

# Evaluation of Process Indicators for Expanded HIV Testing at Hospitals in HPTN 065

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## BACKGROUND

As part of the HPTN 065 (TLC-Plus) study to evaluate the feasibility of a “test, link-to-care, plus treat” HIV prevention approach, 7 participating hospitals in Washington, DC and 9 in the Bronx, NY aimed to achieve universal offer of HIV testing in emergency departments (EDs) and inpatient admissions (IPs). Hospitals aimed to scale-up HIV testing using methods most suitable to their particular contexts, but were encouraged to adopt a laboratory-based approach to increase capacity. Initially, it was anticipated that hospitals might increase HIV testing by 10% each quarter. However, the percentage of ED visits and IP admissions with HIV testing showed minimal change over the 3-year study period (Table 1).

**Table 1: HIV Testing in HPTN 065 Hospitals, 2011–2014**

	Bronx, NY			Washington, DC		
	Feb 2011 - Jan 2012	Feb 2012 - Jan 2013	Feb 2013 - Jan 2014	Feb 2011 - Jan 2012	Feb 2012 - Jan 2013	Feb 2013 - Jan 2014
ED Visits N	525,137	555,113	540,766	233,767	264,337	231,068
HIV Tests n (%)	34,620 (6.6%)	34,166 (6.2%)	37,390 (6.9%)	27,860 (11.9%)	36,449 (13.8%)	36,496 (15.8%)
Inpatient Admissions N	122,021	120,900	118,824	42,758	54,668	53,229
HIV Tests n (%)	15,811 (13.0%)	15,112 (12.5%)	16,163 (13.6%)	8,133 (19.0%)	12,294 (22.5%)	12,702 (23.9%)

As part of periodic monitoring, EDs and IPs reported progress on 15 indicators for processes identified by the study as factors that, if adopted, were expected to contribute to an increase in HIV testing. We assessed the association between observed changes in HIV testing and changes in process indicators collected in May 2012 and January 2014.



## METHODS

Process indicators were grouped into 3 categories: structural, buy-in, and laboratory (Table 2). For each ED or IP, indicators were scored 0 for ‘not yet completed/not planned,’ or 1 for ‘completed.’ Scores were summed overall and by category. Changes in summed scores during 2012–2014 were calculated to determine progress.

Change in HIV testing varied widely among hospitals, ranging from a decrease of 17% to an increase of 16% over the study duration. To analyze the associations between testing rate changes and process indicators, we retrospectively classified EDs and IPs into two categories: “Improvers,” defined as those which had at least a 5 point

increase in the percentage of patients tested, or “Non-Improvers,” which had less than a 5 point increase or a decrease. Three EDs and 4 IPs were categorized as Improvers; 12 EDs and 11 IPs were categorized as Non-Improvers. Mean process scores and differences were compared across Improver and Non-Improver subgroups. We used logistic regression to determine whether changes in process indicators predicted improvements in HIV testing. We reported odds ratios (ORs), indicating the relative odds of improving associated with each 1 point increase in process score, with 95% Confidence Intervals (CIs).

**Table 2: Process Indicators**

	15 Process Indicators				
	Structural	Buy-In	Lab	Lab	
<b>Modified Consent:</b>	Consent forms or admission packet modified to be conducive to routine HIV screening	<b>Staff training and education:</b>	Dedicated effort with the purpose of increasing testing/test offer rates	<b>Lab buy-in:</b>	Willing to make changes to lab procedures, equipment, and/or staff for the purposes of increasing testing volume
<b>Universal offer:</b>	All patients offered HIV test at triage/admission	<b>Staff buy-in:</b>	Staff supportive of initiatives to expand HIV testing and changing procedures to increase testing	<b>Analyzer on-site:</b>	Lab has an automated analyzer capable of performing HIV testing
<b>Tracking of offer:</b>	Offer of HIV testing for all patients is systematically tracked in electronic medical record (EMR) or by some other method	<b>Administrative buy-in:</b>	Hospital administration is open to changing procedures and providing resources to increase testing	<b>Assays/ Reagents on-site:</b>	Lab has purchased assays/reagents for automated HIV testing
<b>Tracking HIV testing history:</b>	EMR system allows tracking of HIV testing history, offer, acceptance, reasons for decline	<b>Billing and reimbursement:</b>	Resolve any problems or issues with how to bill for or obtain reimbursement for HIV testing	<b>Routine automated testing:</b>	HIV testing is routinely run in lab on an automated analyzer
<b>EMR prompts:</b>	EMR reminder pop-ups, pages, or notes to remind providers to offer/order HIV testing	<b>IT support:</b>	IT staff are willing to provide assistance in modifying systems and/or collecting data for the purposes of expanding testing		
<b>Standing orders:</b>	HIV testing included in a panel of tests that are routinely run on all admitted patients				

## RESULTS

The changes in process indicators were small. There was no significant difference in change in the process indicators between Improver and Non-Improver hospitals.

**Table 3. Mean Scores for Process Indicators — Emergency Departments**

		May 2012	Jan 2014	Change 2012 to 2014	OR (95%CI)
Overall	Improvers	5.0	9.7	4.7	2.6 (0.97, 6.9)
(Max 15)	Non-improvers	6.8	8.1	1.3	
Structural	Improvers	1.0	3.3	2.3	1.4 (0.8, 2.7)
(Max 6)	Non-improvers	1.8	2.6	0.8	
Buy-in	Improvers	2.3	4.0	1.7	1.8 (0.8, 4.2)
(Max 5)	Non-improvers	3.0	2.8	-0.2	
Lab	Improvers	1.7	2.3	0.7	1.0 (0.4, 2.6)
(Max 4)	Non-improvers	2.1	2.7	0.6	

ED Improvers = 3; ED Non-Improvers = 12

**Table 4. Mean Scores for Process Indicators — Inpatient Admissions**

		May 2012	Jan 2014	Change 2012 to 2014	OR (95%CI)
Overall	Improvers	6.3	7.3	1.0	0.9 (0.6, 1.4)
(Max 15)	Non-improvers	6.6	8.5	1.9	
Structural	Improvers	0.8	1.8	1.0	1.0 (0.5, 1.8)
(Max 6)	Non-improvers	1.2	2.2	1.0	
Buy-in	Improvers	2.5	2.3	-0.3	1.0 (0.5, 1.8)
(Max 5)	Non-improvers	3.2	3.1	-0.1	
Lab	Improvers	3.0	3.3	0.3	0.6 (0.3, 1.6)
(Max 4)	Non-improvers	2.3	3.3	1.0	

IP Improvers = 4; IP Non-Improvers = 11

## CONCLUSION

HIV testing in EDs and IPs showed little increase over the course of the study, and there were only modest changes in the process indicators from 2012 to 2014. Hospitals did not accomplish many of the structural changes or adopt approaches for laboratory-based testing that were expected to increase HIV testing. We observed little to no improvement in buy-in indicators. There were no statistically significant associations between change in process scores and Improver/Non-Improver status of EDs or IPs. However, the trend in results in EDs suggested that a positive change in process indicators might correlate with increased HIV testing. Given the small changes in both HIV testing and process indicators, it is possible that more progress in the process indicators might have led to greater increases in HIV testing. More work may be necessary to identify alternative strategies for increasing hospital-based HIV testing.

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