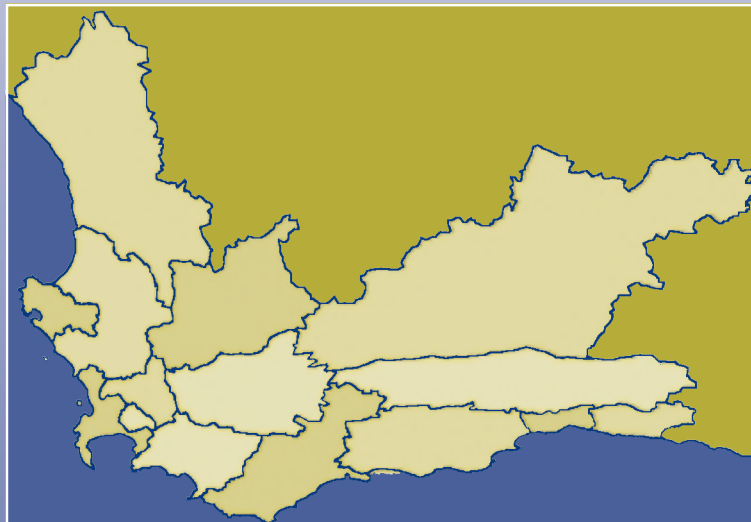


# **The Provincial & District HIV Antenatal Survey WESTERN CAPE 2002**



Department of Health  
Western Cape  
2003



THE HIV ANTENATAL SURVEY: WESTERN CAPE 2002

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## FOREWORD

In 2002, the 13 th HIV Antenatal Survey was carried out in the Western Cape, as part of a national survey that examines HIV and Syphilis sero-prevalence amongst pregnant women attending public sector clinics. The findings of the 2002 Western Cape Provincial survey revealed an overall provincial HIV sero-prevalence rate of 12.4%. This is substantially higher than the 8.6% prevalence reported in 2001. The increase is disturbing but not unexpected and is consistent with the view of experts that the HIV prevalence rate for the province will increase further over the next few years. Some of the salient points of the survey are as follows: Women aged 25-29 years show the highest rate as well as the highest percentage point increase. There has been a steady increase in HIV prevalence amongst teenagers (women under 20 years of age) over the last five years. This is of great concern, as HIV prevalence in this age group is a crude proxy for new infections in a population. Clearly, this suggests that we need to strengthen preventive strategies targeted at young people in this age group.

In addition to the national survey, Western Cape Department of Health conducted the 3rd Annual district- level HIV survey, which examined all 25-health districts in the province. In 2003, the highest HIV prevalence rates were observed in districts located in the Metropole region, namely Khayelitsha, Gugulethu and Heldeberg districts. However, an emerging trend suggest that certain districts located in the rural regions such as Knysna, Plettenberg Bay, Ceres Tulbagh, Central Karoo health districts showed a rise in HIV prevalence compared to the previous year. This implies that that the epidemic is no longer confined to certain epicentres, but is spreading to areas that were previously less affected.

The provincial-level surveys provide us with an overall picture of HIV and Syphilis in the province but also allow for inter provincial comparisons. The district surveys provide important information about the severity of the epidemic at local level as well as an early snapshot of the spread of the epidemic within the Western Cape province. More reliable trend data is yet to emerge from sequential panel surveys such as these. Factors such as the introduction of the Voluntary Counselling and Testing Programmes, Prevention of Mother-To-Child Transmission (PMTCT) programmes may influence the prevalence of HIV at various sites. Individuals may be migrating into districts which offer these services from other health districts. However, with the full-scale implementation of these programmes by early 2003, we anticipate more accurate and stable estimates in future years. .

The district-level surveys provide important management information of the HIV epidemic at a local level. Various government departments, researchers, students and individuals working in districts, regions and municipalities can thus utilise these results. These surveys are the primary source of data for modelling the HIV epidemic, projecting the number of infected people needing hospital care, home based-care, the number of orphans and disability grant claimants expected. These surveys, combined with behavioural studies, can inform policy makers and health managers vital information for planning, implementing and evaluating various interventions.

Many people have participated in the completion of the 2002 HIV Antenatal surveys in this province with great dedication and commitment. I would like to thank Dr Najma Shaikh who has been the driving force behind these provincial and district surveys. She, together with the regional coordinators , Brenda Smuts, Thobeka Qukula, Marvin Johnson, Ina Reynierse and Iris Cupido deserve special thanks for their sterling contribution to this work. Many thanks to Lynette Smit and the staff of the Western Cape National Health Laboratory Systems(NHLS) for their efficient work in testing and analysing the specimens.

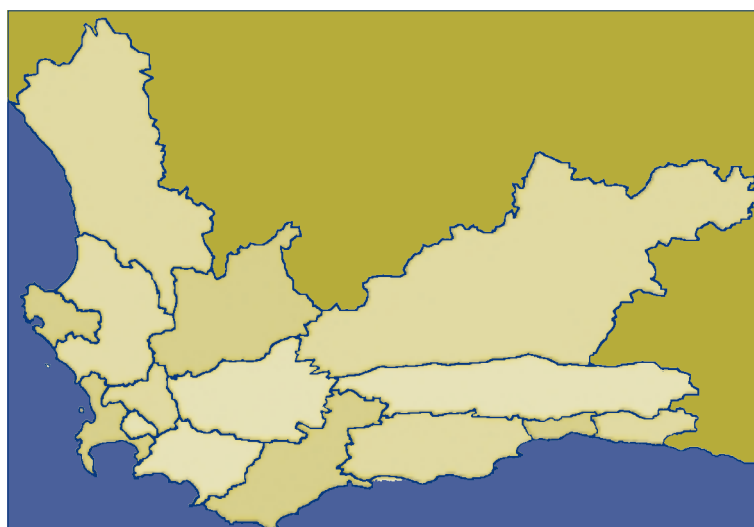
Carl Lombard, Debbie Bradshaw, John Frankish and Rodney Erhrich provided valuable analytical comments. Many thanks to the staff from the provincial office namely; Clive Marx, Hannie Neethling, Msoqoli Qotole, Dumisani Gabula for their logistical and administrative support.

Our sincere appreciation also goes to all the nurses in more than 360 antenatal clinics throughout the province who implemented the survey.

The National Department of Health, particularly Dr Lindiwe Makubalo, Ms Pakiso Netishensi, Lusanda Mahsela and Rika du Plessis provided invaluable support. Finally, I would like to thank the thousands of women attending the antenatal clinics for participating in this survey, without whom this survey would not have been possible.

Dr. Fareed Abdullah

DEPUTY DIRECTOR-GENERAL: DISTRICT HEALTH SERVICES AND PROGRAMMES



# 1. INTRODUCTION

Surveillance forms the cornerstone of any public health Human Immunodeficiency Virus (HIV) /Acquired Immunodeficiency Syndrome (AIDS) programme. <sup>(1)</sup> In South Africa, HIV antenatal surveys have been conducted for over a decade in each of the nine provinces. <sup>(2)</sup> Every year during the month of October, the National Department of Health conducts an anonymous Human Immunodeficiency Virus (HIV) and Syphilis Antenatal Survey in public sector antenatal clinics. <sup>(3)</sup> The aim of the survey is to determine the national and provincial estimates of HIV and Syphilis sero-prevalence amongst public sector antenatal clinics attenders. The data from these surveys remain the primary source of information for measuring the HIV trends in South Africa. The HIV antenatal survey method is an internationally accepted method of monitoring the magnitude, growth and geographic spread of the epidemic in the heterosexual, sexually active, adult population and many countries have developed and implemented these surveys. <sup>(4, 5, 6,7)</sup> In contrast to population surveys, unlinked sentinel sero-prevalence surveys are less expensive and suffer from less participation bias as well as fewer logistical and ethical complications.

In 2001, the Department of Health, conducted district-level surveys in all 25 health districts within the Western Cape province. This second-generation surveillance method was an expansion of the provincial survey with the aim of facilitating local level analysis. <sup>(8)</sup> The findings of the 2001 provincial and district surveys showed that although the provincial HIV prevalence for 2001 was 8.6%, there was wide variation between districts ranging from 0,6% to 22.4%. <sup>(8,9)</sup> In 2002, the Department again conducted the 25 district-level surveys. This report presents the findings of the annual provincial HIV antenatal survey and of the 25 district-level surveys within the Western Cape for the year 2002.

# 2. OBJECTIVES

- 2.1 To measure the provincial HIV and syphilis prevalence amongst women attending public sector antenatal clinics in the Western Cape Province during 2002.
- 2.2 To measure the district HIV and syphilis prevalence amongst women attending public sector antenatal clinics in each of 25 health districts of the province during 2002.

### 3. METHODOLOGY

In 2002 a provincial HIV antenatal survey, which forms part of the National HIV Antenatal Survey, was simultaneously conducted with 25 district level surveys in the Western Cape Province. The criteria for inclusion in the provincial and district survey were women attending the clinic for their first antenatal visit for the current pregnancy and who were willing to participate.

#### 3.1 Survey Design and Sampling for Provincial Survey

A cross-sectional survey was carried out in select public sector antenatal clinics in the Western Cape Province. Each year the same sites (sentinel) are examined where a fixed number of specimens are collected. This allows for a meaningful trend analysis over a period. The sampling design was systematic random cluster sampling using the Probabilities Proportional to Size (PPS) method.<sup>(2,3)</sup> The sample size was set at 2040.

#### 3.2 Survey Design for District Surveys

The district level survey entailed separate cross-sectional studies for each of the 25 health districts of the province. This involved all 344 facilities that provide antenatal care in the public sector.

A stratified proportional sample was drawn. The sample size was determined by specifying a 3-4%<sup>1</sup> error margin, a 95% confidence interval, an estimated HIV prevalence and the total number of booking visits in the district. The sample size was then proportionally allocated to each facility which produced a self-weighting sample for each district. The total number of specimens to be collected were 4235, of which 1758 overlapped with the provincial survey.

#### 3.3 Laboratory Testing

The National Health Laboratory Systems in the Western Cape processed and analysed the specimens. The Rapid Plasma Reagin (RPR) quality control testing was co-ordinated by the Medical University of Southern Africa (MEDUNSA).

1. The use of an acceptable error margin for the sample size, viz. 3 or 4 %, was weighed against the technical and logistical resources available to implement the survey.



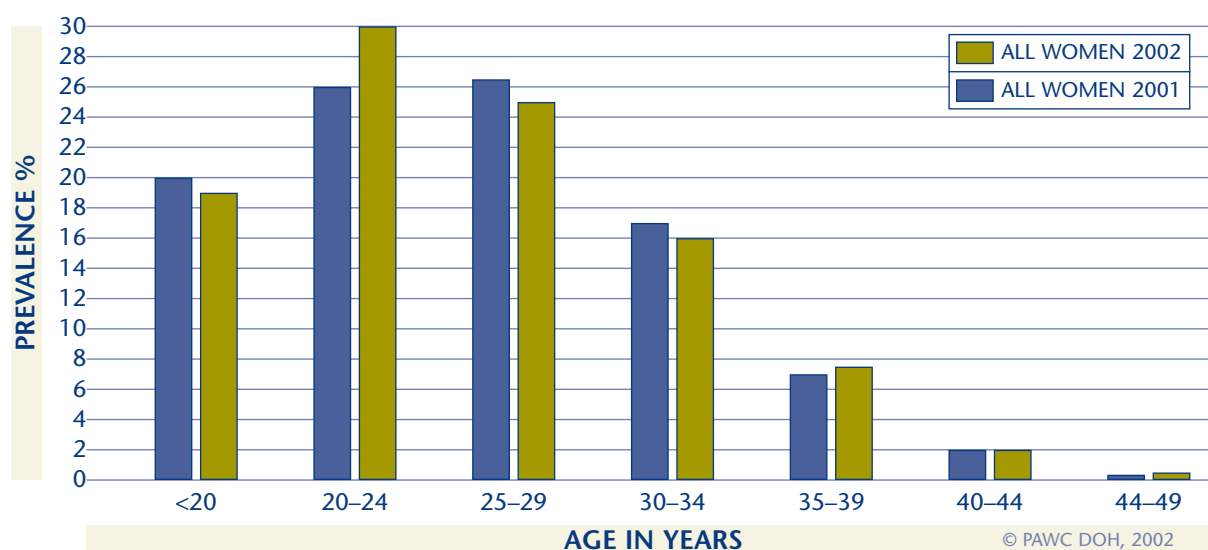
## 4. RESULTS

### 4.1 Provincial Survey

#### 4.1.1 Response Rate

The specimen return rate for the Provincial survey in 2002 was 93% (realised sample), and the participant non-response rate was 0.4% (n=9). The age distributions of the participants for the years 2001 and 2002 are shown in Figure 1.

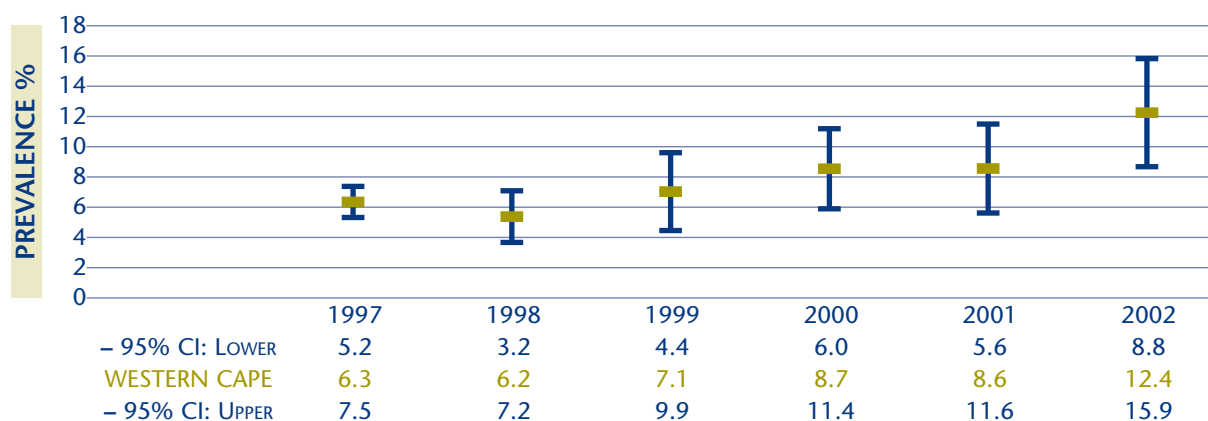
**FIGURE 1: NATIONAL ANTENATAL SURVEYS – PARTICIPANTS BY AGE  
WESTERN CAPE – 2001 & 2002**



#### 4.1.2. Provincial HIV Prevalence

The prevalence of HIV infection in the Western Cape was 12.4% (95% CI: 8.8-15.9) in 2002. This was significantly different from the 8.6% prevalence observed in 2001 (Figure 2). An estimated prevalence of 12.4% means that approximately 1 in every 8 pregnant women examined in the public sector clinics was found to be HIV positive. The marked increase in HIV prevalence between the years 2001 and 2002 suggests that the epidemic has not stabilised in the Western Cape. A widening margin of error, which has been evident over the last few years, may be attributed to design error which is a manifestation of the wide variation of HIV prevalence between sentinel sites. This wide variation is confirmed by the results of the 2001 district survey, which showed that the district HIV prevalence ranged between 1 and 22%.<sup>(8)</sup>

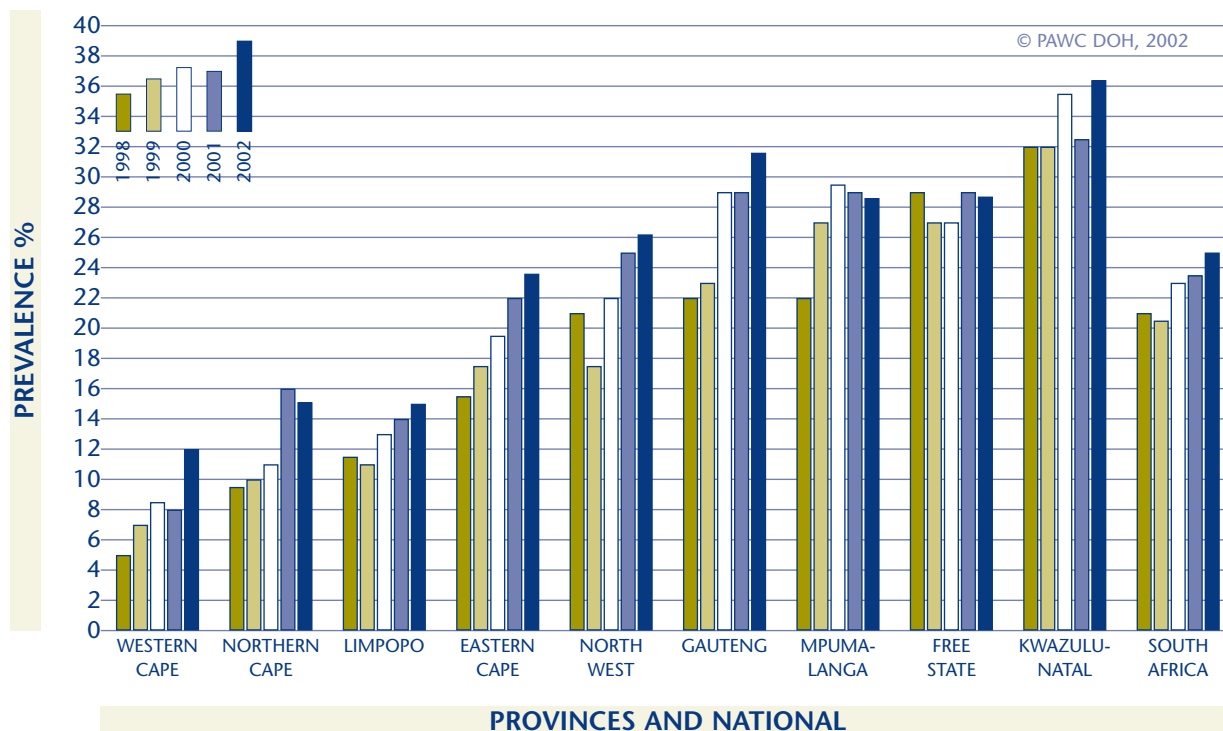
**FIGURE 2: HIV PREVALENCE  
WESTERN CAPE 1997 – 2002**



### 4.1.3 National and Western Cape HIV Prevalence Trends 1990-2002

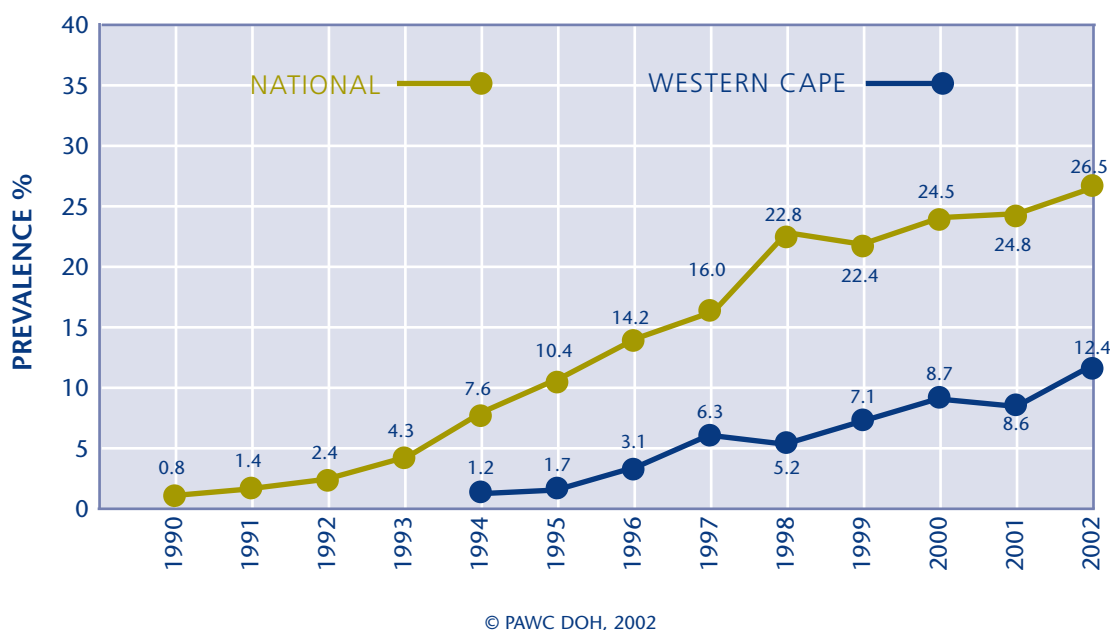
Figure 3 shows the HIV prevalence for the nine provinces over a five-year period. Five-year trends for the nine provinces show that the magnitude and growth of the HIV epidemic in each of the nine provinces varies, with the Western Cape consistently reporting the lowest HIV prevalence (Figure 3).

**FIGURE 3: HIV PREVALENCE BY PROVINCE  
NATIONAL HIV SURVEYS 1998 – 2002**

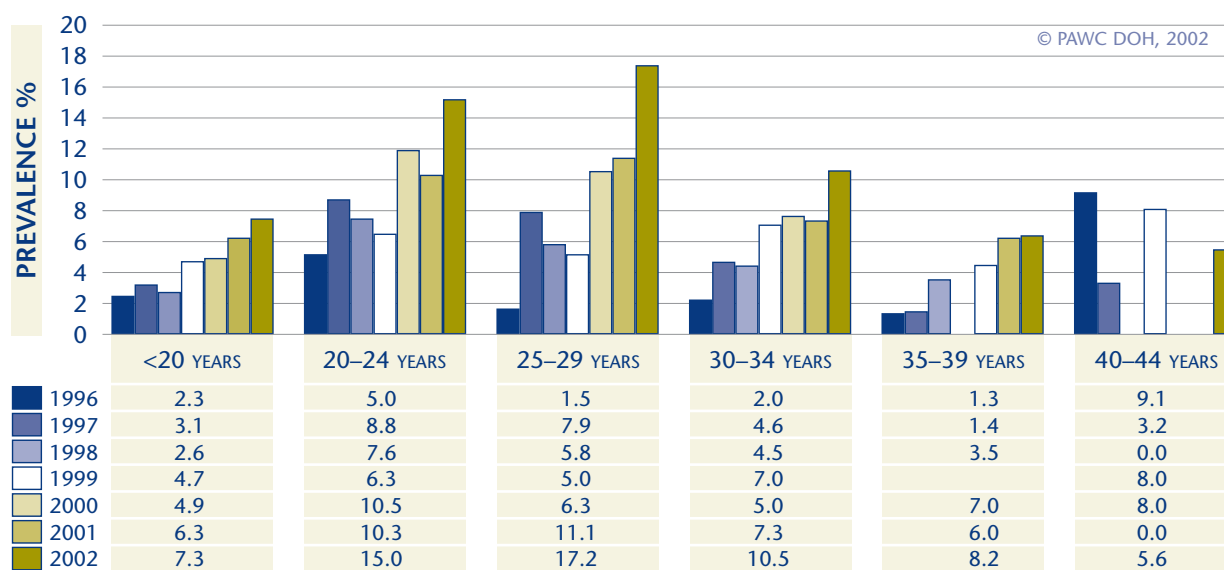


Ten-year trend data of the HIV epidemic in the Western Cape compared to the national epidemic reveals a steady increase over the last decade (Figure 4). However, the Western Cape epidemic differs from the national epidemic in that it reflects a significantly lower magnitude and lags by five to six years (Figure 4).

**FIGURE 4: HIV PREVALENCE:  
NATIONAL VERSUS WESTERN CAPE TRENDS 1990–2002**



**FIGURE 5: HIV PREVALENCE BY AGE GROUP  
WESTERN CAPE 1996 – 2002**

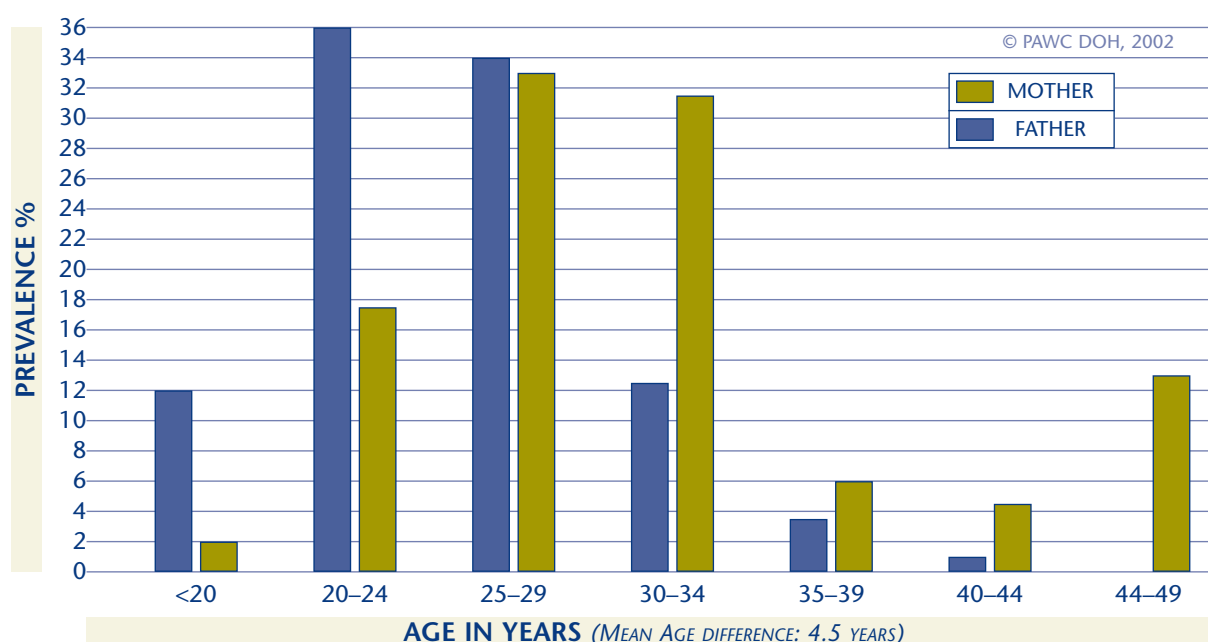


Over the past 7 years, there has been a steady increase in HIV prevalence in the <20 year age group. This is a cause for concern as infection in this cohort may be an indication of new cases although new cases occur in all age groups. The highest prevalence in 2002 was observed in the 25–29 age group. The fluctuation in HIV prevalence in the 35+ age groups over the last few years should be treated with caution given the small sample size in this age group. Furthermore, lower fertility levels are expected in this group as the result of increasing age, individual choice or HIV infection; all of which may dilute the overall HIV prevalence in the older age groups.<sup>(10, 11)</sup>

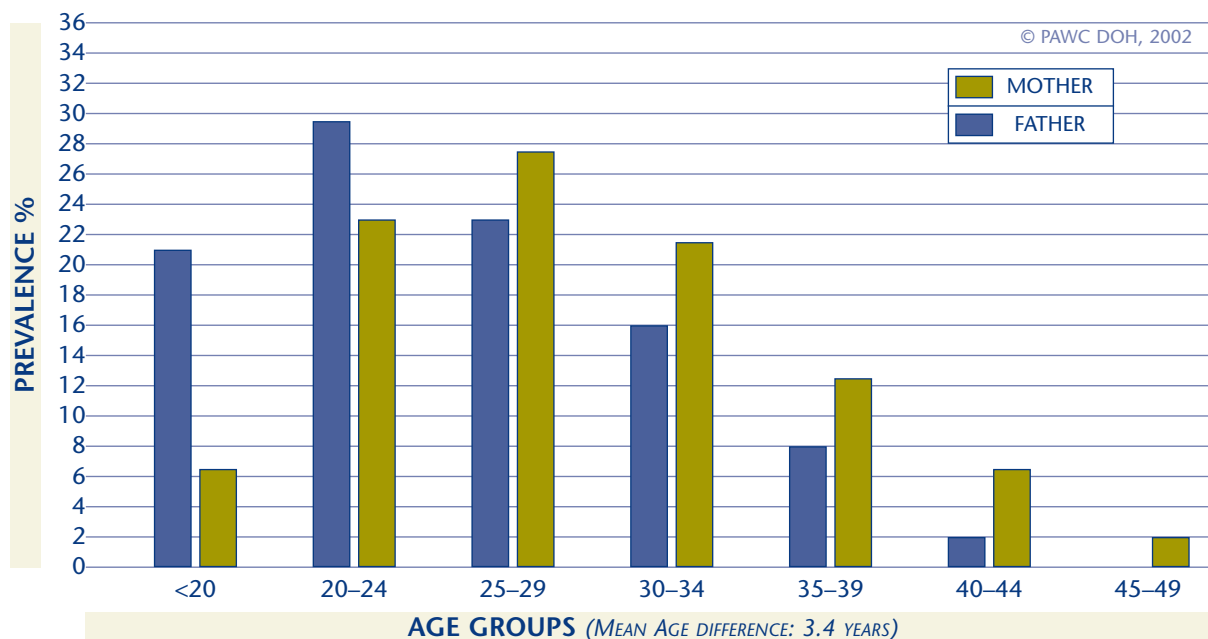
#### 4.1.5. HIV Prevalence and Age of Father

The age distribution of HIV-positive women compared to the age distribution of fathers of the expectant children is shown in Figure 6. The age distribution of the HIV-positive women differs from that of the men in that most women were from the younger age groups while most men were from the older age groups. On average, women who were HIV positive were 4.5 years younger than their male partners/ expectant fathers.

**FIGURE 6: AGE OF MOTHER HIV POSITIVE AND FATHER  
WESTERN CAPE – 2002**



**FIGURE 7: AGE OF MOTHER HIV NEGATIVE AND FATHER  
WESTERN CAPE – 2002**

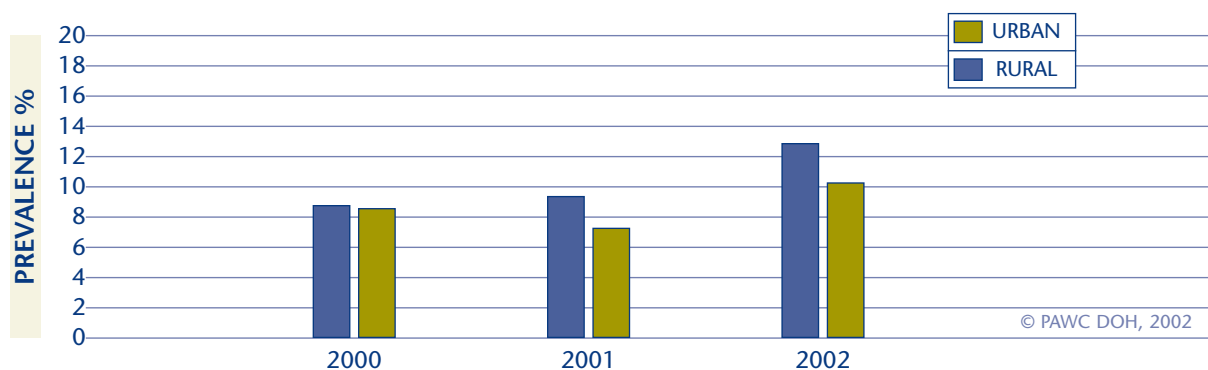


In contrast, the average difference between the HIV negative women was less pronounced with an average age difference of 3.4 years (Figure 7).

#### 4.1.6 Urban/Rural Differences in HIV Prevalence

The prevalence of HIV infection was notably higher in urban areas compared with rural areas (Figure 8). Over the last three years, there has been a steady increase in HIV prevalence in the urban areas.

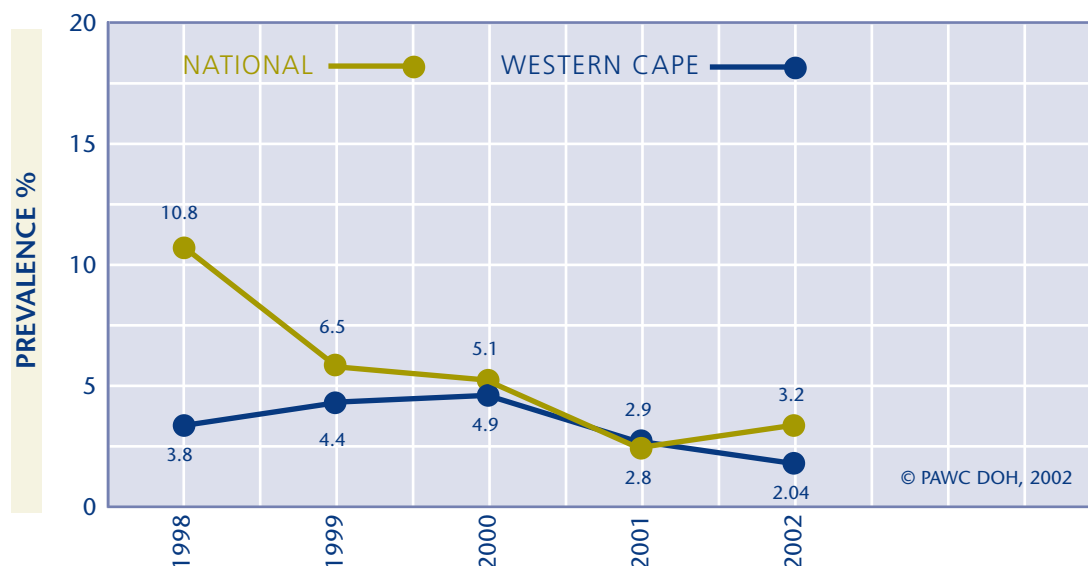
**FIGURE 8: HIV PREVALENCE BY URBAN/RURAL  
WESTERN CAPE 2000 – 2002**



#### 4.1.7 Provincial Syphilis Prevalence

Five-year syphilis trends showed an overall decline (Figure 9). The substantial reduction suggests a notable improvement in health service delivery although higher rates persist in rural areas.

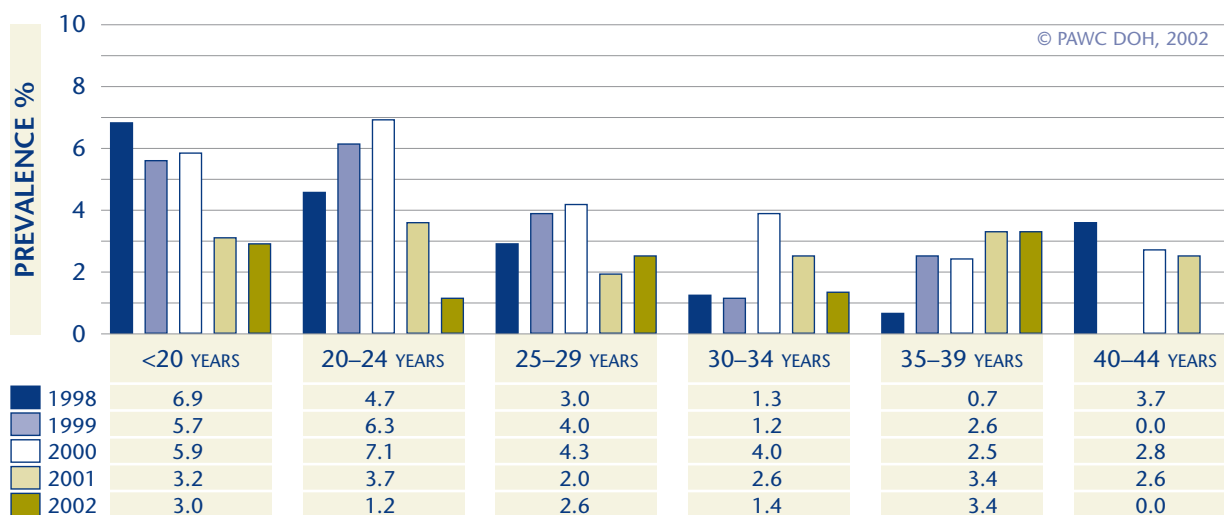
**FIGURE 9: SYPHILIS PREVALENCE:  
NATIONAL VERSUS WESTERN CAPE TRENDS 1998–2002**



#### 4.1.8. Syphilis Prevalence by Age Group

The prevalence of syphilis by age groups is shown in Figure 10. For the period 2001 to 2002 the prevalence of syphilis increased in the 25-29 year age group only. This age group also had the highest HIV prevalence in 2002. Therefore it would be important to monitor the HIV and STI rates in this cohort and improve efforts to reduce the rates.

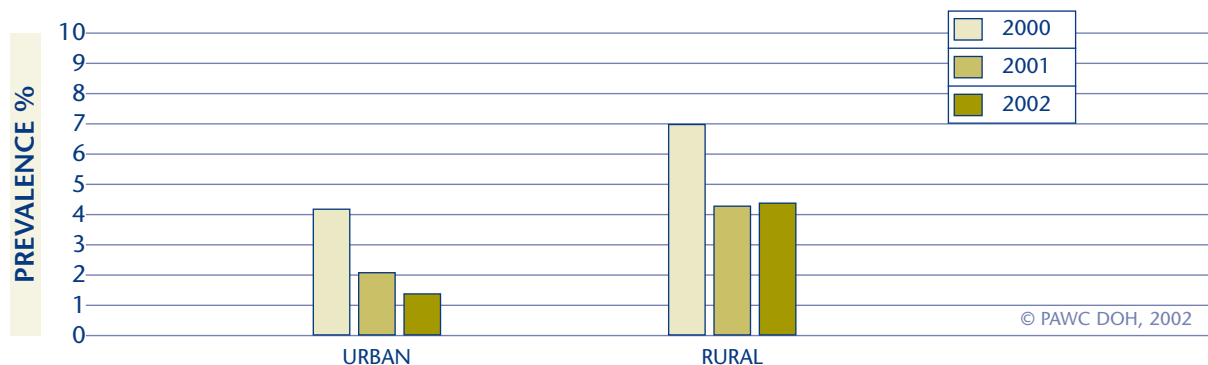
**FIGURE 10: SYPHILIS PREVALENCE BY AGE GROUP  
WESTERN CAPE 1998 – 2002**



#### 4.1.9 Syphilis Prevalence by Urban/Rural Location

Between 2001 and 2002, there was a 33% decrease in syphilis prevalence in urban areas and a marginal increase in rural areas (Figure 11).

**FIGURE 11: SYPHILIS PREVALENCE BY URBAN/RURAL  
WESTERN CAPE 2000 – 2002**



#### 4.1.10 HIV and Syphilis Co-Morbidity

In 2002 there was a positive relationship between HIV infection and active syphilis. The HIV prevalence in syphilis positive women (30.8%) was significantly higher than in syphilis negative women (12%). However, the magnitude of the prevalence (30.8%) in positive cases should be treated with caution as the sample size for number of syphilis positive cases was small (n=39).

**TABLE 1: HIV PREVALENCE IN RPR NEGATIVE AND POSITIVE WOMEN**

| 2002                            | HIV PREVALENCE % (95% CI) | FREQUENCY |
|---------------------------------|---------------------------|-----------|
| Syphilis Positive (RPR +) Women | 30.8 (16.2-45.2)          | 12/39     |
| Syphilis Negative (RPR –) Women | 12.0 (10.5-13.5)          | 224/1870  |

#### 4.1.12 HIV Prevalence and Gravidity

Gravidity is defined as the number of previous pregnancies and is influenced by the number of reproductive years a woman has lived. Therefore gravidity is influenced by age. The HIV prevalence by gravidity, after adjusting for age was higher in women with gravidity of <3 compared with women reporting gravidity ≥3 (Figure 13).

**FIGURE 13: HIV PREVALENCE BY GRAVIDITY – ADJUSTED FOR AGE  
WESTERN CAPE 2002**



## 4.2 DISTRICT SURVEY

### 4.2.1 Response Rate

The specimen return rates for the district survey ranged from 55% to 100%. The non-participation rate ranged from 0-9.6% of the samples in the various districts. The number of non-responders decreased from 85 in 2001 to 34 in 2002.

### 4.2.2. HIV Prevalence by Health District

The estimates of HIV prevalence for each health district are presented for years 2002 and 2001 and for select districts in 2000. In 2002, the prevalence of HIV infection for the 25 health districts ranged from 2.7%-27.8% (Table 2). This suggests that the magnitude and stage of the HIV epidemic varies at local levels. High HIV prevalence rates were observed in the Helderberg, Oostenberg, Tygerberg Western, Paarl, Knysna/Plettenberg Bay, Gugulethu/Nyanga and Khayelitsha districts. There was an increase in HIV prevalence in 19 of the 25 health districts between 2001 and 2002. The highest rates of increase in HIV prevalence between 2001 and 2002 were observed in the Blaauwberg, Cape Town Central, Mitchell's Plain, Gugulethu/Nyanga, Vredendal and Klein Karoo districts.

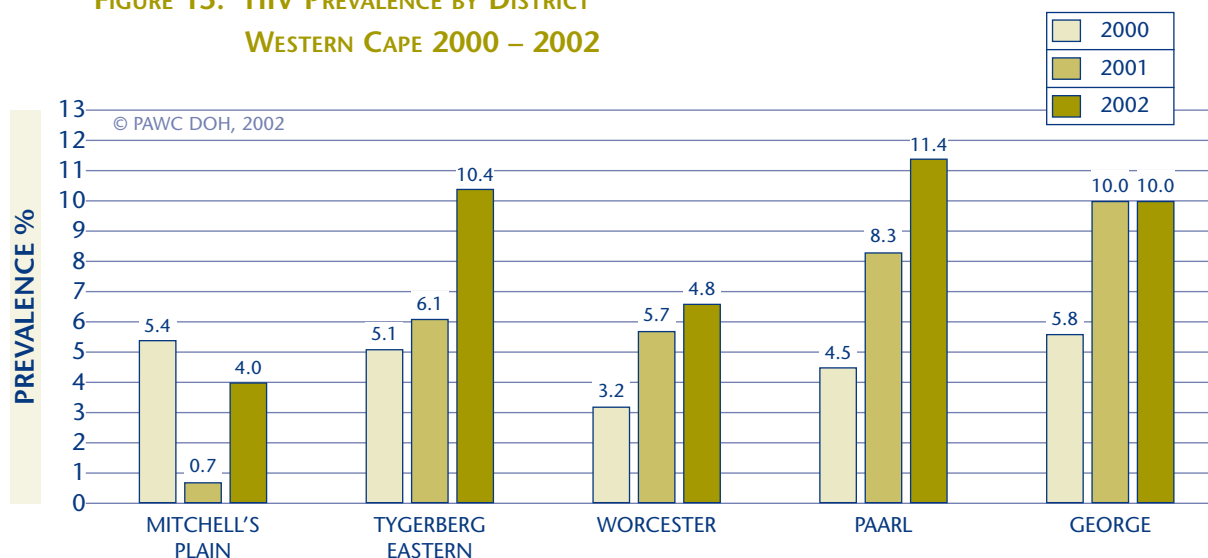
It is worth noting that these districts had implemented the PMTCT programme after the 2001 survey. It is possible that the increase in HIV prevalence for 2002 may have been inflated as the result of inward migration HIV-positive clients from surrounding districts attending ANC services in order to gain access to PMTCT care or a decrease in outward migration of women from these districts to seek PMTCT care in districts that offer these services.

Certain districts reported wide confidence intervals, which makes interpretation more difficult. This could be attributed to poor return rates and wide variation in HIV prevalence at sub-district level.

**TABLE 2. HIV PREVALENCE BY DISTRICTS: WESTERN CAPE 2001**

| REGION               | DISTRICT               | HIV Prevalence (95% Confidence Interval) |            |            |
|----------------------|------------------------|--|------------|------------|
|                      |                        | 2000                                     | 2001       | 2002       |
| CAPE METROPOLE       | BLAAUWBERG             |  | 0.6 ± 1.1  | 8.2 ± 6.0  |
|                      | CAPE TOWN CENTRAL      |  | 3.7 ± 3.6  | 11.9 ± 6.0 |
|                      | GREATER ATHLONE        |  | 6.8 ± 4.6  | 8.9 ± 4.0  |
|                      | HELDERBERG             |  | 19 ± 6.0   | 19.1 ± 4.5 |
|                      | KHAYELITSHA            |  | 22 ± 5.0   | 24.9 ± 4.2 |
|                      | MITCHELL'S PLAIN       | 5.4 ± 0.1                                | 0.7 ± 1.3  | 4 ± 4.0    |
|                      | GUGULETHU/NYANGA       |  | 16.1 ± 6.5 | 27.8 ± 5.2 |
|                      | OOSTENBERG             |  | 5.7 ± 3.3  | 14.5 ± 6.0 |
|                      | SOUTH PENINSULA        |  | 5.9 ± 3.9  | 6 ± 4.1    |
|                      | TYGERBERG EASTERN      | 5.1 ± 3.7                                | 6.1 ± 3.4  | 10.4 ± 5.0 |
|                      | TYGERBERG WESTERN      |  | 7.9 ± 3.9  | 12.7 ± 5.0 |
|                      |                        |  |            |            |
| BOLAND OVERBERG      | BREDASDORP/SWELLENDAAM |  | 1.4 ± 2.7  | 3.2 ± 4.5  |
|                      | CALEDON/HERMANUS       |  | 13 ± 5.0   | 10.8 ± 4.0 |
|                      | CERES/TULBAGH          |  | 6.2 ± 5.3  | 9.4 ± 5.6  |
|                      | WORCESTER/ROBERTSON    | 3.2 ± 2.7                                | 5.7 ± 3.9  | 4.5 ± 3.2  |
| WEST COAST WINELANDS | MALMESBURY             |  | 2.7 ± 3.0  | 6.7 ± 5.3  |
|                      | PAARL                  | 4.5 ± 3.2                                | 8.3 ± 3.6  | 11.4 ± 4.4 |
|                      | STELLENBOSCH           |  | 7.1 ± 3.7  | 8.5 ± 5.0  |
|                      | VREDENBURG             |  | 8.9 ± 5.6  | 9.03 ± 4.7 |
|                      | VREDENDAL              |  | 1.3 ± 2.4  | 10.2 ± 7.6 |
| SOUTH CAPE KAROO     | KNYSNA/PLETTENBERG BAY |  | 13.3 ± 6.7 | 15.9 ± 5.2 |
|                      | KLEIN KAROO            |  | 0.8 ± 1.4  | 7.8 ± 6.1  |
|                      | MOSSEL BAY/LANGEBOEG   |  | 7 ± 4.7    | 6.8 ± 4.0  |
|                      | GEORGE                 | 5.6 ± 5.3                                | 10 ± 6.0   | 10 ± 4.2   |
|                      | CENTRAL KAROO          |  | 5.5 ± 4.5  | 7.4 ± 5.1  |
| WESTERN CAPE         |                        |  | 9.2 ± 1.0  | 12.2 ± 1.0 |

**FIGURE 15: HIV PREVALENCE BY DISTRICT**  
**WESTERN CAPE 2000 – 2002**



Trend data over last three years showed varying patterns of growth in HIV and syphilis prevalence in the five districts examined (Figures 15 & 16). In 2000 five pilot district surveys were conducted to estimate HIV and syphilis sero-prevalence.

In 2001 PMTCT services were offered in 3 of the five districts, namely Worcester, Paarl and George districts. The rise in HIV prevalence in Tygerberg Eastern, Paarl and Mitchell's Plain districts, apart from other factors, may be due to participation bias as the result of the PMTCT programme. The Mitchell's Plain district, for example, showed a decline in 2001 followed by a notable increase in 2002 – it is noted that the PMTCT programme was implemented in the year following the 2001 survey in the Mitchell's Plain district. Hence, the decrease in HIV prevalence in 2001 may be attributable to an outward migration of women seeking PMCT services in other districts at that time.

The Worcester and George districts showed a decrease and levelling of HIV sero-prevalence respectively. This again coincided with the implementation of PMTCT services in the surrounding districts between the 2001 and 2002 surveys. This highlights that the introduction of PMTCT services within a district may influence ANC utilisation patterns, which in turn could influence the measured HIV sero-prevalence rates.

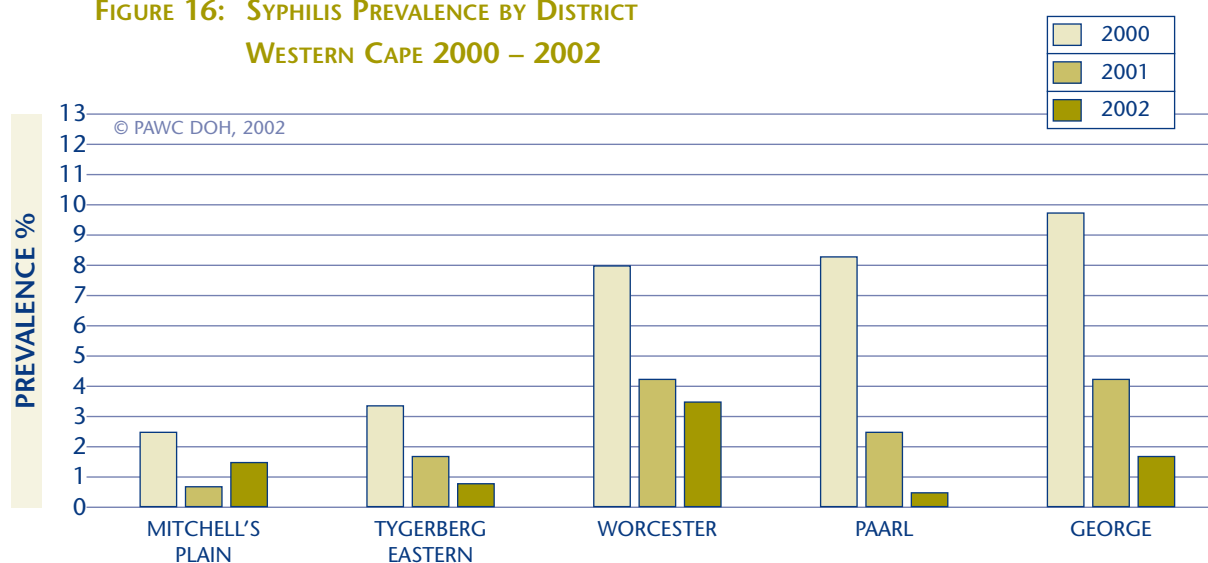
#### 4.2.3 Syphilis Prevalence Trends of Health Districts

The estimated prevalence of syphilis is shown in Table 3. The prevalence of active syphilis ranged between 0.6-6.9% in the 2002 district survey. Higher syphilis prevalence figures were reported in rural districts compared with the urban districts. There was a decline in syphilis prevalence in 14 of the 25 health districts.



**TABLE 2. SYPHILIS PREVALENCE BY HEALTH DISTRICT: WESTERN CAPE 2001**

| REGION              | DISTRICT               | RPR% Prevalence (95% Confidence Interval) |           |             |
|---------------------|------------------------|---|-----------|-------------|
|                     |                        | 2000                                      | 2001      | 2002        |
| CAPE METROPOLE      | Blaauwberg             |   | 3.5 ± 2.7 | 5.5 ± 5.0   |
|                     | CapeTown Central       |   | 0.9 ± 1.8 | 0.9 ± 2.0   |
|                     | Greater Athlone        |   | 1.6 ± 3.3 | 0.1 ± 0.1   |
|                     | Helderberg             |   | 4.0 ± 3.5 | 3.1 ± 2.0   |
|                     | Khayelitsha            |   | 1.2 ± 1.4 | 1.2 ± 1.1   |
|                     | Mitchell's Plain       | 2.5                                       | 0.6 ± 1.4 | 1.4 ± 2.0   |
|                     | Gugulethu/Nyanga       |   | 4.0 ± 3.5 | 2.8 ± 1.9   |
|                     | Oostenberg             |   | 3.7 ± 2.7 | 1.5 ± 2.1   |
|                     | South Peninsula        |   | 0.9 ± 1.8 | 2.3 ± 0.5   |
|                     | Tygerberg Eastern      | 6.5                                       | 1.6 ± 2.0 | 0.7 ± 1.5   |
|                     | Tygerberg Western      |   | 1.6 ± 1.8 | 1.2 ± 1.5   |
| Boland Overberg     | Bredasdorp/Swellendam  |   | 2.8 ± 3.8 | 2.7 ± 1.6   |
|                     | Caledon/Hermanus       |   | 5.5 ± 4.0 | 4.7 ± 2.8   |
|                     | Ceres/Tulbagh          |   | 3.7 ± 4.2 | 7.6 ± 5.0   |
|                     | Worcester/Robertson    | 7.9                                       | 4.3 ± 3.4 | 3.8 ± 3.0   |
| WestCoast Winelands | Malmesbury             |   | 0.9 ± 1.7 | 2.3 ± 0.1   |
|                     | Paarl                  | 8.3                                       | 2.6 ± 2.4 | 0.5 ± 1.0   |
|                     | Stellenbosch           |   | 2.7 ± 2.4 | 2.5 ± 2.9   |
|                     | Vredenburg             |   | 2.0 ± 2.7 | 4.9 ± 1.8   |
|                     | Vredendal              |   | 3.7 ± 1.3 | 10.2 ± 7.0* |
| South Cape/ Karoo   | Knysna/Plettenberg Bay |   | 2.2 ± 3.1 | 4.2 ± 2.9   |
|                     | Klein Karoo            |   | 6.9 ± 1.1 | 5.2 ± 4.0   |
|                     | Mosel Bay/Langeberg    |   | 6.9 ± 4.1 | 5.1 ± 1.0   |
|                     | George                 | 9.7                                       | 4.4 ± 3.6 | 1.6 ± 1.6   |
|                     | Central Karoo          |   | 4.4 ± 4.3 | 4.6 ± 4.0   |
| Western Cape        |                        |   | 2.9 ± 0.6 | 2.2 ± 1.2   |

**FIGURE 16: SYPHILIS PREVALENCE BY DISTRICT  
WESTERN CAPE 2000 – 2002**

Syphilis sero-prevalence for the five districts over a three-year period showed a decline in each of the districts which had established PMTCT services, namely Paarl, Worcester and George. An increase in syphilis sero-prevalence was observed in the Mitchell's Plain district. As earlier alluded to, the increase in syphilis prevalence may be due to participation bias as the result of the PMTCT programme.

## 5. DISCUSSION

### 5.1 HIV PREVALENCE TRENDS

The results of the 2002 provincial HIV survey showed that the HIV prevalence for the Western Cape was (12.5% CI: 8.8%-15.9%). A prevalence of 12.4 % is considered the best estimate and the true value could lie anywhere within the range of the confidence limits (Figure 2). Although the Western Cape has consistently showed the lowest prevalence of the nine provinces over the past ten years, there has been a marked increase in prevalence in 2002 compared to the 8.6% in 2001. It will be critical to monitor HIV trends over the next few years in order to determine the direction of the trend and stage of maturation of the HIV epidemic.

Ten-year trends of the Western Cape HIV epidemic compared to the national epidemic reveal that although the Western Cape province has a lower magnitude of HIV disease, the current rate of progression is greater, suggesting that the epidemic in the Western Cape province is in an earlier phase of the epidemic. The shape of the Western Cape HIV epidemic follows the national trend with a lag of six years.

Sub-provincial analysis on the basis of the 2001 and 2002 district-level surveys in the Western Cape suggests that the HIV epidemic is not homogeneous within the province, with district prevalence rates ranging from 2.7% to 27.8% in 2002.<sup>(8)</sup> The wide range in HIV prevalence at district level highlights that the epidemic is at different stages of development in the various districts within the province. District level trends also show that the growth of the epidemic varies in the various districts, with some districts showing large increases while others show no change or a decline.

The non-homogeneous growth of the epidemic has been observed in other Sub-Saharan countries. This has been attributed to a combination of factors such as the presence of other STIs, sexual networks, sexual mixing patterns (young women with older men), timing of virus introduction in vulnerable populations, population density, proximity to national roads, population mobility, rapid urbanisation, and socio-economic factors such as migrancy, increased mobility and unemployment.<sup>(12,13)</sup>

In the case of the Western Cape epidemic a known factor that might have influenced variation in growth is the impact of introducing the PMTCT programme in select districts and the resultant inward or outward migration of pregnant women seeking these services. The full-scale implementation of PMTCT services by early 2003 will hopefully reduce participation bias as the result of seeking PMTCT care.

District-level trend data over the next three years will provide a more robust picture of the growth rates and progression of the HIV epidemic within districts. The current data, however, provides important local level information to health planners, alerting them of emerging patterns and changes within districts, which can be further investigated and explained through in-depth local level evaluation.

The HIV point prevalence by urban/rural breakdown shows that the urban areas, which constitute 65% of the population, showed higher rates than the rural areas. The differential rates by urban/rural areas are consistent with HIV trends in other countries in Africa where urban areas report considerably higher HIV prevalence than rural areas.<sup>(12)</sup>

However, there has been a greater increase in HIV prevalence between 2001 and 2002 in urban areas compared to rural areas. The district-level data concur with these findings, revealing that there was an increase in HIV prevalence in both urban and rural districts: namely 19 of the 25 health districts showed an increase in HIV prevalence (9 of the 11 urban districts and 10 of the 14 districts in the rural areas). This highlights that the HIV epidemic is dynamic in nature and that without rigorous intervention it will continue to spread geographically and increase in magnitude.

The HIV prevalence by age group for the period 2001 and 2002 showed an increase in all age groups. In 2002 the highest HIV rates were observed in the 25-29 year age group, who also showed the highest rate of increase between the years 2001 and 2002. Unlike the other age cohorts, this group also showed an increase in syphilis prevalence between 2001 and 2002. The increasing level of HIV morbidity among young sexually active adults has serious socio-demographic and economic implications. Trends of HIV infection in the under 20 age group, which is a proxy of new infections in a young adult population, revealed that over the last 6 years the HIV rates had tripled. Increasing rates in this group highlights the need to enhance prevention efforts for the youth.

The growth of HIV epidemics in other African countries has shown that an epidemic begins with a brief period of exponential rise followed by "saturation" of HIV infection in age cohorts at highest risk of being infected. This is followed by a shift of the epidemic to younger age groups who have become sexually active.<sup>(14)</sup>

The findings from the 2002 provincial and district surveys, namely:

- An increase in the provincial HIV rate (from both provincial and district surveys),
- An increase in HIV prevalence rates in urban areas and rural areas,
- An increase in HIV rates in all age cohorts,
- Some districts showing rates as high as 20% and other districts showing a substantial increase within a year,
- Rural areas showing a more rapid rate of increase in HIV prevalence,
- The spread of the HIV epidemic to rural areas,

suggest that the epidemic has not stabilised in this province. In the absence of stabilisation in groups at highest risk of being infected this province should urgently strengthen preventative efforts. Given that the epidemic has not reached maturation, the Western Cape province has a window of opportunity to stabilise the epidemic through targeted interventions.

This includes the following:

- In areas with low HIV prevalence there is still an opportunity to intervene and prevent the escalation of the epidemic through rigorous prevention programmes.
- Areas with high prevalence require prevention efforts to stabilise the epidemic combined with special consideration with regard to the planning and provision of health and social services to HIV-infected persons and affected persons.

The data also revealed that the age differences between women and their partners varied by HIV status. These findings are consistent with population studies in South Africa and other Sub-Saharan countries.<sup>(15)</sup>

<sup>(16)</sup> The wide age differences between HIV positive women and their partners have been linked to sexual networking patterns, economic factors and gender power imbalances in communities.<sup>(17)</sup> Clearly, the empowerment of young women is a critical component of the broader strategy to reduce risk of HIV infection.

The increasing rates of HIV in certain districts that introduced or provided PMTCT may be attributable to participation bias. This may be due to the inward migration of women seeking PMTCT care to districts that offer these services or the reduction of outward migration which may have inflated the sero-prevalence rates in those districts. For example, in the Mitchell's Plain district for the period 2000 to 2001, there was a decline in HIV prevalence, followed by an increase in HIV prevalence between 2001 and 2002. The PMTCT programme was introduced in 2002 prior to the implementation of the 2002 HIV survey. It is possible that the higher rates may be attributable to migration of HIV-positive women seeking PMTCT care from surrounding districts in 2001 and a decrease in such outward migration of women seeking PMTCT care in other districts in 2002. However, an in-depth investigation is needed to understand these differences. With the full implementation of the PMTCT programme within the province by early 2003, bias as the result of migration for PMTCT care will be reduced.

## 5.2 Syphilis Prevalence Trends

The prevalence of syphilis in the Western Cape in 2002 decreased from the previous year. The reasons for this substantial reduction could be attributed to several reasons such as:

- Improved case management of syphilis,
- Exposure to antibiotics for the treatment of other conditions,
- Improved Sexually Transmitted Infection services including the implementation of the syndromic management approach, and
- Increasing awareness through health promotion and prevention programmes.

Given that the HIV prevalence increased from 2001 to 2002, the decline in syphilis prevalence is most likely due to the factors relating to service delivery rather than behaviour change.

The prevalence of syphilis infection by age group showed the highest prevalence in the 20-24 year age group. There was an overall decline in prevalence in all age groups except for the 25-29 age group. This cohort had the highest HIV rates in 2002, highlighting the need to target behavioural intervention to reduce syphilis and HIV in this group.

Despite an overall decrease in syphilis prevalence in the Western Cape, the prevalence in rural areas remains high at 4.1% compared to urban areas (1.4%). This highlights the need to allocate resources and to improve and sustain STI prevention and management strategies.

### 5.3 HIV and Syphilis Co-Morbidity

It is important to note that syphilis is a preventable and treatable infection and therefore the diagnosis, treatment and prevention of STIs should be integrated within the broader HIV strategy. The relationship between HIV and syphilis prevalence indicates that higher HIV rates were observed amongst women who had active syphilis compared with women who did not. These findings are of concern as studies that have shown that STIs such as syphilis increase the risk of HIV transmission and acquisition and that an effective STI programme in areas with low HIV prevalence is very effective in halting the HIV epidemic.<sup>(9, 18)</sup> Given that the presence of active syphilis increases risk of HIV transmission and acquisition and if untreated, may lead to congenital syphilis, it is important that STI programmes be enhanced throughout the population particularly in rural areas so that appropriate interventions can be delivered. However, it is important to note that positive-RPR prevalence is an indicator of quality of care and a less robust indicator of STI prevalence.<sup>(3)</sup>

Between 2001 and 2002, 9 of the 25 health districts showed an increase in syphilis and of these 6 were from the rural regions.

There is an opportunity for districts with

- Low HIV and high syphilis rates to improve the STI services as a strategy to sustain low HIV rates.
- Low syphilis rates to improve and sustain their STI programmes to prevent further increases in HIV rates and the re-emergence of high RPR rates.
- High HIV and RPR rates to improve access to and quality of STI care and to urgently prioritise the planning of HIV and STI intervention programmes and the allocation of the required resources to implement the programmes.

As with the HIV epidemic, high syphilis rates are associated with high population density, increased mobility and high unemployment rates, all of which drive the HIV epidemic.<sup>(13,19)</sup> Hence, a comprehensive HIV strategy that addresses diseases associated with HIV epidemic such as STI infection and tuberculosis are critical. These include addressing socio-demographic factors such as inequity, inappropriate allocation of resources, high migrancy and unemployment rates, the status of women and rapid urbanisation. This in turn should be combined with strategies that address diseases associated with poverty such as malnutrition and other preventable diseases of infancy when planning, implementing and evaluating health services.

### 5.4 Provincial and District HIV Survey Application

The provincial and district surveys are distinctively different in terms of their objectives, design, sampling and application. The provincial survey provides critical information to health care providers, policy makers, and other role players about the magnitude and trends of the epidemic at provincial level. It provides important information on the differential rates of infection by age of partners, gravidity, parity and the presence of syphilis infection.

The district-level surveys on the other hand, provide local level information that is critical for planning and implementing district-level services. This information can contribute importantly to the allocation of resources and to the planning, monitoring and evaluation of targeted interventions at a local level (e.g. PMTCT, VCT and condom distribution). For example, the 2001 and 2002 district-level surveys provided important information for the planning of the PMTCT programme in terms of prioritising districts, ordering of supplies and estimating caseload for the programme. These surveys also showed wide variation in HIV prevalence by district, with varied increases in prevalence between 2001 and 2002. The provincial HIV

prevalence figure of 12.4% for the year 2002 obtained from the provincial survey was notably similar to the 12.2% prevalence derived from the district survey (after appropriately weighting the district data). Similarly, the syphilis infection rate obtained from the provincial survey (2.1%) was very similar to the district survey weighted prevalence figure of 2.2%. It is encouraging to note that the provincial estimates derived from two separate surveys, differing in design and sampling, yielded very similar HIV and syphilis sero-prevalence estimates. Amongst other uses, the district level survey serves as an important validation tool of the provincial survey.

## 6. Conclusion

The Annual HIV Provincial Survey in the Western Cape revealed a prevalence of 12.4 % for the year 2002. The prevalence increased significantly from the previous year's prevalence of 8.6%. This is consistent with the district-level surveys, which showed an overall increase in HIV prevalence for the province and an increase in HIV rates in 19 of 25 health districts for the period 2001 and 2002. The HIV prevalence increased in all age groups, with the highest rates observed in the 25-29 age group.

Furthermore, trends of HIV infection in the under 20-year age group (a proxy of new infections) showed a three-fold increase in HIV prevalence. Higher prevalence rates of HIV infection were observed in urban areas, amongst women with some high school education and women aged between 25 to 29 years.

This evidence suggests that the HIV epidemic has not stabilized in the province. Syphilis trends over the five years showed a decline in active syphilis prevalence for the Western Cape. However, urban districts continue to show higher rates than urban areas. This highlights the need to expand and improve STI screening and STI management, particularly at family planning clinics and VCT sites as part of a broader strategy to contain the HIV epidemic.

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