

# HIV sero-positivity in recently admitted and long-term psychiatric in-patients: prevalence and diagnostic profile

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## Abstract

**Objective:** Research on HIV in South Africa has not reflected the impact of the disease on psychiatric patients. The aims of the study were: to compare the HIV prevalence among patient groups in Weskoppies Hospital; to compare psychiatric diagnoses of infected and non-infected patients; to assess intravenous drug use and high-risk sexual behaviour; to establish HIV-syphilis association; and to investigate the rapid test performance for screening, compared to the confirmatory ELISA test. **Method:** One-hundred-and-ninety-five patients were grouped into four categories according to their duration of admission and gender. HIV rapid testing, HIV ELISA, syphilis-RPR and TPHA testing were performed. **Results:** The HIV prevalence of 11% in the sample was significantly associated with 'gender-and-duration-of-admission' categories ( $p=0.003$ ). No significant association between HIV infection and psychiatric diagnoses or intravenous drug use was found, but a significant association existed between HIV infection and high-risk sexual behaviour ( $p=0.002$ ), and between HIV and syphilis ( $p=0.012$ ). The HIV rapid screening test had a sensitivity of 91.7% and a specificity of 98.2%. **Conclusion:** The overall HIV prevalence at Weskoppies Hospital remains lower than the national average, but has increased since a previous local study. The rapid test for HIV had a lower sensitivity than was expected, and it is recommended that HIV ELISA testing be performed as a first line test in the setting of hospitalised patients. Due to the high prevalence of HIV and syphilis in the psychiatric population it is recommended that all patients be tested for both of these diseases.

**Keywords:** HIV sero-positivity; Prevalence; Diagnostic profile; Psychiatric patients

**Received:** 01-11-2010

**Accepted:** 25-03-2011

**doi:** <http://dx.doi.org/10.4314/ajpsy.v15i1.7>

## Introduction

International epidemiological studies have shown that patients with serious mental illness have been disproportionately affected by the HIV epidemic. Amongst many possible reasons for this, the following two stand out: Firstly, patients with HIV are at risk to develop psychiatric manifestations such as dementia, mood, and psychotic disorders, either due to the primary disease process of HIV or secondary infection.<sup>1</sup> Secondly, patients with mental illness have increased rates of unsafe sexual practices, poverty, homelessness and substance

abuse – all of which increase the risk to become HIV infected.<sup>2,3</sup>

Despite the current pro-active stance the South African government is taking towards HIV testing, routine HIV testing is hardly ever done in the mentally ill patient, possibly due to the perceived difficulty of obtaining informed consent from a mentally ill person. Testing for HIV is usually reserved for cases of clinical suspicion of HIV infection, when there is psychiatric diagnostic uncertainty, or when a needle-prick injury, sexual assault, or physical assault involving blood – human bites, for example – has occurred. It is, however, vitally important to identify HIV-infected patients in a psychiatric hospital for several reasons: the vulnerability of patients with mental illness to HIV infection; the risk the HIV-infected patient poses to other patients; the susceptibility of HIV-infected individuals to diseases such as syphilis, which, in

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turn, may present with mental illness; and because patients who present with mood-, psychotic- and cognitive disorders due to HIV infection can now be treated with anti-retroviral therapy.

South Africa has a generalised, hyperendemic HIV epidemic with prevalence exceeding 18%.<sup>4</sup> HIV prevalence data in the South African psychiatric population is scarce, mostly due to the lack of routine HIV testing in this population. In 2000 an HIV prevalence study was carried out at Weskoppies Hospital on 200 new admissions, and only 9% were found to be HIV positive as determined by enzyme-linked immunosorbent assay (ELISA). The majority of infected patients were male (78%), and most had a history of psychotic episodes and substance abuse, and had low levels of education.<sup>5</sup> A similar study was performed in 2000 at the University of KwaZulu-Natal, where 206 admissions to an acute psychiatric ward were tested anonymously for HIV. The sero-prevalence rate of HIV was 29.1% in the sample (as determined by ELISA and Western blot tests), and the sero-prevalence of HIV among women tested was 40%.<sup>6</sup>

Considering the psychiatric diagnostic profile of patients infected with HIV, a Medicaid study reported that individuals with schizophrenia had 1.5 times the prevalence of HIV than those without a mental disorder while those with chronic depression or bipolar disorder had 3.8 times the prevalence of HIV.<sup>7</sup> The reason for this may be that persons with schizophrenia are significantly less likely to be sexually active compared to those with other major psychiatric disorders, although a recent study reported that the majority of sexually active patients with schizophrenia had multiple partners.<sup>3</sup> Among patients with mood disorders, individuals with bipolar disorder are more likely to report increased sexual activity during emotional crises.<sup>3</sup> Despite these reports a clear association between specific primary psychiatric diagnoses and HIV infection has not been found, and further research is necessary.

Several studies have demonstrated an association between syphilis and HIV.<sup>8,9,10</sup> Individuals with syphilis are said to be at increased risk of acquiring HIV, and syphilis infection is an important co-factor in facilitating HIV transmission.<sup>11</sup> Co-infection with syphilis and HIV is considered to be common because of the shared risk factors related to sexual behaviour, as well as the pathological changes caused by syphilis and HIV respectively. Syphilis-induced genital tract inflammation and/or ulcerations may disrupt innate barriers to HIV and lead to more effective transfer of the virus and, by altering normal immune responses, HIV may in turn affect the presentation, diagnoses, and natural course of syphilitic disease.<sup>12</sup> There is also evidence that HIV infection may lead to more rapid progression to neurosyphilis.<sup>13</sup> It is therefore important to exclude HIV and syphilis in a patient presenting with neuro-psychiatric disease and it is recommended that all patients diagnosed with syphilis be tested for HIV, and vice versa.<sup>11,14,15</sup>

The National HIV Counselling and Testing Policy guidelines for diagnostic HIV testing support a sequential testing strategy, whereby HIV testing is initiated with a rapid screening test (finger prick). A non-reactive screening result is reported as negative, whereas a reactive screening test is subjected to a second, confirmatory test.<sup>4</sup> The type of

confirmatory test is not explicitly stated in these guidelines, and will depend on the setting where the diagnostic testing is taking place. The WHO HIV Testing Guidelines recommend that in settings without extensive laboratory facilities or where clients do not return for follow-up visits, algorithms using two different rapid tests are preferred so that a same-day test result may be given to the patient (although venous blood still needs to be sent for laboratory confirmatory testing). Situations where patients return at regular intervals may allow for HIV ELISA-based algorithms or algorithms combining ELISA and rapid tests.<sup>16</sup> At our institution the diagnosis of HIV is made by first doing a rapid screening test (ACON HIV 1/2/0 Tri-line HIV Rapid Test Device) (ACON Laboratories, San Diego, CA). A reactive rapid screening test is not confirmed by a second rapid screening test, but rather a venous specimen is sent for a confirmatory fourth generation ELISA test which is performed at the National Health Laboratory Services (NHLS), Department of Virology. According to the manufacturer, the rapid HIV test in use (ACON Tri-line HIV Rapid Test Device) has a high reported sensitivity (99.9%) and specificity (99.8%), but its performance under real world conditions in Weskoppies Hospital has never been examined.

The aims of this study were to determine and compare the HIV prevalence among different patient groups in Weskoppies Hospital, to determine and compare the psychiatric diagnoses of the infected and non-infected, to assess self-reported intravenous drug use and high-risk sexual behaviour, to establish the association between syphilis and HIV, and to investigate the performance of the rapid test as screening method, compared to the confirmatory ELISA test.

## Methods

### Setting

Weskoppies Hospital is a specialist psychiatric hospital, and serves as a referral hospital for outlying clinics and secondary hospitals in Pretoria and surrounding areas. The majority of inpatients are involuntary mental healthcare users who suffer from serious mental illness such as schizophrenia, other psychotic disorders and, less frequently, mood disorders. Both in-patient and out-patient services are offered. In addition to the acute in-patient services, there are long-term in-patients who are either undergoing extended psychiatric rehabilitation or their problems are of such a nature that previous attempts at community placement have failed. At the time of sampling, just over 400 beds were occupied by patients of interest to this study: 28% (113) male long-term patients, 39% (161) male recent admissions, 11% (46) female long-term patients and 22% (90) female recent admissions.

### Design

This sero-prevalence study was conducted among 195 consenting, adult psychiatric in-patients who were stratified into four groups according to gender and whether they were long-term patients or recently admitted. The study was specifically designed to have an equal male to female ratio, as well as an equal long-term to recent ratio, to further our knowledge of HIV prevalence in mentally ill patients which at this stage is insufficient. The overall estimate of prevalence of HIV in Weskoppies Hospital may be biased because of this design; however, a simple random sample could have

inadvertently yielded too few respondents in the smaller strata to allow the statistical comparisons of interest, i.e. male vs. female, and recent vs. long-term.

A stratified cluster sample design was used. Wards were stratified according to gender and to duration of admission (long-term wards had patients who had been admitted for more than six months and recent-admission wards mostly had patients who had been admitted for less than three months). In order to have a clear distinction between the long-term and recently admitted patients, patients whose duration of admission was between three and six months were not eligible for this study. This resulted in four 'gender-and-duration-of-admission' categories (recently admitted male patients, long-term male patients, recently admitted female patients, and long-term female patients). Thereafter cluster sampling was performed on randomly selected wards, based on the premise that each ward was representative of the stratum it belonged to. The group of recently admitted patients comprised 50 males and 50 females. The long-term admission group comprised 95 patients of whom 50 were male and 45 female. The smaller number of females tested was the result of a lack of long-term female patients who could give informed consent for participation in the study.

The following objectives were identified:

- To determine, firstly, the prevalence of HIV in the total sample and use this information to obtain an estimate of prevalence in Weskoppies Hospital, and secondly, to compare the prevalence rates among the gender-duration-of-admission groups;
- To describe the psychiatric diagnostic profile of patients who are infected with HIV (DSM-IV-TR criteria, file diagnoses);
- To assess and compare self-reported intravenous drug use and self-perceived high-risk sexual behaviour between HIV-infected patients and non-infected patients;
- To establish the association between HIV and syphilis infection; and
- To determine the performance of the rapid HIV test as screening test compared to the fourth-generation enzyme-linked immunosorbent combination assay test (ELISA).

#### **Measurements and statistical methodology**

In order to compile comprehensive patient information a data capture sheet was designed to include the following information: Patients' demographic details, age, psychiatric diagnoses, self-reported high-risk sexual behaviour (such as having multiple partners, having unprotected sexual intercourse with unknown partners, or prostitution) and intravenous drug use. The ACON HIV 1/2/0 Tri-line HIV Rapid Test Device (ACON Laboratories, Inc, San Diego, CA) was used for the on-site HIV screening test. This is a rapid immunochromatographic assay for the qualitative detection of antibodies to HIV-1, HIV-2 and Subtype O in whole blood, serum or plasma and has a reported sensitivity of 99.9% and specificity of 99.8%.<sup>17</sup> A fourth-generation HIV ELISA test, performed by the Department of Virology, University of Pretoria, National Health Laboratory Service (NHLS) was used to confirm the rapid test results. The fourth generation HIV ELISA simultaneously detects HIV p24 antigens as well as host antibodies to HIV-1 and HIV-2 and, therefore, has a greater

sensitivity than the rapid screening test.

This study formed part of a larger sero-prevalence study to determine the prevalence of syphilis, and the RPR (Rapid Plasma Reagin) and THPA (Treponema pallidum haem-agglutination) tests were also performed on the same group of patients.

The sensitivity and specificity, the positive and negative predictive values, as well as the likelihood ratios for a negative and a positive test (LR-, LR+) were calculated for the HIV rapid test to determine its performance as a screening procedure. The likelihood ratio has advantages over sensitivity and specificity because it is less likely to change with the prevalence of the disease.<sup>18</sup> The likelihood ratio for a positive result (LR+) signifies how much the odds of having the disease increase when a test is positive, and a result of more than 10 is considered to 'rule in' the disease.<sup>19</sup> The likelihood ratio for a negative result (LR-) reveals how the odds of having the disease decrease when a test is negative.<sup>19</sup>

Cross-tabulations with accompanying Chi-square test statistics were constructed and reported with the odds ratio to assess the prevalence of HIV. The sample was post-hoc spliced according to psychiatric diagnosis and analysed accordingly to determine if there were differences with respect to the prevalence of HIV in these groups. The software programme used to analyse the data was the SPSS version 17.0.

#### **Ethical considerations**

Ethical concerns exist when testing for HIV, and even more so in the mentally ill population. Mentally ill patients may not comprehend information about the disease, or about issues relating to testing, treating, and protecting sexual partners from being infected. However, psychosis per se does not exclude the ability to give informed consent.<sup>20,21</sup> Relevant information regarding HIV testing must be given to the patient, and the ability to give informed consent must be determined on an individual basis.<sup>21</sup> In this study patients were assessed clinically for capacity to give informed consent for participation in this study. This was done by applying the standard assessment criteria for capacity. Patients who were not able to give informed consent were not included in this study. Apart from the written informed consent for participation in the study, informed consent to test for HIV was also obtained after pre-test counselling. Post-test counselling was done on an individual basis regardless of the result of the HIV test. The participants in the study were informed of their HIV status and were managed by referral to an immunology clinic in the event of a reactive HIV test. This study was approved by the Research Ethics Committee of the Faculty of Health Sciences, University of Pretoria.

#### **Results**

Table I presents the serological prevalence data for HIV rapid tests and HIV ELISA tests. For the purposes of this study a reactive HIV ELISA test was considered to be indicative of HIV infection. Of the 195 patients tested 24 (12%) were HIV infected. An estimate of 11% (95% confidence interval (0.07; 0.15)) for the prevalence of HIV in Weskoppies was obtained by calculating a weighted proportion, based on the distribution of the four strata in the population. HIV infection was the most prevalent among female long-term patients

(20%), and the lowest in male long-term patients (2%), with both male and female recently admitted patients showing a prevalence of 14%. The 45 female long-term patients constituted the sub-population, hence 20% is the actual

prevalence of HIV in this stratum.

The demographics, general characteristics, psychiatric diagnoses and HIV sero-positivity are summarised in Table II. Female patients dominated with HIV sero-positive results, with

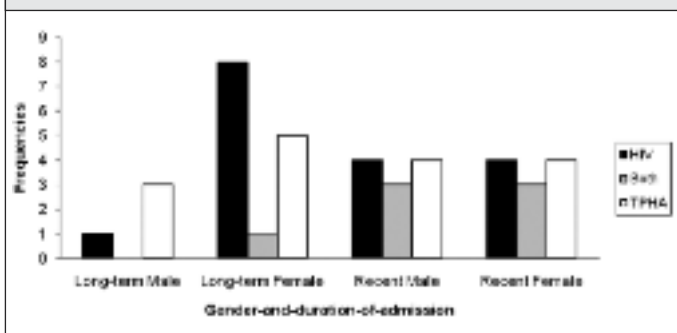
**Table I: HIV rapid tests and HIV ELISA results for the total sample tested**

<i>Duration of admission and gender</i>	<i>Reactive rapid HIV</i>		<i>Reactive HIV ELISA</i>		<i>Total number of patients</i>
Male patients long-term admission	1	(2%)	1	(2%)	50
Female patients long-term admission	9	(20%)	9	(20%)	45
Male patients recent admission	10	(20%)	7	(14%)	50
Female patients recent admission	5	(10%)	7	(14%)	50
Total number of patients	25	(13%)	24	(12%)	195

**Table II: Demographics, general characteristics, psychiatric diagnoses and HIV serological sero-positivity of the total sample**

	<i>HIV infected</i>		<i>HIV negative</i>		<i>Total sample</i>
<b>Mean age in years (std.dev)</b>	38.7	(9.6)	39.2	(12.3)	39.1 (12)
<b>Gender</b>					
Males	8	(8%)	92	(92%)	100
Females	16	(17%)	79	(83%)	95
<b>Duration of admission</b>					
Recent (<3 months)	14	(14%)	86	(86%)	100
Long term (>6 months)	10	(11%)	85	(89%)	95
<b>Gender and duration</b>					
Male patients recent	7	(14%)	43	(86%)	50
Male patients long term	1	(2%)	49	(98%)	50
Female patients recent	7	(14%)	43	(86%)	50
Female patients long term	9	(20%)	36	(80%)	45
<b>Sexual orientation</b>					
Heterosexual	23	(13%)	154	(87%)	177
Homosexual	0	(0%)	5	(100%)	5
Bisexual	1	(8%)	12	(92%)	13
<b>Marital status</b>					
Married	3	(17%)	15	(83%)	18
Unmarried	21	(12%)	156	(88%)	177
<b>Self-reported high risk sexual behavior</b>					
Yes	16	(21%)	60	(79%)	76
No	8	(7%)	111	(93%)	119
<b>Self-reported intravenous drug use</b>					
Yes	1	(10%)	9	(90%)	10
No	23	(12%)	162	(88%)	185
<b>Primary psychiatric diagnoses</b>					
Schizophrenia	8	(9%)	79	(91%)	87
Schizo-affective disorder	4	(14%)	25	(86%)	29
Psychotic disorder NOS	0	(0%)	5	(100%)	5
Bipolar disorder	2	(8%)	24	(92%)	26
Major depressive disorder	1	(8%)	11	(92%)	12
Psychotic disorder due to a general medical condition	6	(46%)	7	(54%)	13
Substance-induced psychotic disorder	2	(29%)	5	(71%)	7
Dementia	0	(0%)	2	(100%)	2
Mental retardation	1	(8%)	12	(92%)	13
Personality disorder	0	(0%)	1	(100%)	1

**Figure 1: Bar chart of the distribution of gender-and-duration-of-admission in patients with HIV and/or syphilis**



16 out of 95 (17%) compared to 8 out of 100 (8%) of the male patients. More patients (14%) who had been admitted for less than three months had HIV sero-positive results than patients who had been admitted for longer than six months (11%). The 14 patients with HIV sero-positive results in the recent-admission group were equally distributed across gender. However, in the long-term-admission group the majority of HIV sero-positive patients were female (90%) (Figure 1). Almost all of the HIV-infected male patients (7 of 8; 88%) were recent admissions. This was in contrast to the 16 HIV-infected female patients where fewer belonged to the recently admitted group (44%) [Figure 1].

There was a statistically significant association between the gender-and-duration-of-admission groups and HIV sero-positivity ( $p$ -value=0.003). Specifically, there were significantly more female long-term patients and significantly fewer male long-term patients who were HIV positive.

The primary psychiatric diagnoses of the sample are displayed in Table II. Psychotic disorders were the most common primary psychiatric diagnoses in the total study group (121 of 195; 62.1%) and included schizophrenia, schizo-affective disorder, and psychotic disorder not otherwise specified. Mood disorders included bipolar disorder and major depressive disorder, and were the primary psychiatric diagnoses in 38 of the 195 patients (19.5%). Psychotic disorder due to general medical conditions included seven patients with psychotic disorder due to epilepsy, none of whom were HIV positive, as well as six patients who had a primary diagnosis of psychotic disorder due to HIV infection. Five of these six patients were female. No patients with dementia or personality disorder as a primary diagnosis were HIV positive. In the comparison of psychiatric diagnoses between HIV-infected and non-infected patients, the association between primary psychiatric diagnosis and HIV sero-positivity was not statistically significant.

Considering secondary psychiatric diagnoses, 85 patients (44%) had a secondary psychiatric diagnosis, with cannabis abuse and/or dependence (21%), mental retardation (12%) and personality disorders (11%) the most common. None of these secondary diagnoses was statistically significantly associated with HIV sero-positivity.

With regard to self-reported high-risk factors for HIV infection, only a small number of patients reported intravenous drug use (5%) and a statistically significant

association between intravenous drug use and HIV could not be found (Table II). A large proportion of patients (76 of 195; 39%) reported high-risk sexual behaviour, and a statistically significant association was found between HIV sero-positivity and self-perceived high-risk sexual behaviour such as multiple partners, unknown partners or absence of barrier protection ( $p$ -value 0.002) (Table II). Self-reported high-risk sexual behaviour was the lowest in the female recently admitted patients (28%), and the highest in the male recently admitted group (46%), with reported rates of high-risk sexual behavior in the male long-term group (40%) and the female long-term group (42%). The difference in high-risk sexual behaviour between groups was not statistically significant.

The association between HIV and TPHA sero-positivity is illustrated in the bar charts in Figure 1. Statistically significantly more patients who were diagnosed with HIV also had reactive TPHA results ( $p$ -value =0.012).

Concerning the performance of the HIV rapid test as screening procedure to diagnose HIV infection, the following was found: there were two false negative rapid HIV test results and three false positive results, with a sensitivity of 91.7% (95% confidence interval (0.88; 0.96)), and a specificity of 98.2% (95% confidence interval (0.95; 0.99)). The positive predictive value of the rapid test in this setting was 88%, with a negative predictive value of 98.8% while the likelihood ratio for a positive test (LR+) was 52.25 and for a negative result (LR-) 0.08.

## Discussion

It is known that mentally ill patients have a higher prevalence of HIV infection than people with no mental illness. Although the 12% prevalence of HIV infection in our present sample, or the adjusted 11% at Weskoppies Hospital (which jumps to 14% when only the recently admitted patients in the sample are considered) is higher than the previous study's 9% prevalence, our expectation that the HIV prevalence rate in our patients would be higher than the current national average was not confirmed.

In the study performed at Weskoppies Hospital in 2000 it was found that of the 18 HIV-infected patients, three-quarters were male patients. In the present study two-thirds of the 24 HIV-infected patients were female.<sup>5</sup> Moreover, the breakdown of HIV infection among the four subgroups revealed notable discrepancies. Recently admitted patients had an HIV prevalence of 14% for both males and females, whereas the HIV prevalence rate differed greatly between male and female long-term patients. The reason for this gender discrepancy is unclear as self-reported high-risk sexual behaviour did not differ significantly between the various groups. The present gender distribution supports the known fact that the female population of South Africa currently carries the greatest burden of HIV infection. However, there may be gender bias in this study, since the study was specifically designed to represent males and females equally for both long-term and recently admitted patients.

When comparing the psychiatric diagnostic profile of patients infected with HIV to the non-infected, it was found that the psychiatric diagnostic profile did not differ substantially between these two groups. According to the

current literature the prevalence of major depressive disorder is high in HIV-infected patients, but the results of this study did not support such a finding.<sup>1,7</sup> Concerning the secondary psychiatric diagnoses, it was found that comorbid personality disorders were not associated with greater risk of HIV, though the association has been reported in the literature.<sup>3</sup> Patients with mental retardation are more vulnerable to sexual exploitation, which may lead to a higher incidence of HIV infection, but this was also not substantiated by this study. Cannabis abuse was a common secondary psychiatric diagnosis, but was also not statistically associated with HIV, despite the fact that drug use is associated with sexual disinhibition, irregular condom use, trading of sex and intravenous drug use.<sup>3</sup> The small number of patients with personality disorders and mental retardation in this sample probably prevented clear patterns from emerging.

The non-association between intravenous drug use and HIV could also be due to the small number of patients in this sample who had been exposed to intravenous drugs. A large proportion of patients reported high-risk sexual behaviour, and the significant association between self-perceived high-risk sexual behaviour and HIV sero-positivity was not surprising.

The previously reported association between HIV and syphilis infection was confirmed by the results of this study.<sup>8,9,10</sup> It is recommended that patients infected with HIV should be tested for syphilis, and vice versa. Indeed, taking into account the alarming prevalences of HIV and syphilis, it is recommended that all psychiatric admissions be tested for both HIV and syphilis.

Concerning the performance of the HIV rapid test as a screening procedure, it was found that the sensitivity and specificity of the rapid test were lower in the Weskoppies Hospital setting than is reported by the manufacturers. The LR+ ratio of the screening test in our setting was 52.25, which points to the high likelihood that a positive result is due to HIV infection. The LR- was 0.08 and is indicative of the low odds that the patient is HIV infected in the presence of a negative screening test. However, the odds are not zero, and there is still a risk that a patient with a negative screening test is, in fact, HIV infected. This casts doubt on the utility of the HIV rapid test as a screening procedure.

Reported possible reasons for false negative rapid HIV test results are: a) testing during the early course of the infection, when antibodies against HIV may still be lower than detectable levels (the window period for the rapid test varies from 25-32 days);<sup>22</sup> b) the rare individual who does not produce HIV-specific antibodies, or in cases of infection with highly divergent HIV strains;<sup>23</sup> c) screening assays that do not detect nonclade-B virus, early initiation of ART and hypogammaglobulinemia;<sup>24</sup> d) testing during the terminal stage of infection, when antibody production has been depleted;<sup>25</sup> e) dysfunctional rapid test strips; and f) operator error.

The two false negative HIV rapid results in this study were in patients with CD4 counts of  $154 \times 10^6$ /litre and  $350 \times 10^6$ /litre respectively, which are still relatively high, and it is unlikely that their antibodies to HIV had dropped below detectable levels due to advanced disease with such CD4 counts. The reason for the false negative HIV rapid tests is

unknown. Both patients had repeated rapid tests, and the one result (CD4 count of  $350 \times 10^6$ /litre) was positive when a new rapid strip from another batch was used. The other HIV rapid test remained negative on repeat testing. ELISAs in both of these patients remained reactive on repeat testing, with unequivocal results. The three false positive screening test results were obtained from consecutive tests with the last remaining strips of a batch. When these rapid tests were repeated with a different batch of test strips, all three results were negative. It is possible that the strips had become dysfunctional as a result of inadvertent storage at higher temperatures than recommended by the manufacturer. The reason for the low sensitivity could possibly be that the conditions under which the rapid was tested were not stringent enough. However, the aim was to investigate the performance of the rapid under 'real life' conditions.

This study is very relevant in the South African context, because it provides much needed information of the seroprevalence of HIV in mentally ill hospitalised patients in South Africa, for whom only scant data is available. This study also forms part of a larger sero-prevalence study, where the sero-prevalence of syphilis infection was also determined. Another benefit of this HIV study was that both the rapid and the confirmatory ELISA test were performed on all patients and not only on patients with a reactive rapid test. However, splicing the sample for the sake of subgroup comparisons resulted in too few subjects in some subsets, which was a limitation for data analysis.

With a view to future research, prevalence data should be continually collected to clarify the development of the HIV epidemic in mentally ill hospitalised patients. The low prevalence of HIV among the long-term male patients should be investigated further, possibly to determine whether there might be certain protective factors at play. The reasons for the high prevalence of HIV among the long-term female patients should also be researched further in order that preventative measures can be put in place.

## Conclusion

Although the current prevalence of HIV in patients in our sample at Weskoppies Hospital is below the national average, it is higher than in the previous study which was conducted a decade ago. The high prevalence in the long-term female patients is especially of concern. The relatively low sensitivity of the rapid test is of great concern. It could be argued that, despite the rapid test forming the backbone of HIV screening in South Africa, utilisation of the HIV ELISA as first line test for the diagnosis of HIV in a hospitalised patient is justified. Due to the high prevalence of both HIV and syphilis in the psychiatric population it is recommended that all patients be tested for both of these diseases.

## Acknowledgement

The authors express their sincere gratitude to Ms J. Jordaan (Department of Statistics, University of Pretoria) for electronic data management, Drs L. Webber and S. Mayaphi, (Department of Virology, University of Pretoria, National Health Laboratory Services) for expert advice, Ms B. English for valuable language editing and Mrs M.A. Mabena, CEO of Weskoppies Hospital, for enabling the

research at the hospital.

This study was financially supported by a grant from the Research Committee of the Faculty of Health Sciences, University of Pretoria. There are no conflicts of interest.

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