.7
	Kebribeyah HC	406	0.0	0.7	1.6
	Dolo Odo HC	404	12.1	15.6	19.1
	Kelafo HC	404	1.0	2.5	4.0
	Erer HC	406	0.0	0.0	0.0
Benishangul Gumuz	Debate HC	304	0.6	2.3	4.0
	Kamashi HC	457	2.2	3.9	5.7
	Menge HC	409	0.0	0.2	0.7
SNNPR	Belle HC	434	2.5	4.4	6.3
	Tercha Hospital	419	0.0	0.2	0.7
	Karat HC	456	3.2	5.3	7.3
	Gimbichu HC	237	0.0	1.7	3.3
	Mirab Abaya HC	383	0.0	0.0	0.0
	Attat Hospital	500	0.0	0.0	0.0
	Chiri HC	424	0.3	1.4	2.5
	Sheko HC	431	6.3	9.0	11.8
	Agam HC	447	5.5	8.1	10.6
	Teza HC	498	0.0	0.2	0.6
	Chencha Hospital	423	0.0	0.0	0.0
	Gazer HC	496	0.0	0.4	1.0
	Bechi HC	356	4.4	7.0	9.7
Gambella	Itang HC	310	10.3	14.2	18.1
	Korgang HC	307	1.0	2.9	4.8
	Mettin HC	285	0.7	2.5	4.3
	Pynido HC	207	3.3	6.8	10.2
	Pynido Refugee Clinic	485	0.1	1.0	1.9
Harari	Hasange HC	403	0.0	0.5	1.2
Dire Dawa	Biyowale HC	404	0.0	0.0	0.0

Annex 6: Syphilis Prevalence by Age Group and Site Setting, 2009

Setting	Age Group	No. Syphilis Positive	No. Syphilis Negative	Total No. Tested	Syphilis Prevalence
National	15-24	386	18,935	19,321	2.0
	25-34	423	18,677	19,100	2.2
	35-49	100	3,535	3,635	2.8
	All Ages	909	41,147	42,056	2.2
Urban	15-24	84	6,922	7,006	1.2
	25-34	62	5,363	5,425	1.1
	35-49	13	708	721	1.8
	Total	159	12,993	13,152	1.2
Rural	15-24	302	12,013	12,315	2.5
	25-34	361	13,314	13,675	2.6
	35-49	87	2,827	2,914	3.0
	Total	750	28,154	28,904	2.6

Annex 7: Syphilis Prevalence by HIV Status and Site Setting, 2009

		HIV Status		
Setting	**Syphilis**	**Total**	**HIV-positive**	**HIV-negative**
National	Total	41,224	1,218	40,006
	Non Reactive	40,329	1,170	39,159
	Reactive	895	48	847
	Syphilis prevalence (%)	**2.2**	**3.9**	**2.1**
Urban	*Total*	*13,195*	*712*	*12,483*
	Non Reactive	*13035*	*699*	*12336*
	Reactive	*160*	*13*	*147*
	Syphilis prevalence (%)	***1.2***	***1.8***	***1.2***
Rural	*Total*	*28,029*	*506*	*27,523*
	Non Reactive	*27294*	*471*	*26823*
	Reactive	*735*	*35*	*700*
	Syphilis prevalence (%)	**2.6**	**6.9**	**2.5**

Annex 8: PMTCT Testing Uptake at 43 Health Facilities ANC Surveillance in Ethiopia

Region	Site	Accepted & tested in PMTCT	Total first visit in ANC Register	PMTCT uptake with 95% CI		
				Uptake%	Lower	Upper
Addis Ababa	Gulele HC	1409	1721	81.9	80.0	83.7
	Higher 23 HC	726	3005	24.2	22.6	25.7
	Kazanchis HC	548	640	85.6	82.7	88.3
	Teklehymanot HC	793	1201	66.0	63.3	68.7
Afar	Aysaita HC	1095	1219	89.8	88.0	91.5
	Chifra HC	109	372	29.3	24.7	34.2
	Dubti Hospital	758	758	100.0		
Amhara	Addis Zemen HC	1319	1441	91.5	90.0	92.9
	Bahir Dar HC	1213	1351	89.8	88.0	91.3
	Bahir Dar Hospital	948	1234	76.8	74.4	79.2
	Dangla HC	1104	641	172.2		
	Enawari HC	486	531	91.5	88.8	93.8
	Estie HC	693	937	74.0	71.0	76.7
	Haik HC	762	1946	39.2	37.0	41.4
	Mertolemar HC	125	141	88.7	82.2	93.4
Ben. Gumuz	Assosa Hospital	430	438	98.2	96.4	99.2
	Pawe Hospital	872	951	91.7	89.8	93.4
Dire Dawa	Dire Dawa HC	450	450	100.0		
	Dire Dawa Hospital	631	631	100.0		
Gambella	Gambella Hospital	950	1411	67.3	64.8	69.8
Harari	Hasange HC	191	191	100.0		
	Hiywot Fana Hospital	440	494	89.1	86.0	91.7
Oromia	Adama HC	1976	1976	100.0	99.4	100.0
	Alemaya HC	1960	2984	65.7	63.9	67.4
	Gambo Hospital	2939	3082	95.4	94.6	96.1
	Gosa Clinic (Bore)	651	954	68.2	65.2	71.2
	Nekemet HC	2201	2257	97.5	96.8	98.1
	Shashemene HC	2592	2043	126.9		
SNNPR	Agam HC	439	1012	43.4	40.3	46.5
	Awassa HC	475	1677	28.3	26.2	30.5
	Chencha Hospital	257	318	80.8	76.1	85.0
	Dilla Hospital	1007	1936	52.0	49.8	54.3
	Hossana Hospital	946	2841	33.3	31.6	35.1
	Soddo HC	1030	1811	56.9	54.6	59.2
	Teza HC	897	1638	54.8	52.3	57.2
Somali	Jijiga Hospital	1180	1180	100.0		
Tigray	Abi Adi HC	573	672	85.3	85.1	90.3
	Adigrat HC	1497	1966	76.1	74.2	78.0
	Atsbi HC	996	996	100.0		
	Edaga Arbi HC	640	628	101.9		

Region	Site	Accepted & tested in PMTCT	Total first visit in ANC Register	PMTCT uptake with 95% CI		
				Uptake%	Lower	Upper
	Maychew Hospital	932	976	95.5	94.0	96.7
	Mekele HC	1173	1274	92.1	90.5	93.5
	Workamba HC	415	456	91.0	88.0	93.5
Overall	All sites	40,828	54,381	75.1	74.7	75.4