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## Community health care workers in South Africa are at increased risk for tuberculosis

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**To the Editor:** High rates of tuberculosis (TB) and human immunodeficiency virus (HIV) in sub-Saharan Africa pose a serious threat to health care systems and health care workers (HCWs). Studies in South Africa<sup>1</sup> and Ethiopia<sup>2</sup> have indicated that HCWs have an increased risk of TB disease compared with the general population. The risk for TB disease is even higher among HCWs co-infected with HIV. Studies from South Africa found an HIV prevalence among HCWs of 15.7% in 4 provinces in 2002<sup>3</sup> and of 11.5% in 2 hospitals in Gauteng in 2005.<sup>4</sup>

Many sub-Saharan African countries face a severe shortage of qualified HCWs as a result of the dual HIV/TB epidemic, which has triggered task shifting to a range of lay community health care workers (CHWs) – for example, home-based care workers, lay counsellors and adherence supporters, for both TB and highly active antiretroviral therapy (HAART). CHWs may experience a considerable occupational TB risk; however, their risk of TB disease and HIV prevalence has never been documented.

The TB/HIV Care Association is a non-governmental organisation that employs CHWs to provide adherence support to both TB patients and patients taking HAART. The Desmond Tutu HIV Foundation partnered with the TB/HIV Care Association to provide HIV and TB testing to their CHWs, and subsequently determined the prevalence of diagnosed and undiagnosed TB and HIV among them.

### Methods

Between October 2008 and February 2009, our mobile HIV testing unit (the TUTU tester) provided HIV testing, CD4

counts and TB screening to TB and antiretroviral adherence supporters employed by the TB/HIV Care Association in Cape Town on 8 days in 8 venues. All CHWs were asked about any previous HIV testing, history of TB treatment, hypertension, diabetes, and their most recent Pap smear. Verbal consent for HIV testing was obtained. HIV testing was performed according to the Western Cape guidelines. All CHWs were offered post-test counselling. Individuals who tested HIV-positive were offered a CD4 count test. Individuals who needed treatment or follow-up were referred to clinics.

Individuals who were HIV-positive and those with symptoms of TB were offered to undergo sputum induction. Smears and cultures were performed on 47 out of 62 sputum samples, and the remaining 15 sputum samples were only examined for acid-fast bacteria (AFBs) with light and fluorescence microscopy.

### Results

A total of 215 female CHWs were offered HIV and TB testing; the most common age group was 40 - 49 years old ( $N=72$ , 33%); 58 (27%) had never had a previous HIV test, and only 57 (27%) had had an HIV test within the last 12 months (Table I). Older CHWs were significantly more likely to have never tested before ( $p<0.01$ ).

A total of 42 CHWs (20%) were HIV-positive, 11 were newly diagnosed, and 31 already knew their status. Among the 31 known HIV-positive CHWs, 17 were on HAART, and 11 were not yet eligible for HAART. Of 26 CHWs who knew their most recent CD4 count, 6 had a CD4 count  $<350$  cells/ $\mu$ l. Eight of those who were newly diagnosed as HIV-positive had had a CD4 count at the time of diagnosis, and 5 (63%) had a CD4 count  $<350$  cells/ $\mu$ l. HIV prevalence (23%) and prevalence of newly diagnosed HIV (9%) was highest among the 30 - 39-year-old age group.

Sputum induction was offered to 80 CHWs; 38 were HIV-positive, and 42 reported TB symptoms. A total of 62 sputum samples were obtained – 29 from HIV-positive individuals and 33 from HIV-negative symptomatic individuals. Twelve CHWs were unable to produce sputum, and 6 refused sputum induction.

The overall TB prevalence was 5% (10/215); 6 (3%) were on TB treatment at the time of the study; 4 (2%) were newly diagnosed with TB, one was smear- and culture-positive, and 3 were smear-negative and culture-positive. Two of the newly diagnosed TB cases were HIV-negative and symptomatic, 1 was known HIV-positive and not yet on HAART, and 1 was on HAART.

### Discussion

This is the first report of HIV and TB prevalence among CHWs in South Africa. The observed HIV prevalence of 20% is higher

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**Table I. HIV testing experience, HIV prevalence and TB prevalence in lay community health care workers stratified by age**

	Age in years				Total N (%)
	<30 N (%)	30 - 39 N (%)	40 - 49 N (%)	≥50 N (%)	
Previous HIV testing experience					
Never tested	6 (18)	5 (9)	16 (23)	31 (58)	58 (27)
Last test <3 months ago	5 (15)	5 (9)	4 (6)	4 (8)	18 (9)
Last test 3 - 6 months ago	2 (6)	1 (2)	3 (4)	0 (0)	6 (3)
Last test 6 - 12 months ago	6 (18)	12 (22)	12 (17)	3 (6)	33 (16)
Last test >12 months ago	6 (18)	19 (35)	28 (40)	12 (23)	65 (31)
Previously tested positive	8 (24)	13 (24)	7 (10)	3 (6)	31 (15)
HIV result					
Negative	23 (68)	36 (65)	61 (85)	48 (89)	168 (78)
Newly diagnosed positive	2 (6)	5 (9)	2 (3)	2 (4)	11(5)
Known positive	8 (24)	13 (24)	7 (10)	3 (6)	31 (14)
Refused	1 (3)	1 (2)	2 (3)	1 (2)	5 (2)
On TB treatment					
Yes	1 (3)	4 (7)	1 (1)	0 (0)	6 (3)
No	33 (97)	51 (93)	71 (99)	54 (100)	209 (97)
TB diagnosed on screening					
Yes	0 (0)	2 (4)	1 (1)	1 (2)	4 (2)
No	33 (100)	49 (96)	70 (99)	53 (98)	205 (98)

than the HIV prevalence of 17.9% among antenatal women in the Western Cape Metropolitan area in 2008.<sup>5</sup>

Only 27% of CHWs had an HIV test within the last 12 months; more importantly, 27% had never had an HIV test. A total of 11 new HIV diagnoses were established. At least half of the newly diagnosed HIV-infected CHWs would be eligible for HAART according to the WHO ART guidelines and the proposed new South African guidelines for implementation in the near future.

Only 5 CHWs did not consent to HIV testing, suggesting that HIV testing uptake is improved when access is facilitated. An obstacle to access may be concerns with confidentiality, and CHWs may not feel comfortable about testing in the health care facilities where they work.

TB prevalence among CHWs was 5%, with 4 out of 10 TB cases (40%) only identified through active case finding. A recent population-based prevalence survey in a township near Cape Town found a TB prevalence of 3% with a similar proportion of undiagnosed TB (48%).<sup>6</sup> However, the population-based survey included men and women, with men having a higher risk of TB disease, whereas the CHWs screened in this study were all women; this finding suggests that CHWs are at higher risk of TB disease than the communities they live in.

Limitations of this report include relatively small sample size and that the sample was not representative of all CHWs working in Cape Town. TB screening included only one induced sputum sample per person, and some of the sputum samples were not cultured.

We conclude that CHWs are at high risk for HIV and TB. HIV testing should be actively facilitated, CHWs should be screened regularly for TB, and more emphasis should be placed on effective infection control measures.

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