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Frequent detection of undiagnosed HIV within emergency departments in Botswana

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Background

- Botswana has a severe HIV epidemic (23% adult HIV prevalence) with a high annual HIV incidence (1.3%).
- In 2004, Botswana became Africa's first country to routinize "opt out" provider-initiated HIV testing and counseling (PITC) at health facilities, though it is rarely implemented in Emergency Departments (EDs).
- EDs provide episodic, unplanned care to large volumes of undifferentiated patients. Thus, EDs provide an opportunity to capture patients with undiagnosed HIV infection missed by other facility-based HIV testing.
- We evaluated the frequency of detecting undiagnosed HIV infection in the ED and other PITC settings using data from a national HIV testing program in Botswana.

Methods

- From January 2018 to September 2019, HIV testing was conducted by program counselors at 149 facilities.
- Electronic data captured demographic information (age, sex, citizenship) and testing date, location and result.
- Data were included from individuals' first HIV test during the program within ED, voluntary counseling and testing (VCT), or other PITC settings.
- We excluded data from risk-based testing strategies (e.g., index testing, STI or TB clinics) and antenatal clinics.
- Observations were excluded if results were unavailable or if the individual previously tested HIV-positive.
- Poisson regression models with robust standard errors accounting for clinic clustering were used to generate prevalence ratios.

Results & Conclusions

Figure 1. Distribution of 149 facilities in 16 districts, including 55 EDs (indicated in red)

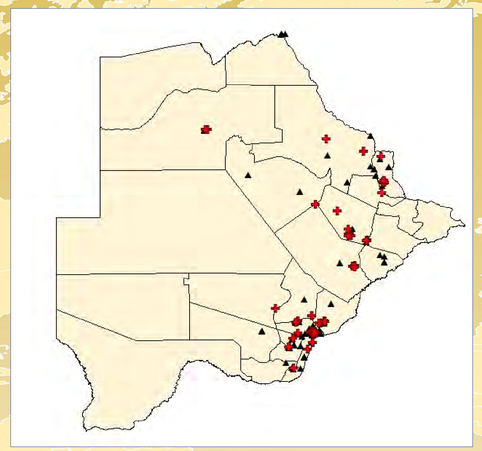

Figure 2. Distribution of individuals who HIV tested, by department

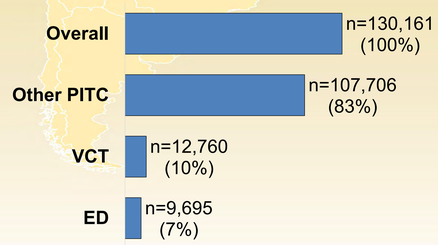

Table 1. Characteristics of HIV testers in Botswana from January 2018 to September 2019, by HIV testing department

Individual characteristics	N (%) or Median (IQR)				p-value[2]
	Overall (N= 130,161)	HIV testing department[1]			
		VCT (n=12,760)	Other PITC (n= 107,706)	ED (n=9,695)	
Age (years)	30 (24-39)	29 (23-38)	30 (24-39)	30 (23-41)	0.039
Male sex	68433 (53%)	7009 (55%)	56465 (52%)	4959 (51%)	0.003
Urban setting[3]	74288 (57.1%)	6110 (47.9%)	61200 (56.8%)	6978 (72.0%)	<0.001
Newly detected HIV-positivity[4]	4387 (3.4%)	276 (2.2%)	3656 (3.4%)	455 (4.7%)	<0.001
ART initiation[5,6]	2848 (81.3%)	177 (78.7%)	2433 (82.6%)	238 (71.0%)	<0.001

VCT=voluntary HIV counseling and testing; PITC=provider-initiated HIV counseling and testing; ED=emergency department; ART=antiretroviral therapy

[1] We excluded records from antenatal care clinics and risk-based testing strategies (e.g., index testing, STI clinics, TB clinics, etc.) and records without HIV test results available. Only observations from first HIV tests were included.

[2] Kruskal –Wallis tests for continuous measures and Chi-squared tests for proportions comparing ED versus VCT/Other PITC

[3] Urban settings included the districts of Gaborone, Greater Francistown, Lobatse, Mahalapye, Serowe/Palapye, and Maun

[4] Newly detected HIV-positivity defined as no previous HIV positive test result

[5] Among individuals with HIV-positive test results

[6] Among n=3505 individuals with ART initiation information; 882/4387 (20%) of individuals were missing ART initiation information as this variable was implemented are the program was initiated.

- Frequency of HIV detection in EDs was 2-fold higher than in VCT (prevalence ratio[PR]=2.2, 95% CI 1.4-3.3, p<0.001) and 1.4-fold higher than in other PITC (OR=1.4, 95% CI 1.1-1.9, p=0.03).
- Those who tested HIV-positive in EDs less frequently initiated same-day ART (71% vs 82%, PR=0.9, 95% CI 0.8-1.0, p=0.003).
- **HIV testing was successful within EDs in Botswana and yielded higher frequency of detecting undiagnosed HIV infections than VCT or other PITC; however, immediate ART initiation was less frequent. ED HIV testing programs should strengthen linkage to care.**

Figure 3. Poster from Botswana's *Checka Status* multi-media campaign which is designed to increase the uptake of facility-based HIV testing, especially among young people and men



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