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## Background

Harris Health System is the public safety net hospital system in the Houston, TX area. Following the 2006 CDC recommendations,<sup>1</sup> a routine HIV screening program (Routine Universal Screening for HIV [RUSH]) has been running at various sites across Harris Health since 2009.

Patients are informed at registration and are given the opt-out form along with other registration forms and patients 16 years of age or older who require a blood draw or IV insertion for other reasons during their visit receive an HIV screening unless they opt out. The program was designed in such a way to have minimum impact on the process flow of the busy emergency departments<sup>2</sup>.

Patients with a positive test result are contacted by the program's Service Linkage Workers (SLW) often before they leave the facilities. Our network of SLW's is an integral part of this program. They facilitate delivering test results, counsel patients, and link to care at our free-standing HIV clinic (Thomas Street Clinic) or refer them to the clinic of patients' choice.

## Objectives

To retrospectively study 5 years of routine HIV screening in two of Houston's busiest emergency centers and evaluate the outcomes of the program over the years

## Methods

For this study we evaluated data from the two emergency centers, which together account for more than half the HIV tests performed in Harris Health. All data were extracted from the health system's unified electronic medical record and electronic laboratory databases.

Tests with a positive result were sent to the City of Houston department of Health and Human Services where they compare them against local and national databases to determine if the patient is diagnosed for the first time or if they have been previously diagnosed.

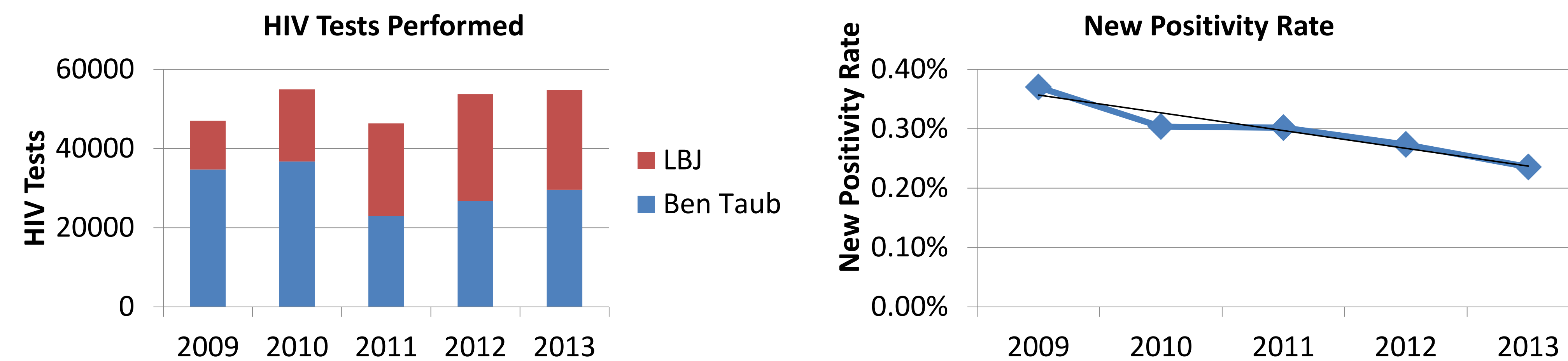
Annual new diagnosis rate was calculated by dividing the number of new diagnoses by the total number of HIV tests performed.

Initial CD4 count was defined as the first CD4 count with 6 months of diagnosis. Viral suppression was defined as having a viral load of less than 200 copies/ml within 12 months after diagnosis.

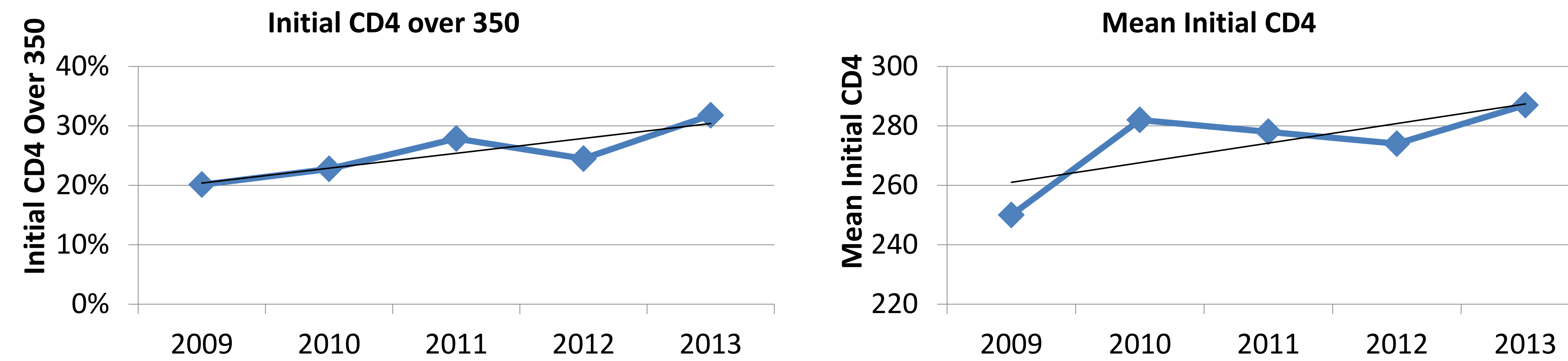
Linkage to care was defined as completing an HIV primary care visit within 90 days of diagnosis. Retention in care was defined as having completed at least two such visits within 12 months after diagnosis with two visits at least 3 months apart.

## Results

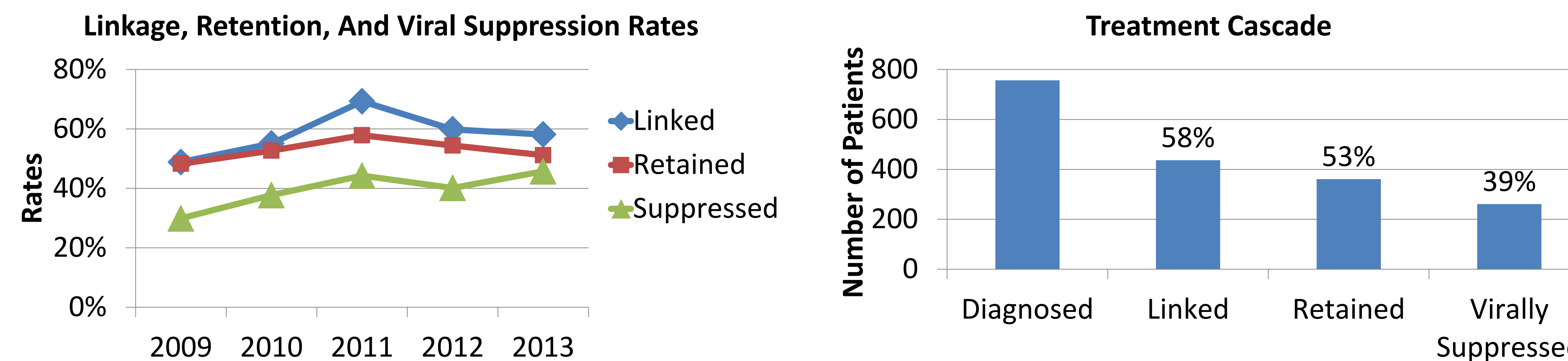
Between 2009 and 2013 a total of 256,888 tests were performed in the two EC's including 3946 tests with a positive result. 757 of the positive tests (0.29% of total tests) were new diagnoses. Rate of new diagnosis decreased from 0.37% in 2009 to 0.24% in 2013 (P=0.002):



Proportion of patients with an initial CD4 cell count over 350 had an increasing trend from 20% in 2009 to 32% in 2013 (P=0.167). Similarly, the average initial CD4 had an increasing trend from 250 in 2009 to 287 in 2013 (r=0.73; P=0.164):



Linkage to care (49% to 58%; P=0.007), retention in care (48% to 51%; P=0.026), and viral suppression within 12 months (30% to 46%; P<0.0001) improved over the years:



Male, Black, and young to middle-aged individuals had a disproportionately higher positivity rate. Male, Hispanic, and middle aged and older individuals showed better linkage, retention, and viral suppression:

Sex	Ethnicity	Age Group	Testing Year	HIV Testing (N=256,888)			New Diagnosis (N=757)			Linkage to Care Within 90 days (N=437)			Retention in Care (N=399)			Viral Suppression Within 12 Months (N=295)		
				N	%		N	%	New Positivity Rate	N	%	Linkage Rate	N	%	Retention Rate	N	%	Viral Suppression Rate
Female			2009	137,602	54%		196	26%	0.14%	101	23%	52%	92	23%	47%	72	24%	37%
Male			2010	119,286	46%		561	74%	0.47%	336	77%	60%	307	77%	55%	223	76%	40%
Black non-Hispanic		16-24	2011	85,050	33%		386	51%	0.45%	195	44%	51%	177	45%	46%	131	44%	34%
Hispanic		25-34	2012	126,009	49%		294	39%	0.23%	205	47%	70%	184	46%	63%	140	48%	48%
White non-Hispanic		35-44	2013	36,894	14%		70	9%	0.19%	33	8%	47%	33	8%	47%	21	7%	30%
Other		45-54		8935	4%		7	1%	0.08%	4	1%	57%	5	1%	71%	3	1%	43%
		55+		25,786	10%		90	12%	0.35%	42	10%	47%	36	9%	40%	23	8%	26%
				51,161	20%		211	28%	0.41%	124	28%	59%	115	29%	55%	82	28%	39%
				53,470	21%		206	27%	0.39%	114	26%	55%	109	27%	53%	71	24%	34%
				63,197	25%		168	22%	0.27%	103	24%	61%	94	24%	56%	77	26%	46%
				63,274	24%		82	11%	0.13%	54	12%	66%	45	11%	55%	42	14%	51%
			2009	47,010	18%		174	23%	0.37%	85	20%	49%	84	21%	48%	52	18%	30%
			2010	54,992	22%		167	22%	0.30%	92	21%	55%	88	22%	53%	63	21%	38%
			2011	46,375	18%		140	19%	0.30%	97	22%	69%	81	20%	58%	62	21%	44%
			2012	53,758	21%		147	19%	0.27%	88	20%	60%	80	20%	54%	59	20%	40%
			2013	54,753	21%		129	17%	0.24%	75	17%	58%	66	17%	51%	59	20%	46%
			<b>Total</b>	<b>256,888</b>	<b>100%</b>		<b>757</b>	<b>100%</b>	<b>0.29%</b>	<b>437</b>	<b>100%</b>	<b>58%</b>	<b>399</b>	<b>100%</b>	<b>53%</b>	<b>295</b>	<b>100%</b>	<b>39%</b>

## Conclusions

The program has been highly successful in screening patients and identifying undiagnosed HIV-infected persons.

Linkage and retention rates are at worst moderately successful. Nearly half the newly diagnosed in 2013 achieved viral suppression within a year, which is above national estimates.

Visit and laboratory data were not available from external sources, therefore the presented rates are likely lower bounds.

Decreasing rate of new diagnosis and improved initial CD4 over the years indicate that the program has made an impact in the community.

Male, Black, and young to middle-aged individuals continue to be disproportionately affected by the virus, while male, Hispanic, and middle aged and older individuals seem to have better health outcomes in this cohort.

When diagnosed early and put on antiretroviral therapy, HIV patients can lead healthy, normal lives and are less likely to infect others<sup>3</sup>. Even patients previously diagnosed with HIV could benefit from a routine HIV screening program by being linked or re-linked to care<sup>4</sup>. Therefore healthcare settings in high HIV prevalence areas should consider adopting CDC and USPSTF recommendations on HIV screening.

## References

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