The Kingdom of Swaziland

SWAZILAND HIV ESTIMATES AND PROJECTIONS

REPORT

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UNAIDS
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FOREWORD

In recognition and commitments to the Millennium Development Goal 6 as well as the Universal access targets, Swaziland has set an ambitious target of reducing HIV incidence from 2.9 percent to 2.3 percent by 2014 (NSF 2009-2014). As a country with the highest HIV prevalence in the world, (26% among the 15-49 age groups) Swaziland has witnessed a dramatic fall in life expectancy from 60 years in 1997 to 40.2 years in 2008, a rising number of orphaned and vulnerable children as well as other devastating social and economic impacts of the AIDS epidemic.

To rise to this challenge, stakeholders to the AIDS response, both local and international have responded by developing an evidence informed and results based National Strategic Framework with greater emphasis on targeted prevention interventions, a Health Sector Response plan whose goal is to attain universal access coverage in treatment care and support, and commitment in terms of resources and political will. With better understanding of the major drivers of the epidemic including deepened analytical work on *know your epidemic* and *know your response* commonly termed the modes of transmission study, combined with a scientific approach to target setting, it is believed that the nation will make progress towards mitigating the impact of AIDS.

The Swaziland HIV estimates and projections report 2010, is one of the main information products generated by a broad range of partners, to assist the country assess progress towards attainment of MDG's and the country's universal access targets. Every two years, the estimates and projections team in the country undergo a regional training supported by UNAIDS,WHO and PEPFAR, after which they populate the two models, SPECTRUM and Estimates and Projections Package (EPP) with country data to generate estimates of the population in need of various services. These data assist government, civil society, NGO's development partners and stakeholders to establish the reach of their intervention and collectively to monitor and evaluate the impact of HIV interventions including progress towards national and international commitments such as NSF targets, NDS, HSRP, MDG Universal Access and UNGASS. Furthermore, the data contained in this report is intended for programming for HIV both now and into the future.

While the current estimates indicate some positive progress particularly in the scale up of PMTCT and ART services. Both the 2007 and 2009 HIV estimation and projections reports indicate that progress has been made in responding to the HIV epidemic; particularly in scaling up efforts in treatment, care and support, but that the prevalence rates might not change significantly unless the prevention tap is tightened further.

The data in this report are by no means conclusive and are therefore subject to change depending on future policy decisions around the eligibility criteria, change of drug regimen, revisions and assumptions in future EPP and SPECTRUM tools.

Derek von Wissell
NERCHA Executive Director

ACKNOWLEDGEMENTS

This resourceful report is a culmination of the continuous efforts by the country's HIV estimates and projections core team comprised of personnel from the NERCHA, Ministry of Health, Central Statistics Agency, WHO, and UNAIDS. The time and expertise they dedicated to generating these estimates and projections is highly appreciated. The National Emergency Response Council on HIV and AIDS (NERCHA) is indebted to UNAIDS for providing training and the technical support that made this very important exercise a reality. In particular, we are indebted to Eleanor Gouws (UNAIDS), Peter Ghys (UNAIDS), John Stover (Futures Group Institute) and Mary Mahy (UNAIDS) for their invaluable guidance during the analytical phase of this work. We would especially like to thank the Ministry of Health (MOH) and other partners including CSO, WHO and UNAIDS for this collaborative effort and for their invaluable participation.

This report would not have been made possible without the cooperation of all Swazi's who regularly and willingly participate in Census and other surveys such as the ANC, DHS, including service providers who submit data on the coverage of services.

Finally, it is believed that the contents of this report will assist the country in making evidence informed decisions and subsequently strengthen the response to HIV in the country.

This report was drafted by team comprised of Helen Odido (UNAIDS), Bheki Mamba (NERCHA), Nhlanhla Nhlabatsi (MOH), Maqhawe Sibandze (NERCHA), Nomsa Mulima (MOH-M&E), Sibongile Mndzebele (MOH M&E), Nokwazi Mathabela (NERCHA) Nelisiwe Sikhosana (MOH), Dr. Benjamin Gama (WHO) and Lucas Jele (NERCHA).

OVERVIEW

Country Profile

Swaziland is a landlocked country in southern Africa with a land surface area of about 17,364 square kilometers. It is divided into four administrative regions namely Hhohho, Shiselweni, Manzini and Lubombo. It is further subdivided into 55 Tinkhundla (constituencies) and 360 chiefdoms and towns. The estimated population of the country is 1,018,449 people, with 52 percent under the age of 20 years, while 52.7% are females. Manzini is the most populated region, housing over 30 % of total population, followed by Hhohho. Unsurprising, since these are areas for formal employment, they attract internal migrants in search of employment. The Swazi economy is agriculturally driven, producing mainly food canning, wood pulp, sugar, citrus fruits, livestock and pineapples. The country is classified as a middle income country with per capita income of US $2,580 (2007), although in the last twenty years, the economic growth has slowed down. Table 1 below highlights the status of some of the socio economic parameters for the country.

Table 1: Highlights of the health and socio-economic indicators

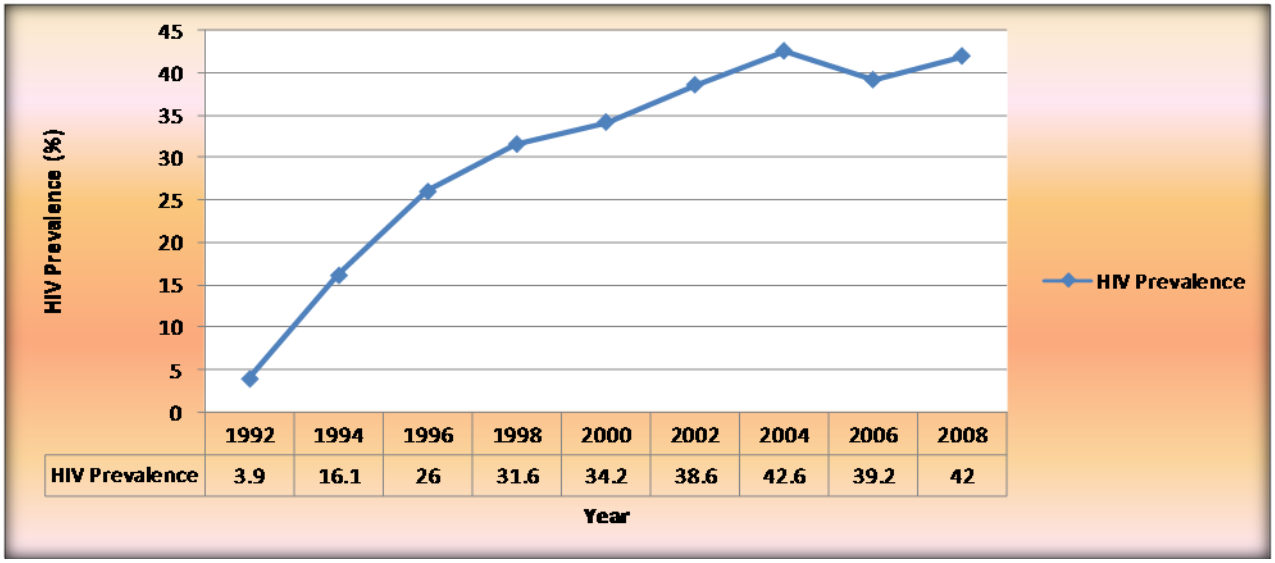
INDICATOR	VALUE
Total Population	1,018,449
Life Expectancy	40.2 years
Human Development Index (HDI) value	0.542
Total Fertility Rate	3.8
Antenatal Coverage	97%
Contraceptive Prevalence	51%
Median Duration of Breastfeeding	17 months
HIV Prevalence (15-49 years)	26%
%of children under 18 who are orphans	23%
% of Vulnerable Children under 18 years	12%

Source: Mostly Swaziland Demographic and Health Survey, 2007

Overview of HIV/AIDS in Swaziland

Swaziland has the world's highest HIV prevalence of 26% for the reproductive age group 15-49 and a high estimated annual HIV incidence of 2.66%. According to Sentinel Surveillance data, HIV prevalence among ANC clients increased from 3.9% in 1992, 26% in 1996 to 42% in 2008. It is also worth noting that the HIV prevalence in the country is evenly distributed within the four regions. HIV prevalence among pregnant women has risen steadily from 3.9 percent in 1992 to stabilize at a high level (42 percent in 2008) as shown figure 1 below.

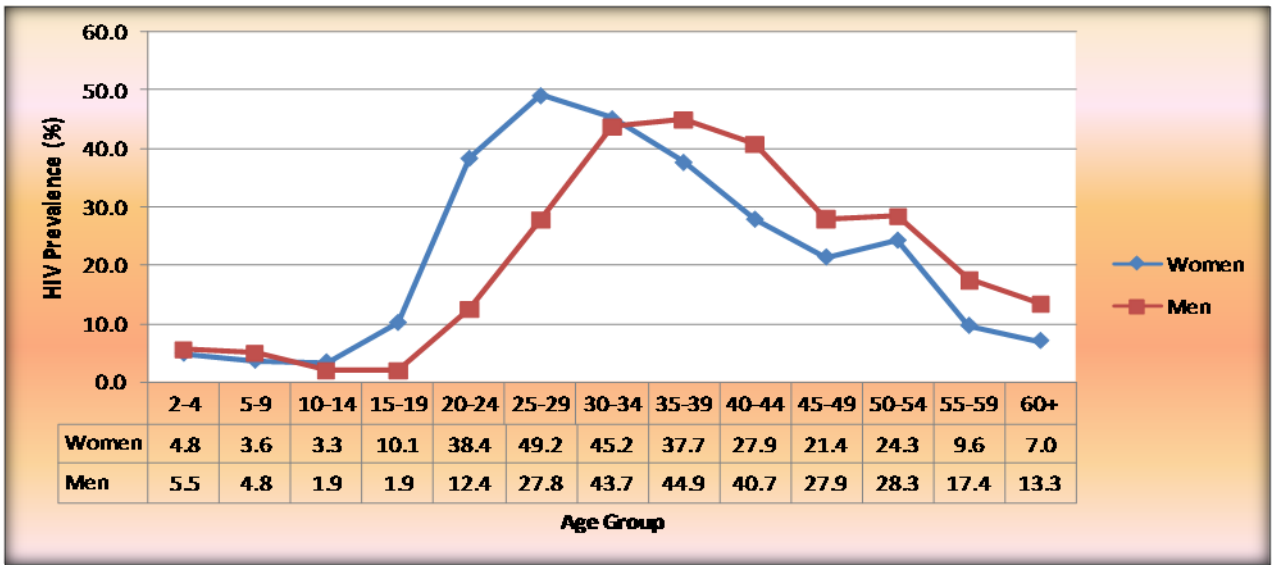
Figure 1: HIV Prevalence among ANC Clients



	1992	1994	1996	1998	2000	2002	2004	2006	2008
HIV Prevalence	3.9	16.1	26	31.6	34.2	38.6	42.6	39.2	42

Source: HIV Sentinel Surveillance Report, 2008

Figure 2: HIV Prevalence, Women and Men by Age, Swaziland 2007



	2-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60+
Women	4.8	3.6	3.3	10.1	38.4	49.2	45.2	37.7	27.9	21.4	24.3	9.6	7.0
Men	5.5	4.8	1.9	1.9	12.4	27.8	43.7	44.9	40.7	27.9	28.3	17.4	13.3

Source: Swaziland Demographic and Health Survey, 2007

In terms of age and sex disaggregation, the Swaziland Demographic and Health Survey 2007[1] shows that that women aged 15-49 are more likely to be HIV positive than men, at 31% and 20%, respectively. Also, HIV prevalence peaks earlier in women than among men, (25-29 years for women and 35-39 years for men) as shown in figure 2 above. In terms of HIV testing and Counseling (HTC), only 16% of the population know their HIV status, (22% women and 9% men).

Rural residents are more likely to be tested than their urban counterparts, and similarly those with little education are more likely to test compared to those who are educated. On the other hand, HIV prevalence is higher among urban than rural folks, among the population in the reproductive ages.

[1] Central Statistics Office (CSO), Swaziland Demographic and Health Survey, 2007.

Further analysis from the Modes of Transmission report 2009 [2]suggest that over 90% of new infections occur through heterosexual contact and about 68% of all new infections in adults occur in persons above 25 years, the majority of whom are married or cohabit with a steady partner.

THE PROCESS AND METHODOLOGY OF DERIVING ESTIMATES AND PROJECTIONS

The data contained in this report was generated using two software packages, namely the Estimates and Projections Package (EPP) and SPECTRUM, as recommended by the UNAIDS/WHO Working Group on Global HIV and STI Surveillance.

The EPP and SPECTRUM models used for deriving estimates and projections are updated on a regular basis with recommendations from the global UNAIDS Reference Group on HIV Estimates, Modeling and Projections. The group is comprised of demographers, epidemiologist, clinicians and modelers and typically meets twice per year to review the most current scientific developments in areas related to the models and assumptions in the models. The process of developing country estimates usually commences by a SPECTRUM and EPP training workshop for national counterparts, UN M&E Advisors, PEPFAR and other partner staff who are involved in the estimation process in countries. The trainings are usually coordinated by a team consisting of UNAIDS, WHO, USG and the Future's Group Institute. Prior to the training, country participants update the datasets from the most recent sentinel surveillance survey, Census, routine Treatment data and DHS.

SPECTRUM is a demographic model used for making national HIV estimates and projections of the demographic impact of HIV. It is designed to produce information useful for policy formulation and dialogue on a number of areas including antiretroviral treatment (ART) needs, prevention of mother-to-child (PMTCT) needs, orphan hood status, the rate of new infections and AIDS deaths, among others. The EPP software is used to build models of the national epidemic using ANC surveillance prevalence data as well as data from the national prevalence surveys such as the DHS.

The purpose is to generate information essential for policy and planning purposes. The projections show the magnitude of the AIDS epidemic and the demographic, social and economic consequences.

The Methodology

The new features on EPP allow the user to enter ANC HIV prevalence, ART coverage and DHS prevalence data or other available survey data, after which a curve is fitted and calibration is done. After adjusting for regional differences, a national epidemic curve (prevalence and incidence) is generated. The national incidence curve from EPP is read into SPECTRUM, combined with ART and PMTCT data, and epidemiological assumptions about the age and sex distribution of HIV, progression from infection to treatment need or death, fertility reduction among HIV positive women and the effects of treatment. In the 2009/2010 national HIV estimates a new version of SPECTRUM was used that had substantial improvements from the version used in the 2007 round of estimates.
These improvements and/or assumptions are summarized below:
Incidence instead of Prevalence: With the rapid roll out of ART, the models needed to account for the adjustment in prevalence due to people living longer and reduced infectivity of people who were on ART.

[2] NERCHA, UNAIDS (2009), Swaziland Prevention Response and the Modes of Transmission Analysis.

In the new version of EPP, users are able to include ART coverage data which are used to generate a national incidence curve, providing a more accurate description of the HIV epidemic in a country. SPECTRUM now reads the incidence from EPP rather than prevalence reflecting this more accurate description of new infections.

Age sex patterns for incidence: Since SPECTRUM now reads incidence from EPP it is necessary to describe how new infections are distributed by age and sex. A model developed by Tim Hallett and colleagues was used to calculate the age pattern of incidence from survey data. These calculations have been done for all countries with repeat national HIV surveys and used to derive standard default patterns.

Adult Progression: The patterns of adult progression from new infection to eligibility for treatment and to AIDS death are based on data from cohort studies as analyzed by the ALPHA network and the e-ART LINC Collaboration. The ALPHA network pooled data from several cohorts and analyzed the net AIDS mortality by time since infection. That analysis found a median time from infection to death of 11 years for those infected at ages 25-29. The median has been adjusted to 10.5 years for males and 11.5 years for females to account for the younger age at infection for females. The e-ART LINC Collaboration analyzed the time from infection to eligibility and from eligibility to death using two different definitions of eligibility: CD4 cell counts below 200 (according to the 2006 WHO guidelines) and CD4 count under 350 cells/µl (according the latest 2009 WHO guidelines). Countries can now change the treatment option in Spectrum according to the eligibility criteria that are currently used in their country.

Survival on ART: Previous analysis showed that the average annual survival on ART was about 85% in the first year after initiation and 95% in subsequent years, taking account of deaths and those lost to follow-up . The updated analysis includes new data on mortality and mortality among those lost to follow up. The new default values for adults are 86% in the first year and 90% in subsequent years.

HIV effects on Fertility: An improved method for calculating the HIV effects on fertility allows countries to use their own results from a recent DHS instead of using a generic value for all of Africa. In the absence of country specific data the default assumptions in relation to the reduction in total fertility rate as a result of HIV infection can be used.

Probability of Mother to Child Transmission: In the new version of SPECTRUM transmission from mother-to-child is divided into transmission during pregnancy and delivery and transmission through breastfeeding. The standard values for intra-partum transmission are derived from studies of the efficacy of various prophylactic regimens. The probability of transmission through breastfeeding depends on the type and duration of infant feeding method. Mixed feeding in the first six months carries the highest risk, 1.5% per month. Mothers on ART for their own health have the lowest risk of transmission at 0.3% per month.

Breastfeeding: A new input to SPECTRUM is the median duration of breastfeeding. This will allow countries to imitate the practices in their country more accurately. The median duration of breastfeeding in Swaziland was obtained from the DHS and is 17 months, while the percentage of mothers (both HIV positive and HIV negative) who provide mixed feeding to their children is 100%.

Child Progression: Estimated duration of child progression from infection to need for treatment and to AIDS death were created and included in the new model. These data come from cohort studies that provide stronger evidence for the estimation of survival of infected children. As mentioned above these survival curves are based on whether the child was infected intra-partum or during breastfeeding. HIV-positive children who have progressed from moderate-to-severe HIV disease are likely to die within 2-3 years if not treated.

New Child Eligibility for ART: WHO guidelines on ART for children in 2008 proposed that all HIV+ children under the age of one are considered in need of treatment. Eligibility for children over the age of one is based on progression to moderate-to-severe disease.

In 2010 new guidelines recommended that all children under the age of two are in need of treatment and the CD4 count threshold for children 24-59 months is 750 and 350 for children over 5. The default settings in the new version of SPECTRUM use these assumptions from 2010 forward. However countries can change them according to their national policy.

Use of PCR for infant diagnosis: In the new SPECTRUM version the percent of infants diagnosed with PCR can vary by year. The need for treatment is based on actual status so it will not vary with the coverage of PCR. But the use of ART will be affected by ART coverage. New ART patients were distributed by age according to identified need. For children under one this requires PCR. For children over the age of one identified need is assumed to be the same as progression to eligibility.

Child survival on ART: Finally, data from cohort studies have provided updated values of the survival of children on ART. ART can prolong life for infected children. The default values for survival on ART have been incorporated into SPECTRUM. Analysis of data from ART-LINC cohorts suggests the following survival rates for children in ART:

- Under one year of age: 0.85
- Over one year of age, first year: 0.85
- Over one year of age: subsequent years: 0.93

Population data was obtained from the 2007 population and housing census. Other assumptions are discussed in the relevant sections of the report.

Rationale for Estimation and Projections

Surveys including the ANC and DHS among others are useful for monitoring HIV trends over time and provide point prevalence data which are valuable for planning purposes. National estimates on the other hand provide timely information on the magnitude, future trends and the impact of HIV on health and other areas of development as well as the size of the impact with and without effective intervention. For instance the SPECTRUM and EPP are able to estimate the number of adults and children needing anti-retroviral therapy, which serves as a basis for setting national and regional targets and expanding access to treatment. National estimates also provide useful data which are used to measure progress towards national and international targets contained in national strategic plans, UNGASS and MDG.

Also, due to the recent increases in treatment successes which have slowed down the progression from HIV to AIDS, and death, data on HIV prevalence alone is no longer sufficient to track HIV infection rates or monitor and evaluate programmatic impact. The EPP and SPECTRUM models hence provide alternative data on the number and rate of new HIV infections, which ideally should be obtained through large scale cohort studies.

SPECTRUM Outputs

SPECTRUM requires epidemiological data that describes the characteristics of the HIV/AIDS epidemic and the response to it. Some of these inputs require national data while others rely on recommended values based on a review of scientific studies. The SPECTRUM outputs are:

- **HIV population:** The total number of people who are alive and infected with HIV. This includes those that know their status and those that do not.
- **HIV age distribution:** The number of infected people, by age and sex. This information can be displayed as a table or a pyramid chart.
- **Number of HIV+ pregnant women:** The number of pregnant women who are infected with HIV. Note that not all of these women will give birth since some pregnancies end in miscarriage.
- **Number of new HIV infections**: The total number of new HIV infections each year.
- **New infections by age:** The number of new infections by age and sex and incidence by age and sex.
- **AIDS deaths**: The annual number of deaths due to AIDS.
- **Cumulative AIDS deaths**: The cumulative number of AIDS deaths since the beginning of the projection.
- **Adult HIV prevalence**: The percentage of adults (population aged 15 to 49) who are infected with HIV.
- **Adult HIV incidence**: The percentage of uninfected adults who become infected in each year.

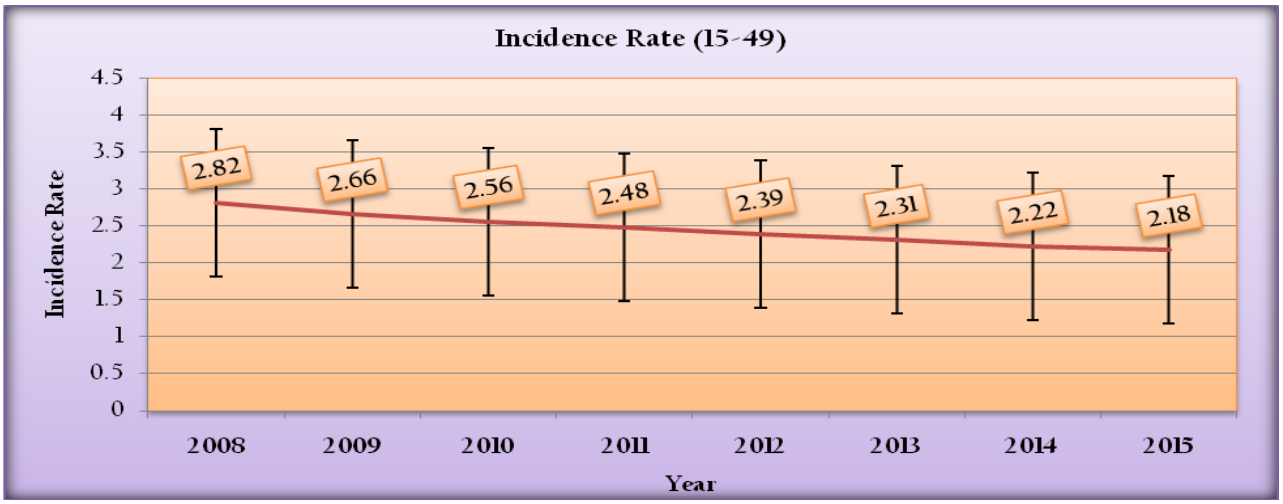
1. RESULTS

1.1. HIV Incidence

1.1.1. HIV Incidence Rate among 15-49 years

Adult HIV incidence is the percentage of susceptible (uninfected) adults aged 15 to 49 who are newly infected with HIV in a year. In 2008 the HIV incidence was estimated at 2.9% and this is expected to gradually decline over the years to reach 2.18% by the year 2015, which is close to the country's target of 2.3% by 2014. The trend in the incidence rate for adults aged 15-49 years is reflected in Figure 3 below.

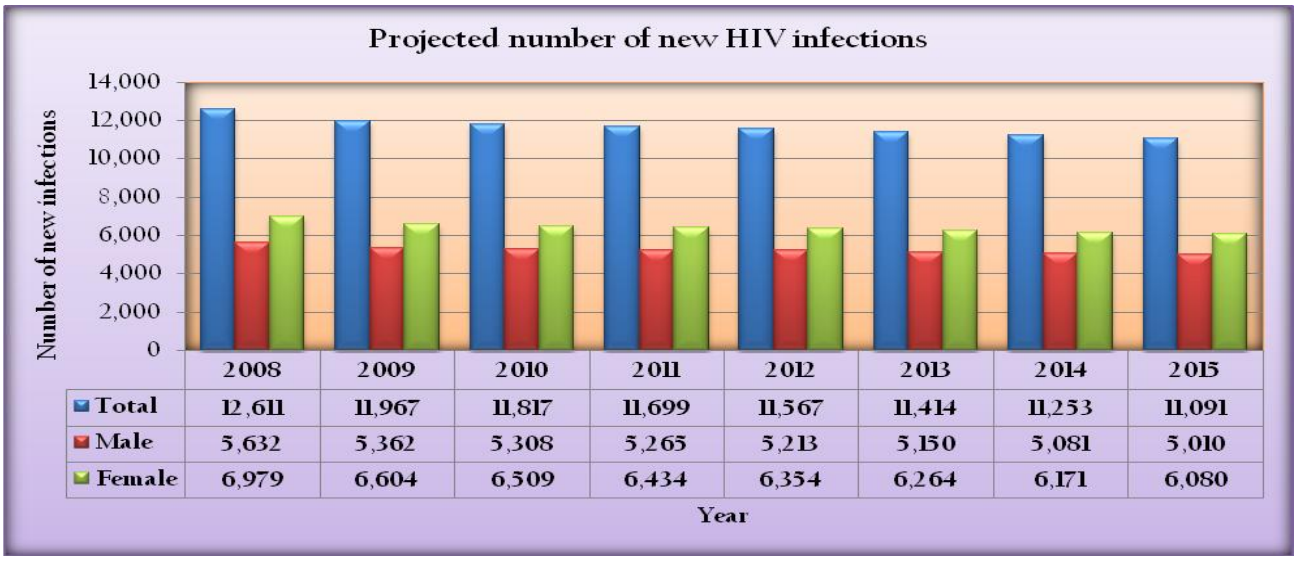
Figure 3: Trends in HIV Incidence



Source: SPECTRUM, 2010

The number of new adult HIV infections attributable to these incidence rates for the years 2008 to 2015 is shown in figure 4. These new HIV infections occur within a narrow range commencing at 12,611 in 2008 and remaining at around 11,000 a year from 2009 to 2015.

Figure 4: Projected number of New Infections (15-49), 2008-2015



Source: SPECTRUM, 2010

Overall, slightly over 11000 new infections occur among adults every year, with female new infections exceeding male new infections by a factor of 1.22 on average, confirming the generally observed higher vulnerability of females to HIV infection.

1.1.2. Number of new HIV infection in Children (0 -14 years)

The majority of new HIV infections in children in Swaziland are due to mother to child transmission during pregnancy, childbirth and breastfeeding. Additional childhood infections may be due to other causes including sexual abuse of children, but little data exist to quantify this.

New infant infections are influenced by the number of HIV positive women who access PMTCT services, receive appropriate ARV prophylaxis and adopt the recommended infant feeding option. These variables were factored into the projections software and yielded the data in tables 2 and 3 below. The tables reveals that HIV new infections due to mother to child transmission shall fall during the period 2008 to 2015 but far too many new infections are still projected to occur. This may be due to the fact that the previous gains made when PMTCT was scaling up will no longer be possible as the program reaches more and more women in need of PMTCT. Also in the model, the assumption made is that by 2015 60% of women will be on dual therapy, implying that some transmission of HIV to infants will continue due to the effectiveness of dual therapy.

Table 2: New Infections: Children (0-14)

Sex	2008	2009	2010	2011	2012	2013	2014	2015
Total	1,748	1,743	1,666	1,588	1,518	1,432	1,339	1,263
Female	886	883	844	805	769	726	678	640
Male	862	859	822	783	749	706	661	623

Source: SPECTRUM, 2010

When this assumption was changed and all positive pregnant women switched from dual to triple from 2010, the result in much fewer cases of mother to child transmission. The country's target for PMTCT is to reduce the percentage of HIV infected infants born to HIV positive mothers from 21% in 2007 to 5% by 2014.

Table 3: Number of New Infections among Infants (Under 1)

Sex	2008	2009	2010	2011	2012	2013	2014	2015
Total	1,416	1,406	1,335	1,264	1,201	1,124	1,043	977
Males	718	713	677	641	609	570	529	496
Females	697	692	658	623	592	554	514	481

Source: SPECTRUM, 2010

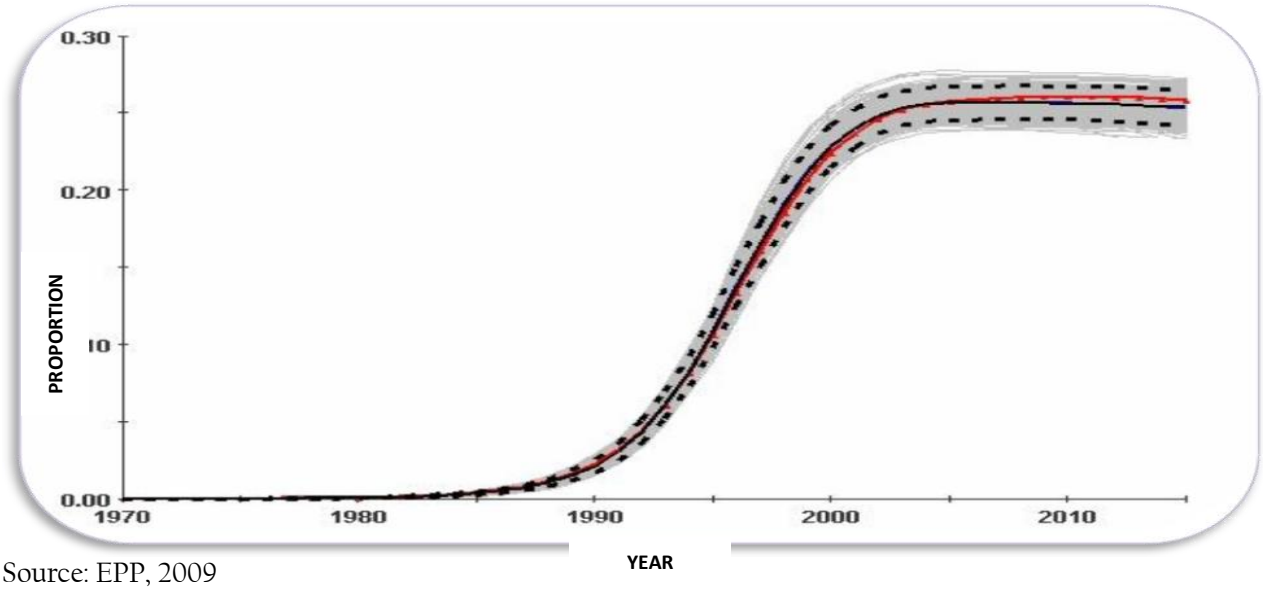
Overall, the projections show that there will be about 11, 000 new adults and 977 infants new infections in 2015

1.2. Adult (15-49) HIV Prevalence

The country has been measuring HIV infection among pregnant women on a biennial basis from the selected ANC sites since 1992. It should be noted that this type of survey is not able to distinguish between new infection and older ones. This together with the fact that it focuses only on pregnant women means that it is not representative of all the general adult population.

In 2006, the country also conducted a Demographic and Health Survey (SDHS) measuring the HIV prevalence in the general population and the findings were factored into EPP .The exercise was further enriched by the input of national census data rather than the projected population data. The adult HIV prevalence increased rapidly in the early nineties with a peak in 2004, and then leveled-off around 26% from 2008. It is projected to remain at this level until 2015. Figure 5 shows the national estimate and confirms that the national adult HIV prevalence grew rapidly in the early 1990s and peaked at 26% in 2000 and then, leveled off with no sign of decline. The range of the epidemic over time is illustrated by the dashed lines.

Figure 5: Estimated National HIV Prevalence

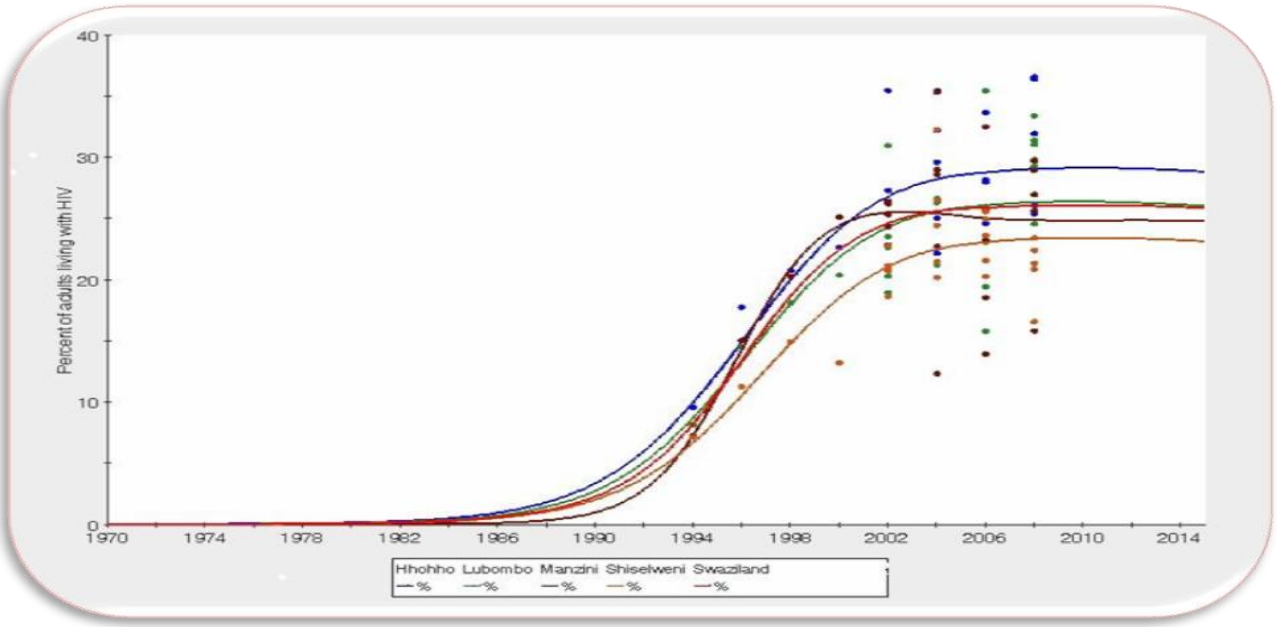


Source: EPP, 2009

Figure 6 further shows the regional results which have followed a similar pattern with the exception of the Manzini Region which had an early peak around the year 2000, declined slightly then followed the national pattern.

On the other hand, Hhohho Region is showing a higher rate compared to the other regions whilst Shiselweni Region from the actual and projected data has the lowest HIV prevalence compared to the other three regions. As observed in the figure above, the HIV prevalence will level off in all the regions from 2010 though at a high rate.

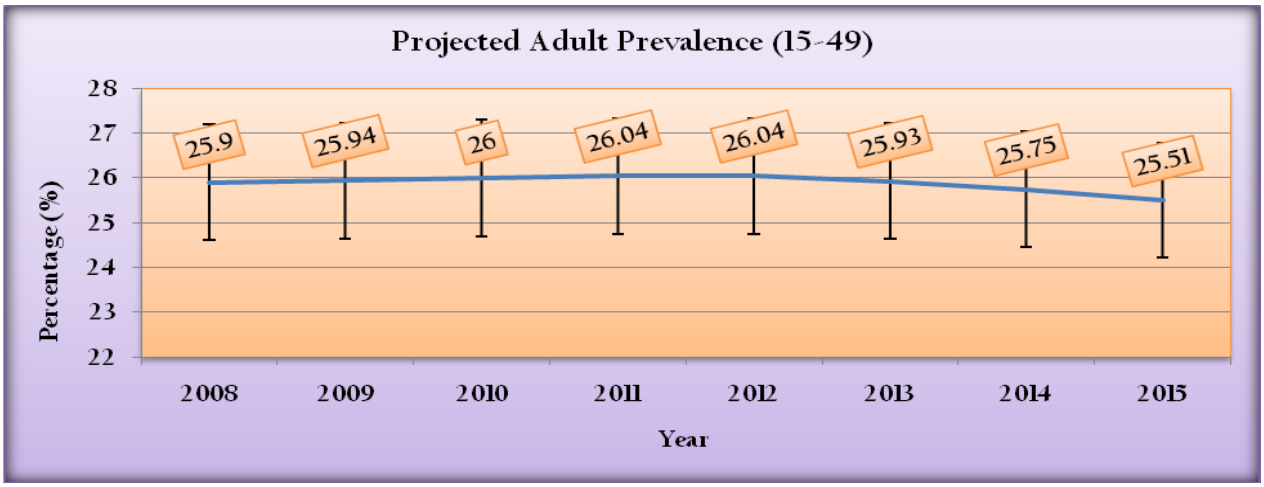
Figure 6: Estimated Regional HIV Prevalence



Source: EPP, 2009

The graph below shows the HIV prevalence rate over time. The median time from infection to AIDS in Sub-Saharan Africa without treatment is estimated to be 11 years.
It is projected that the HIV prevalence will level off at an average of 26% throughout the projected period. The rate seems to level off with narrow confidence limits between 24% and 27%.

Figure 7: Projected Adult Prevalence (15-49) 2008-2015



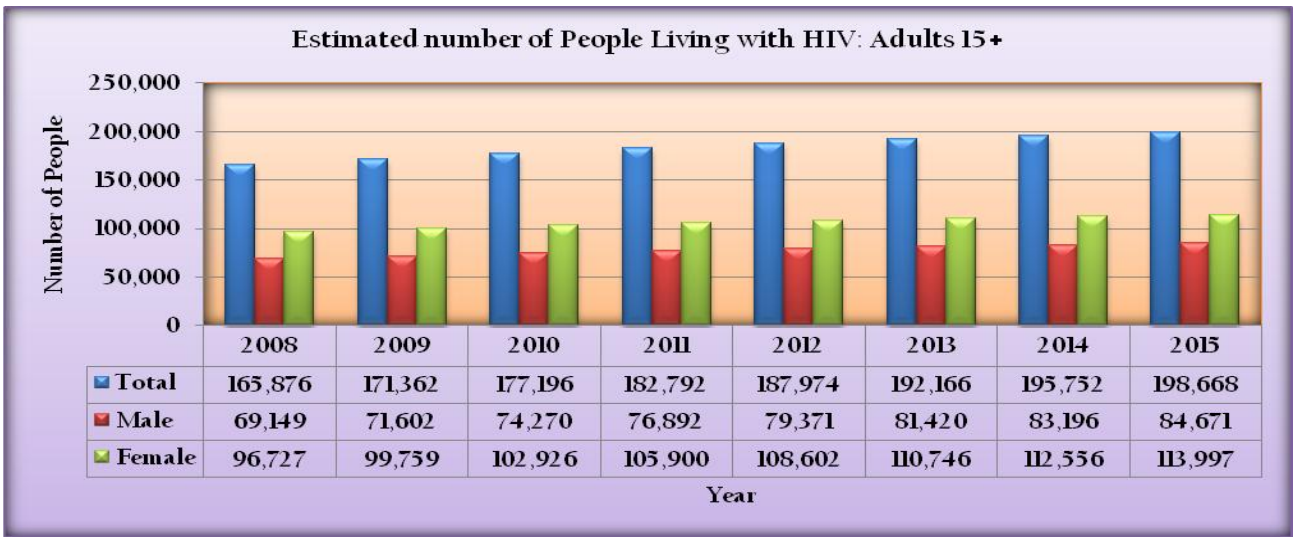
Source: SPECTRUM, 2010

1.3. NUMBER OF PEOPLE LIVING WITH HIV

1.3.1. HIV POPULATION: ADULTS (15+)

PLHIV aged 15+ years will continue to increase, from 165,876 in 2008 to 198,668 by 2015, and correspondingly the national HIV prevalence rate is expected to increase by 0 .02% to 24%. The number of women living with HIV continues to be more than their male counterparts over the years as shown in figure 8.

Figure 8: Number of People living with HIV aged 15 and over



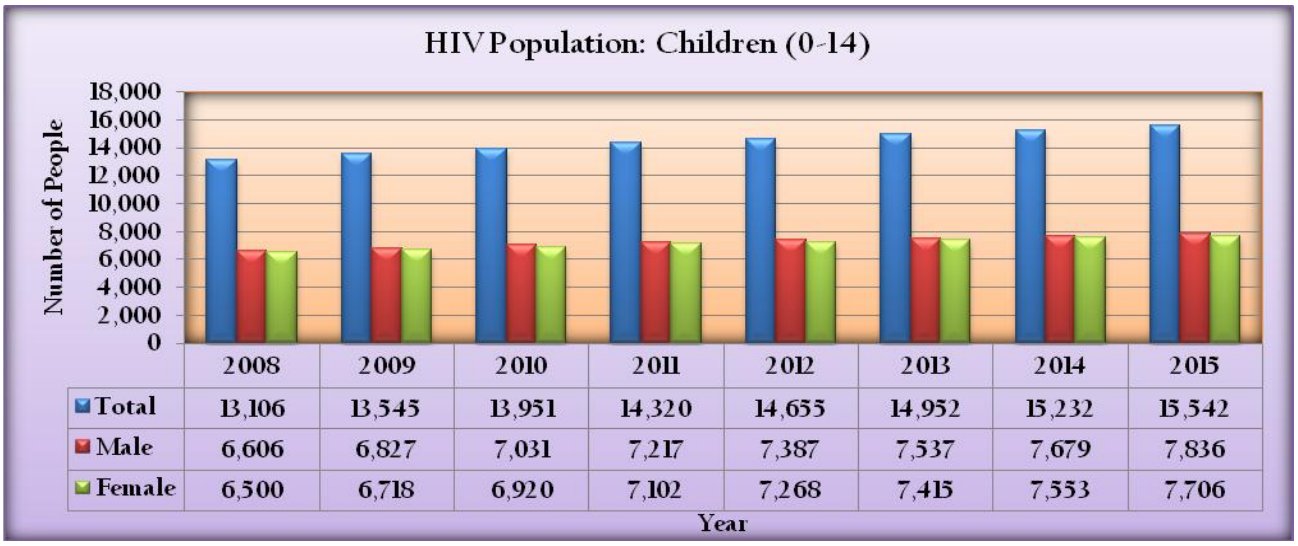
	2008	2009	2010	2011	2012	2013	2014	2015
Total	165,876	171,362	177,196	182,792	187,974	192,166	195,732	198,668
Male	69,149	71,602	74,270	76,892	79,371	81,420	83,196	84,671
Female	96,727	99,759	102,926	105,900	108,602	110,746	112,556	113,997

Source: SPECTRUM, 2010

1.3.2. HIV POPULATION: Children (0-14)

During the period 2008 and 2015, the number of PLHIV aged 0-14 years will increase from 13, 106 in 2008 to 15,542 in 2015, as shown in figure 9 below.

Figure 9: Number of Children (0-14) living with HIV



	2008	2009	2010	2011	2012	2013	2014	2015
Total	13,106	13,545	13,951	14,320	14,655	14,952	15,232	15,542
Male	6,606	6,827	7,031	7,217	7,387	7,537	7,679	7,836
Female	6,500	6,718	6,920	7,102	7,268	7,415	7,553	7,706

Source: SPECTRUM, 2010

1.4. ADULT AND CHILDREN: NEED FOR TREATMENT

1.4.1. ADULTS (15+): NEED FOR ART

Evidence shows that Antiretroviral Therapy (ART) prolongs the life and enhances the quality of life for people living with HIV. It is also known to delay the progression to AIDS death as long as it is still effective. Progression from HIV infection to need for ART varies by individual.

SPECTRUM adapted specific assumptions around the survival of ART patients. Regardless of the eligibility criterion for ART initiation being a CD4 count of 200 or below for adults, the median CD4 count for African countries ranges from 87-125, due to the fact that many patients seek services very late. The survival assumptions for adults on ART are 0.86 for the first year and 0.90 for subsequent years.[3]

This section of the report focuses on adults receiving ART; therefore the population living with HIV is estimated for all adults, from 15 years and above. The notable gap between the HIV positive population and the population in need is based on several assumptions among them eligibility criteria of CD4 cell count below 200.

Table 4: HIV Population, population in need of ART 2008-2015

YEAR	HIV+ Population (Adults15+)	Need for ART (CD4 <350)	Need for ART (CD4 <200)
2008	165,876	68,833	43,700
2009	171,362	73,014	49,048
2010	177,196	77,156	54,692
2011	182,792	81,324	60,716

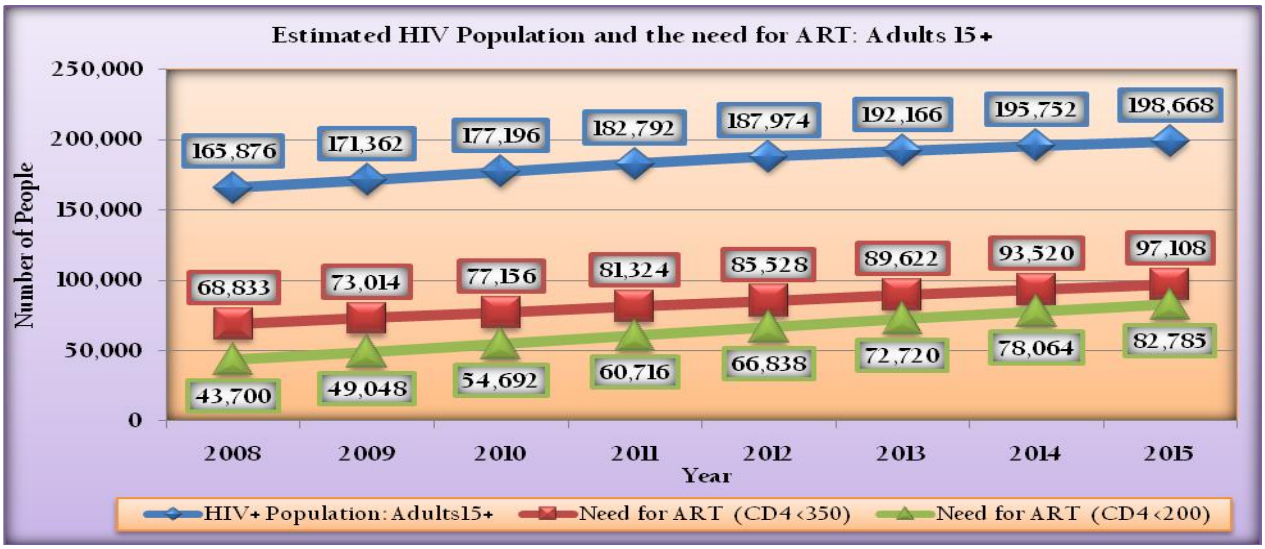
[3] John Stover: The Futures Institute, Spectrum System of Policy Models

2012	187,974	85,528	66,838
2013	192,166	89,622	72,720
2014	195,752	93,520	78,064
2015	198,668	97,108	82,785

Source: SPECTRUM, 2010

Sex disaggregation shows that females in need of ART are more than their male counterparts, with a ratio of 3:2. From figure 10 below it is noted that the total in need of ART was estimated at 68,833 for 2008 and projected to reach 79,666 in 2015 (CD 4 ‹ 350).

Figure 10: Adult HIV Population 15+ in need of ART



Source: SPECTRUM, 2010

1.4.2. Pediatric ART and Prevention of Mother to Child Transmission

1.4.2.1. Prevention of Mother to Child Transmission

The SDHS established that 97 percent of pregnant women attend antenatal care (ANC) at least once, which is a positive indication for access to PMTCT services, as these are integrated into ANC services. Routine ANC data show an increase in the number of pregnant women opting to test for HIV, which is an entry point to prevention of mother to child transmission of HIV.

Transmission rate of HIV from mother to child without any treatment is estimated at 20 % and with the single dose Nevirapine it drops to 11%. With the dual and triple treatment the rate drops significantly to 4% and 2% respectively. Transmission may also occur after birth, though at a minimal rate and this is determined by the duration of and type of infant feeding methods adopted. The median duration of breastfeeding for Swaziland from the SDHS is 17 months. Assumptions made in SPECTRUM are that the transmission after delivery ranges from 0% for exclusive replacement feeding to 1.5% for mixed feeding.

It is estimated that 85% of pregnant women will need PMTCT drugs. This may be due to the fact that some HIV positive pregnant women are already on ART (actually, SPECTRUM assumes that approximately 15%

of pregnant mothers will lose their babies because of still birth, abortions, etc.). Table 5 shows the projections for pregnant mothers from 2008 to 2015.

Table 5: Projected number of HIV+ pregnant women in need of PMTCT

YEAR	Estimated Number of HIV+ Pregnant Women	HIV+ Pregnant Women in Need of PMTCT
2008	11,.031	9,376
2009	10,979	9,332
2010	10,856	9,227
2011	10,728	9,118
2012	10,566	8,981
2013	10,374	8,818
2014	10,186	8,658
2015	9,999	8,499

Source: SPECTRUM, 2010

As shown in the table above, the model estimates that the number of HIV positive pregnant women is expected decline from 11,031 in 2008 to 9,999 by 2015. Also to be noted from the graph below is the narrowing of the gap between HIV positive pregnant women and HIV+ pregnant women needing PMTCT moving towards 2015.

1.4.2.2. Pediatric ART

SPECTRUM focuses on two types of treatment for children: Cotrimoxazole and antiretroviral therapy. The table below shows estimates for infants and children less than 14 years.

Table 6: HIV population for children 0-14 years, in need of ART and Cotrimoxazole

YEAR	HIV + Population (children 0-14)	Children in Need of ART(under 1)	Children in Need of ART (1-4)	Children in Need of ART (0-14)	Children needing Cotrimoxazole
2008	13,106	1,416	333	6,225	14,901
2009	13,545	1,403	337	6,827	16,329
2010	13,951	1,317	331	9,064	12,143
2011	14,320	1,229	324	9,751	12,678
2012	14,655	1,152	317	10,585	13,195
2013	14,952	1,074	308	11,482	13,641
2014	15,232	1,005	296	12,436	13,995
2015	15,542	964	286	13,497	14,323

Source: SPECTRUM, 2010

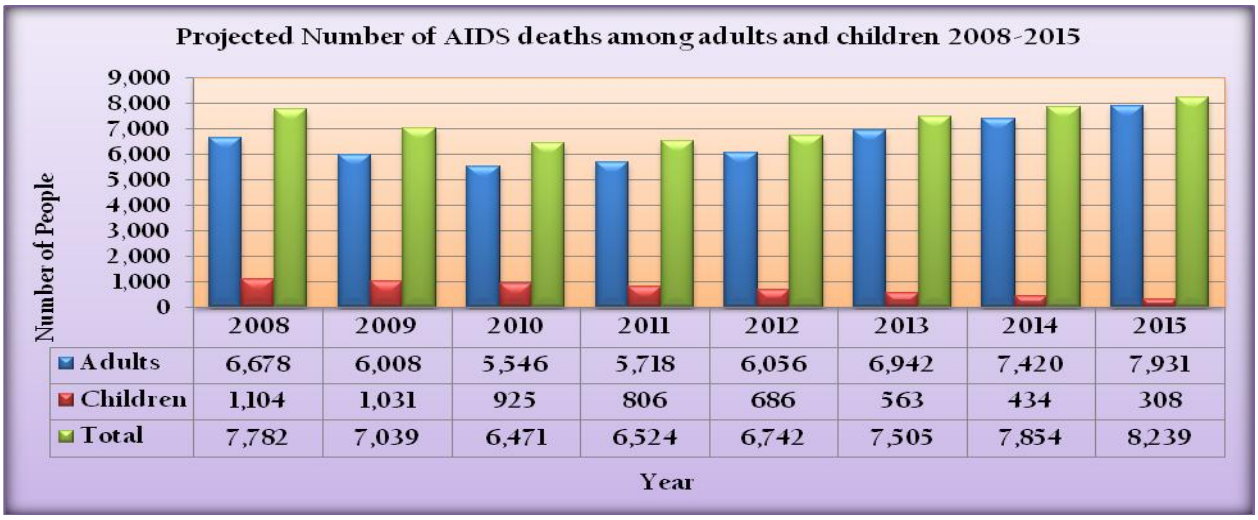
Cotrimoxazole (CTX) prophylaxis plays an important role in controlling infections among HIV patients. Studies have shown the positive impact of CTX among HIV exposed infants. It is assumed that CTX can

reduce mortality in HIV exposed children by 33%. All HIV exposed infants are eligible for CTX from 6 weeks of birth until their HIV status is determined as negative. Furthermore, if the child tests positive, continuation on CTX is recommended.

1.5. AIDS DEATHS

Projected deaths for children and adults due to AIDS show an interesting pattern in Swaziland. The projections reveal that deaths due to AIDS will decline in the near future among children whilst the trend is increasing for adults. Currently deaths among children are estimated at 925 (2010) and they are expected to decline by almost two thirds to 308 in 2015. In 2010, adult AIDS deaths are estimated at 5,546 and expected to rise to 7931 by 2015.

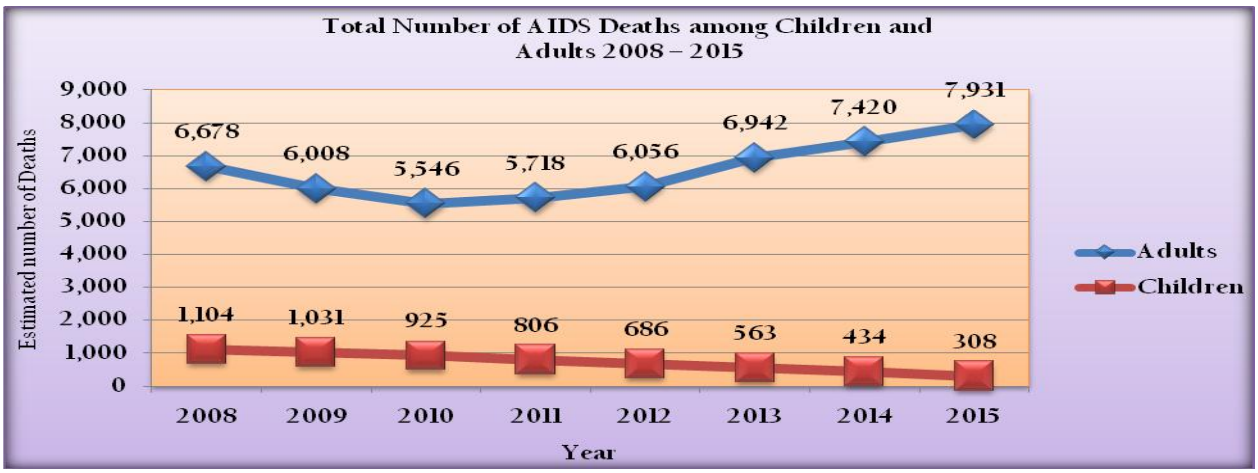
Figure 11: Projected Number of AIDS deaths among adults and children 2008-2015



	2008	2009	2010	2011	2012	2013	2014	2015
Adults	6,678	6,008	5,546	5,718	6,056	6,942	7,420	7,931
Children	1,104	1,031	925	806	686	563	434	308
Total	7,782	7,039	6,471	6,524	6,742	7,505	7,854	8,239

Source: SPECTRUM, 2010

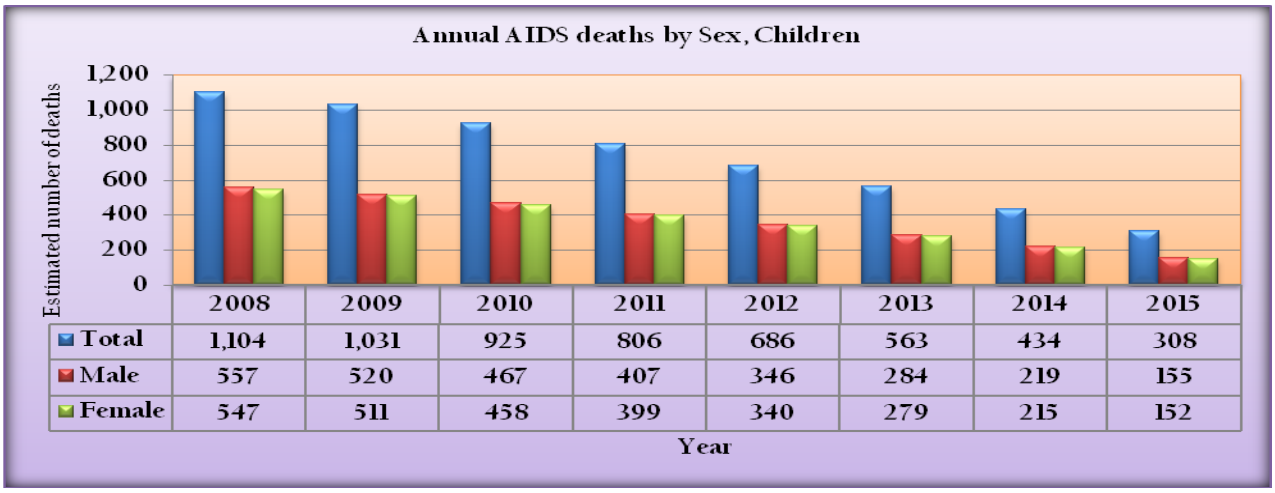
Figure 12: Total Number of AIDS Deaths among Children and Adults 2008 – 2015



Source: SPECTRUM, 2010

Deaths among boys and girls due to AIDS are similar, though boys tend to be affected slightly more than girls as indicated in figure 13. However, among adults, there is a clear difference between males and females. Among adults, females are expected to be affected more than males by the AIDS pandemic, a pattern that is envisaged to occur throughout the next five years as indicated in figure 14.

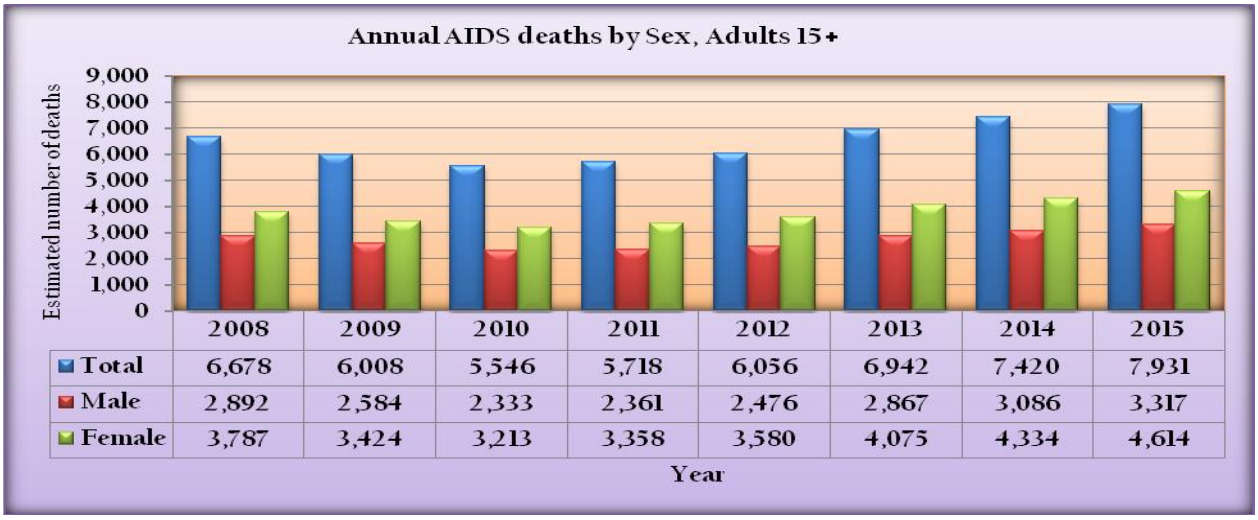
Figure 13: Annual AIDS deaths by Sex, Children



	2008	2009	2010	2011	2012	2013	2014	2015
Total	1,104	1,031	925	806	686	563	434	308
Male	557	520	467	407	346	284	219	155
Female	547	511	458	399	340	279	215	152

Source: SPECTRUM, 2010

Figure 14: Annual AIDS deaths by Sex, Adults 15+



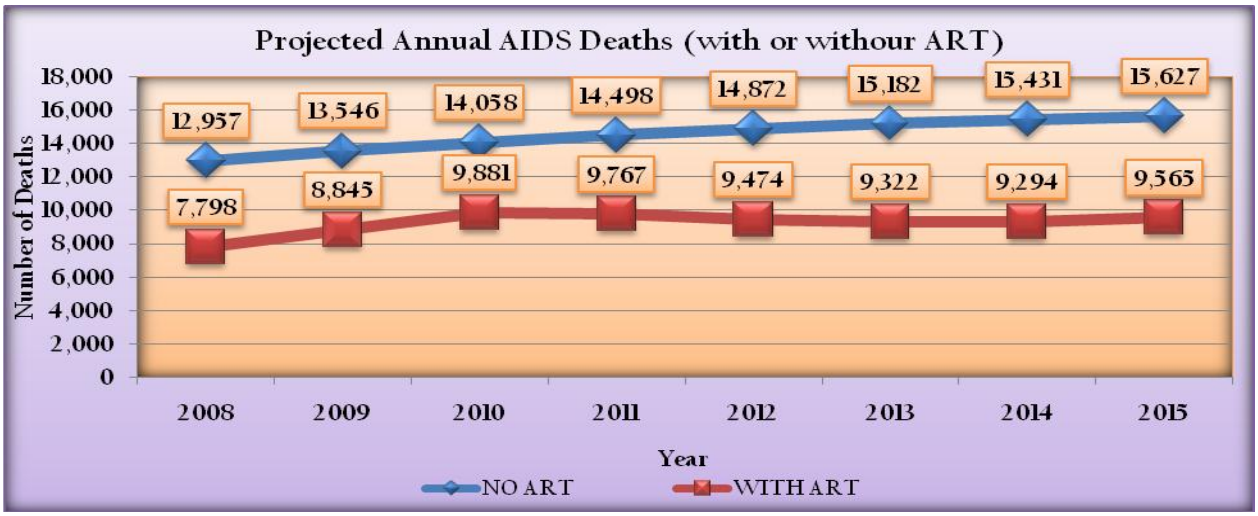
	2008	2009	2010	2011	2012	2013	2014	2015
Total	6,678	6,008	5,546	5,718	6,056	6,942	7,420	7,931
Male	2,892	2,584	2,333	2,361	2,476	2,867	3,086	3,317
Female	3,787	3,424	3,213	3,358	3,580	4,075	4,334	4,614

Source: SPECTRUM, 2010

1.6. IMPACT of ART on Survival of PLHIV

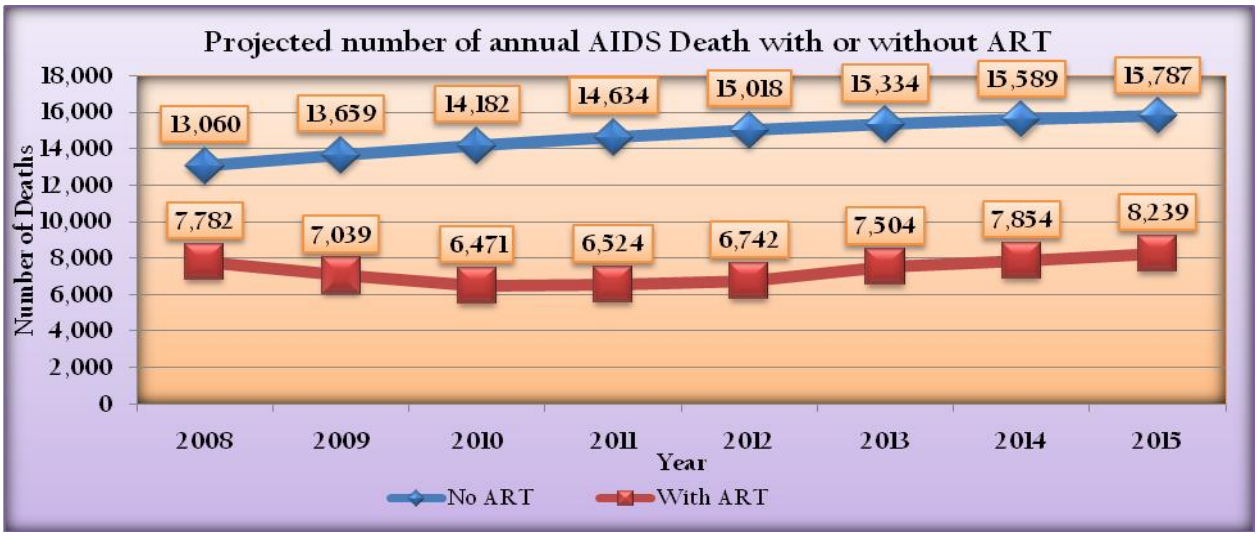
As mentioned earlier, ART improves the survival of people living with ART for many years and the figure below illustrates the effectiveness of ART over time. With cohort studies showing survival on first year at 0.86 and increasing to 0.90 in the subsequent year, ART significantly reduces mortality among PLHIV. For instance in 2010, in the absence of ART, mortality is 14,058, yet if ART is factored it reduces to 9881 with a CD4 count of <350 and 6471 if CD 4 count <200. The high mortality with higher CD 4 of above 350 is probably due to the wide gap between those in need and receiving. If scale up is aggressive, the gap between in need and receiving with be narrowed and mortality will decline accordingly.

Figure 15: Projected annual AIDS deaths with and without ART (CD 4 ‹ 350)



Source: SPECTRUM, 2010

Figure 16: Projected annual AIDS deaths with and without ART (CD 4 ‹ 200)



1.7. ORPHANS

The large number of AIDS deaths has increased the total number of adult deaths and, therefore, the number of children that are orphaned. SPECTRUM calculated the number of orphans from the pattern of mortality and fertility[4]. These estimates use the definition of an AIDS orphans as 'a child who has at least one parent from AIDS' and a double AIDS orphan as 'a child whose mother and father have both died, at least one due to AIDS' (UNAIDS Reference Group on Estimates Modeling and Projections, 2002).

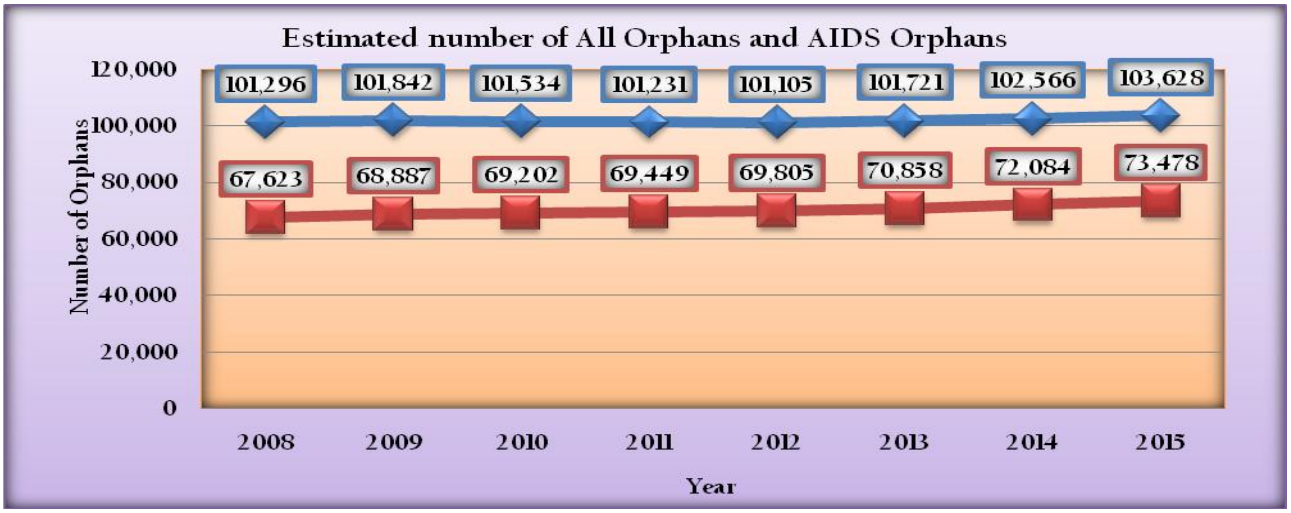
[4] Grassly NC, Timaeus IM. "Methods of Estimates the number or Orphans as a Results of AIDS and Other Causes in sub-Saharan Africa" Journal of Acquired Immune Deficiency Syndrome 2005, July1;39 (3) 365-375

Table 7: ALL Orphans and AIDS orphans

Category	2008	2009	2010	2011	2012	2013	2014	2015
ALL ORPHANS	101,296	101,842	101,534	101,231	101,105	101,721	102,566	103,628
AIDS ORPHANS	67,623	68,887	69,202	69,449	69,805	70,858	72,084	73,478

Source: SPECTRUM, 2010

Figure 17: ALL Orphans and AIDS orphans



Source: SPECTRUM, 2010

It is estimated that the country will have an estimated 101,000 orphans at the end of 2008 and is expected to rise to 103,000 by 2015. The projection shows that approximately 60-70% of these are AIDS orphans.

2. SUMMARY AND CONCLUSION

A prerequisite for planning, resource mobilization and allocation, and priority setting for the HIV response is better understanding of the epidemic, the current status and how it will affect the country in the near future. The EPP and SPECTRUM are designed solely for this purpose and have guided countries in this regard.

The EPP and SPECTRUM estimated that the HIV prevalence among adults aged 15 to 49 years increased rapidly in the early nineties peaked in 2004 and then level off around 26% in 2008. It is projected to remain at that level until 2015. HIV prevalence projections therefore indicate that the prevalence rate in Swaziland will remain high, although incidence is projected to decline slightly from the current 2.82% to 2.18% by 2015.

The estimates and projections further show that deaths attributable to AIDS will decline among children, while the orphan numbers will not change much in the near future. With regard to infant infections, the trend appears to be decreasing but rather slowly due to the effect of breastfeeding and the fact that majority of pregnant women will be on dual therapy. Should the country switch majority of women to triple therapy and replacement feeding, the decline in infants born HIV positive would be dramatic.

With the change in the eligibility criterion from 200 to 350 CD4 count the projected demand for ART will increase. The impact on ART on survival is dramatic with estimates projecting that ART reduces death among PLHIV significantly.

The percentage of orphans as estimated by SPECTRUM stands at 19% compared to those obtained from the SDHS (23%). This is probably due to an under-estimate of adult mortality due to other causes (non AIDs) by the UN Population Division. The Population's Division's projections for adult mortality were based on data from the 90's which showed some positive trends in adult mortality. The difference is however not significant enough to create concern given that the methodologies adopted by the two approaches differ.

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Annexes:

Table 8: Summary Data on HIV population, adults and children in need and receiving ART, children receiving Cotrimoxazole, mothers needing and receiving PMTCT

YEAR	HIV+ Population (Adults15+)	HIV + Population (children 0-14)	Adults (15 +) In Need of ART	Children in Need of ART	Children needing Cotrimoxazole	PMTCT (Mothers in need)
2008	165,876	13,106	68,833	6,225	14,901	9,376
2009	171,362	13,545	73,014	6,827	16,329	9,332
2010	177,196	13,951	77,156	9,064	12,143	9,227
2011	182,792	14,320	81,325	9,751	12,678	9,118
2012	187,974	14,655	85,527	10,585	13,195	8,981
2013	192,166	14,952	89,622	11,482	13,641	8,818
2014	195,752	15,232	93,520	12,436	13,995	8,658
2015	198,668	15,542	97,108	13,497	14,323	8,499

Table 9: Summary data on New Infections among adults and children, AIDS Deaths and Orphans

Year	New Infections (Adults 15-49)	New Infections: (children 0-14)	New infant infections: (Under 1)	AIDS Orphans	Total Orphans	Adults: AIDS Deaths	Children: AIDS Deaths
2008	12,611	1,748	1,416	67,623	101,296	6,678	1,104
2009	11,967	1,743	1,403	68,887	101,842	6,008	1,031
2010	11,817	1,666	1,317	69,202	101,534	5,546	925
2011	11,699	1,588	1,229	69,449	101,231	5,718	806
2012	11,567	1,518	1,152	69,805	101,105	6,056	686
2013	11,414	1,432	1,074	70,858	101,721	6,942	563
2014	11,253	1,339	1,005	72,084	102,566	7,420	434
2015	11,091	1,263	964	73,478	103,628	7,931	308