

# Provider-initiated testing and counselling reaches persons who may not otherwise test for HIV in Zanzibar, 2010-2011

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## INTRODUCTION

In 2007 Zanzibar included provider-initiated testing and counselling (PITC) in their HIV testing and counselling programme to diagnose new infections earlier and to increase access to persons who would not otherwise get tested. Our objective was to assess the uptake of PITC and the proportion of HIV-positive tests through PITC in Zanzibar.

## METHODS

Our team examined 2010-2011 programmatic data to assess how many people were tested through PITC compared to other testing approaches. We also compared the rates of HIV positivity through PITC and non-PITC programmes to assess the relative yield of case detection.

## RESULTS

From 2010 to 2011, 6.1% of tests were recorded as PITC. PITC served relatively more females (7.6%), persons aged under 15 (24.8%) and over 35 (9.1%), and widowed (12.2%) and married (8.4%) persons, and reached relatively more persons on Pemba Island (12.2%) compared to Unguja Island (5.0%). The rate of HIV seropositivity for PITC testers was 4.1%, nearly twice the rate of non-PITC testers (2.1%,  $p$ -value<0.05). The percentage of HIV-positive tests was significantly higher for PITC compared to non-PITC for all categories of testers except clients aged 15 to 24 years compared to other age groups (1.5% vs. 1.0%,  $p$ =0.224) and clients who were widowed compared to other marital statuses (4.9% vs. 5.8%,  $p$ =0.106).

## CONCLUSION

Despite challenges, PITC reaches persons who may not otherwise test for HIV. PITC may remove barriers to HIV testing for some populations and therefore result in earlier diagnosis of HIV.

*Key words: HIV testing and counselling, provider-initiated testing and counselling, Zanzibar*

## INTRODUCTION

The HIV epidemic in Zanzibar has often been characterised as a concentrated epidemic, though more recent evidence suggests it may be a mixed epidemic with a high burden in key populations at risk (Zanzibar Integrated HIV, Tuberculosis and Leprosy Programme, 2014). The 2011-2012 Tanzania HIV/AIDS and Malaria Indicator Survey estimated HIV prevalence to be 1.0% in Zanzibar among those aged 15-49 years (Tanzania Commission for AIDS, Zanzibar AIDS Commission, National Bu-

reau of Statistics, Office of the Chief Government Statistician, & ICF International, 2013). An integrated bio-behavioural survey (IBBS) among key populations in 2007 found 16.0%, 10.8%, and 12.3% HIV prevalence for people who inject drugs (PWID), commercial sex workers (CSW), and men who have sex with men (MSM), respectively (Zanzibar AIDS Control Programme, 2007). While the overall prevalence of 1.0% is lower than mainland Tanzania (5.3%), pockets of high transmission among groups at risk make continued efforts to identify and initiate in-

ected individuals onto treatment critically important.

Knowledge of HIV serostatus is critical for prevention of HIV transmission. HIV testing and counselling (HTC) is an evidence-based intervention to increase serostatus awareness, decrease high-risk behaviour, and decrease transmission. Most importantly, it serves as the entry point into care and treatment programmes. HTC must be accessible to all people in settings with a generalised HIV epidemic, but in settings with a concentrated epidemic, HTC must be accessible to those with high-risk behaviours who are more likely to test HIV positive (Bock et al., 2008).

While voluntary counselling and testing (VCT) remains an effective way for people to learn their HIV status, it has the potential to miss people who are either unaware of VCT services or unable or unwilling to seek out an HIV test voluntarily (Koo, Begier, Henn, Sepkowitz, & Kellerman, 2006). With limited resources for HIV prevention globally, recent evidence promotes provider-initiated testing and counselling (PITC) as an additional means of capturing previously undiagnosed HIV infections as well as increasing access to persons who would not test otherwise (Bock et al., 2008; Koo et al., 2006; Steen et al., 2007; Wall et al., 2012).

Zanzibar has been implementing HTC services since 1988. In an effort to find cost efficiencies, maximize the yield of the HTC programme, and diagnose HIV infections early, the Ministry of Health in Zanzibar through the Zanzibar AIDS Control Programme introduced PITC services in 2007 as another HTC approach. This initiative aimed to increase access to persons who would not otherwise get tested and to improve efficiency of the HTC programme by detecting more individuals who are HIV-infected. As of January 2012, HTC was offered at 56 facilities in Zanzibar; PITC specifically was available at 8 government hospitals and 30 primary health care units.

PITC makes HTC a comprehensive part of medical care and is offered to all patients attending outpatient services, including tuberculosis and sexually transmitted infection (STI) clinics, inpatient wards, and other settings within the health facility, regardless of whether they show signs and symptoms of HIV infection (WHO Department of HIV/AIDS, Joint United Nations Program on HIV/AIDS, 2007). We have examined two years of data since the roll-out of PITC services to determine the demographics of people reached through PITC as well as whether it is an efficient means of detecting HIV infections in Zanzibar.

## Objective

To assess the uptake of PITC and the proportion of people who test HIV-positive through PITC in Zanzibar from 2010-2011.

## METHODS

### Study design

Service providers collected routine HTC programme data in paper registers at the point of service and data

were aggregated and sent to the Zanzibar AIDS Control Programme Testing and Counselling Unit in 2012. We examined the two most recent years (2010 and 2011) of HTC programmatic data, including the records of all HIV tests performed in Zanzibar across public, private, and non-governmental programmes to assess who was tested through PITC compared to other testing approaches. In addition, we compared the proportion of people who tested positive through PITC and non-PITC programmes to assess the relative yield of case detection.

### Study subjects

We analysed records of all HIV tests performed in public, private, and non-governmental programmes in Zanzibar from January 2010 through December 2011.

### Measures

The present study is limited to the data collected from the client at the time of testing, recorded on a registry form. The registry form records basic demographic information (age, sex, marital status, residence), client category (e.g., MSM, CSW, PWID), reason for testing, whether PITC or not, and test site. History of prior testing was not documented. For each test performed, the result is recorded.

### Analysis

We entered data into a Microsoft Excel database and used Stata 12.0 (College Station, Texas) to clean and analyse the data. In the analysis we described frequencies of demographic characteristics by seropositivity and used the chi-square test to assess if differences were statistically significant. Our analysis comprised two stages to answer two questions. In the first stage, we compared the characteristics of clients of PITC to clients of other HTC approaches to assess which populations were more likely to be reached through PITC than HIV-specific testing programmes. The chi-square test was used to assess whether a particular group of clients was more likely to test via PITC than other HTC modalities. In the second stage, we compared the proportion of those who tested positive among persons testing through PITC compared to other approaches. Chi-square was used to assess whether differences were statistically significant, which indicates whether the relative rate of case detection is higher or lower in PITC compared to other approaches.

## RESULTS

From 2010 to 2011, a total of 152,711 records of HTC sessions were registered, with a 40% increase in 2011 (63,396 in 2010 vs. 89,315 in 2011) (Table 1). Over the two years, 6.1% of the tests performed were recorded as PITC and PITC accounted for about 1 in 13 (7.8%) of the HIV tests performed in Zanzibar in 2011. PITC served more females than males (7.6% vs. 4.7%, respectively,  $p$ -value <0.05), and a greater proportion of persons under

15 and over 35 years compared to 15-24 and 25-35 years (24.8% and 9.1% vs. 4.7% and 5.1%, respectively, p-value <0.05). PITC served a greater proportion of widowed and married persons than single, divorced, or cohabitating

(12.2% and 8.4% vs. 5.0%, 4.1%, and 0.0%, respectively, p-value <0.05) and reached more persons on Pemba Island compared to Unguja Island (12.2% vs. 5.0%, respectively, p-value <0.05).

**Table 1.** Characteristics of persons testing for HIV, overall and by PITC versus non-PITC clients, Zanzibar, 2010-2011

Characteristic	Overall		Non-PITC clients		PITC clients		P-value, PITC vs. non-PITC
	N	%	N	%	N	%	
<b>Overall</b>	152,711	100	143,347	93.9	9,364	6.1	-
<b>Year</b>							<0.05
2010	63,396	41.5	60,981	96.2	2,415	3.8	
2011	89,315	58.5	82,366	92.2	6,949	7.8	
<b>Sex</b>							<0.05
Female	73,958	48.4	68,321	92.4	5,642	7.6	
Male	78,753	51.6	75,026	95.3	3,722	4.7	
<b>Age (years)</b>							<0.05
<15	3,006	2.1	2,261	75.2	745	24.8	
15-24	57,383	36.9	54,699	95.3	2,684	4.7	
25-36	61,241	41.0	58,125	94.9	3,116	5.1	
>35	31,081	19.9	28,262	90.9	2,819	9.1	
<b>Marital status</b>							<0.05
Single	82,999	54.4	78,849	95.0	4,150	50.0	
Married	50,191	32.9	45,964	91.6	4,227	8.4	
Divorced	17,231	11.3	16,520	95.9	711	4.1	
Widowed	2,178	1.4	1,912	87.8	266	12.2	
Cohabiting	31	0	31	100.0	0	0	
<b>Island</b>							<0.05
Pemba	24,025	15.7	21,104	87.8	2,921	12.2	
Unguja	128,686	84.3	122,243	95.0	6,443	5.0	
<b>Reason for Testing</b>							
Plan Marriage	32,719	23.4					
Contact/Partner Positive	799	0.6					
TB	499	0.4					
To Know HIV Status	96,919	69.3					
STI Patient	398	0.3					
PITC	8,467	6.1					
<b>Client's Category</b>							<0.05
Substance user	3,899	2.8	3,870	99.3	29	0.7	
PWID	536	0.4	527	98.3	9	1.7	
MSM	60	0	57	95.0	3	5.0	
CSW	311	0.2	299	96.1	12	3.9	
None	136,874	96.6	127,563	93.2	9,311	6.8	

The overall proportion of HIV seropositivity for PITC testers (including tuberculosis and STI clinic patients) was 4.1%, nearly twice the seropositivity among non-PITC testers (2.1%, p-value <0.05) (Table 2). The relative yield of HIV-positive tests was significantly higher for PITC compared to non-PITC for most categories of testers. The exceptions, in which PITC did not detect a higher rate

of HIV-positive clients than non-PITC approaches, were for those under 15 years (3.1% vs. 5.8%, p-value <0.05) and widowed clients (4.9% vs. 5.8%, p-value <0.05). The HIV seropositivity rates for PWID, MSM, and CSW were significantly higher among the few persons in these categories tested through PITC compared to other testing approaches.

**Table 2.** HIV seropositivity by overall characteristics and by PITC versus non-PITC clients, Zanzibar, 2010-2011

Characteristic	Overall		Non-PITC clients		PITC clients		P-value, PITC vs. non-PITC
	N	%	N	%	N	%	
<b>Overall</b>	<b>3,371</b>	<b>2.2</b>	<b>2,986</b>	<b>2.1</b>	<b>385</b>	<b>4.1</b>	<b>&lt;0.05</b>
<b>Year</b>							<0.05
2010	1,551	2.4	1,427	2.3	124	5.1	
2011	1,820	2.0	1,559	1.9	261	3.8	
<b>Sex</b>							<0.05
Female	2,104	2.8	1,877	2.8	227	4.0	
Male	1,264	1.6	1,107	1.5	157	5.2	
<b>Age (years)</b>							<0.05
<15	154	5.1	131	5.8	23	3.1	
15-24	576	1.0	537	1.0	39	1.5	
25-36	1,559	2.5	1,415	2.4	144	4.6	
>35	1,082	3.5	903	3.2	179	6.4	
<b>Marital status</b>							<0.05
Single	1,270	1.5	1,149	1.5	121	2.9	
Married	1,254	2.5	1,072	2.3	182	4.3	
Divorced	720	4.2	653	3.9	67	9.4	
Widowed	123	5.6	110	5.8	13	4.9	
Cohabiting	1	3.2	1	3.2	-	-	
<b>Island</b>							<0.05
Pemba	238	1.0	189	0.9	49	1.7	
Unguja	3,113	2.4	2,797	2.3	336	5.2	
<b>Reason for Testing</b>							
Plan Marriage	254	0.8					
Contact/Partner Positive	87	10.9					
TB	41	8.2					
To Know HIV Status	2,175	2.2					
STI Patient	13	3.3					
PITC	331	3.9					
<b>Client's Category</b>							<0.05
Substance user	90	2.3	85	2.2	5	17.2	
PWID	37	6.9	36	6.8	1	11.1	
MSM	4	6.7	3	5.3	1	33.3	
CSW	17	5.5	16	5.4	1	8.3	
None	2,806	2.1	2,429	1.9	377	4.1	

## DISCUSSION

Our study results show that PITC is being widely used in Zanzibar and is reaching people who may not be diagnosed otherwise. We determined that several groups were more likely to be tested through PITC compared to other testing approaches. For example, women and children under age 15 were more likely than men and other age groups to be tested through PITC. This finding is consistent with the concept that women are more likely to access primary health care services than men. Additionally, women and children in Zanzibar are more likely to attend health care services together when a child falls ill and is accompanied by his/her mother, or vice versa. We theorise that this interaction results in more PITC exposure for both women and children.

We also found that PITC achieved a relatively higher uptake on the island of Pemba where it reached one in eight HIV tests performed, compared to the island of Unguja, where it was one in twenty. First, this may be because Unguja is larger in population and offers more alternatives for HIV testing, while Pemba is smaller with fewer options. Second, stigmatization from seeking an HIV test may play a greater role in a smaller community such as Pemba. PITC may provide a “cover” for getting an HIV test since it is done in the context of other health care services. To the extent that this is true, the routine provision of HIV testing through PITC has the advantage of reducing such a barrier in places where seeking an HIV test carries high stigma. Botswana, the first African country to roll out routine HIV testing, had similar successes in scale up of testing as a result (Steen et al., 2007).

On the other hand, PITC does not appear to be a strategy to increase the testing of key populations such as MSM, PWID, and CSW. PITC is primarily conducted at government inpatient and outpatient hospital settings and clinics where persons in these hidden populations may not disclose their risk behaviours. Therefore, the number of key population members tested through PITC may be underestimated. In addition, the modality of PITC does not allow time for extensive counselling or the opportunity for the client to disclose and discuss their HIV-related risk behaviours. Rather, only brief, general information is provided. However, there is a dearth of evidence showing the efficacy of pre-test counselling, so this challenge should not be viewed as an obstacle to the expansion of PITC without further evidence (Koo et al., 2006). Key population testing is usually conducted through mobile testing, VCT sites, and outreach efforts in communities to allow for more extensive, individualized counselling that reveals and addresses specific risk behaviours.

We found higher rates of HIV detection within PITC compared to other HIV testing and counselling approaches. This finding may reflect the fact that persons with health problems who are already seeking care may be more likely to have HIV, which is particularly true of persons with suspected tuberculosis and STIs. It is im-

portant to point out, however, that while the rate of HIV detection was higher for PITC, the vast majority of HIV diagnoses were still made through other testing approaches. It remains to be seen whether further expansion of PITC will result in a larger number of new diagnoses compared to other testing approaches (Koo et al., 2006)

The study has several limitations. First, the data were programmatic and were not designed to answer a specific research question. We therefore have few variables by which to characterize the study population. In addition, there are no data on the quality of the services provided or feedback on the satisfaction with the services by the population served. In addition to limitations in the data, the PITC programme itself faces many challenges. Limited resources, both material and human, and high rate of turnover of trained staff restrict the quantity and quality of HTC within the PITC modality.

## CONCLUSION

Despite challenges, we found that PITC is being used in Zanzibar and is reaching persons who may not otherwise be tested and diagnosed. Such barriers and delays may result in later diagnosis with accompanying increases in morbidity and mortality. However, our findings indicate that PITC may not be the solution for all groups, and targeted efforts such as peer outreach continue to be needed in order to reach disenfranchised groups who are often at higher risk for infection and who may attend other health services.

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## ETHICAL ISSUES

Data included in this article were part of routine data collection activities and did not include any personal identifying information. In addition, ZIHTLP Strategic Information manages this data and did not require external approval to analyze it. Therefore, the study protocol did not require review by an institutional review board.

## CONFLICT OF INTEREST

The authors declare that they have no competing interests.

## AUTHORS' CONTRIBUTIONS

T Ali, T Amour and SO conceived and designed the study. T Ali, T Amour and SO carried out the data analysis. T Ali, T Amour and SO drafted the manuscript. All authors read, revised and approved the final manuscript.

## REFERENCES

Bock, N. N., Nadol, P., Rogers, M., Fenley, M. A., Moore, J., & Miller, B. (2008). Provider-initiated HIV testing and counseling in TB clinical settings: tools for program implementation. *International Journal of Tuberculosis and Lung Disease*, 12, 69-72. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/18302826>.

Koo, D. J., Begier, E. M., Henn, M. H., Sepkowitz, K. A., & Kellerman, S. E. (2006). HIV Counseling and Testing: Less Targeting, More Testing. *American Journal of Public Health*, 96, 962-964. doi: 10.2105/AJPH.2006.089235

Steen, T. W., Seipone, K., Gomez, F. L., Anderson, M. G., Kejelepula, M., Keapoletswe, K., et al. (2007). Two and a half years of routine HIV testing in Botswana. *Journal of Acquired Immune Deficiency Syndrome*, 44, 484-488. doi: 10.1097/QAI.0b013e318030ffa9

Tanzania Commission for AIDS (TACAIDS); Zanzibar AIDS Commission (ZAC); National Bureau of Statistics (NBS); Office of the Chief Government Statistician (OCGS); ICF International. (2013). Tanzania HIV/AIDS and Malaria Indicator Survey 2011/12. Retrieved from <https://dhsprogram.com/pubs/pdf/AIS11/AIS11.pdf>

Wall, K. M., Kilembe, W., Nizam, A., Vwalika, C., Kautzman, M., Chomba, E., Tichacek A., ... Allen, S. (2012). Promotion of couples' voluntary HIV counselling and testing in Lusaka, Zambia by influence network and agents. *BMJ Open*, 2, 221-227. doi: 10.1136/bmjopen-2012-001171

WHO Department of HIV/AIDS, Joint United Nations Program on HIV/AIDS. (2007). Guidance on Provider Initiated HIV Testing and Counseling in Health Facilities. Geneva, Switzerland: WHO, UNAIDS.

Zanzibar AIDS Control Programme. (2007). Integrated Behavioural and Biological Surveillance Survey among Most at Risk Populations in Zanzibar (Unpublished Report). Zanzibar AIDS Control Programme, Zanzibar.

Zanzibar Integrated HIV, Tuberculosis and Leprosy Programme. (2014). Epidemiological Profile (Unpublished Report). Zanzibar Integrated HIV, Tuberculosis and Leprosy Programme, Zanzibar.