

Decreases in HIV Prevalence in an Inner-city Emergency Department Correlate with Trends in HCV Infection But Not HSV-2 Infection

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Background

- Emergency Departments (EDs) serve as primary health care facilities for millions of individuals.
 - In 2011, there were 136 million ED visits representing 45% of the US population.
 - At the Johns Hopkins Hospital ED (JHED), there are >60,000 annual adult visits.
- EDs can also serve as a lens for revealing the state of public health within the local community.
- Starting in 1986-2013, the JHED conducted systematic serosurveys for HIV, Hep B & C, and HSV-2 infections on all adults requiring blood draws during a 6-8 week period.

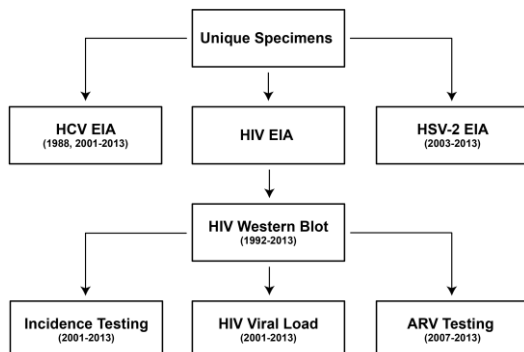
Objective

- Examine local trends in the HIV, HCV and HSV-2 epidemics in our ED population over past decade.
- Examine the potential contribution of changes in sexual and parenteral risk behavior by examining trends in HIV, HSV-2 and HCV infection in this population between 2003-2013.

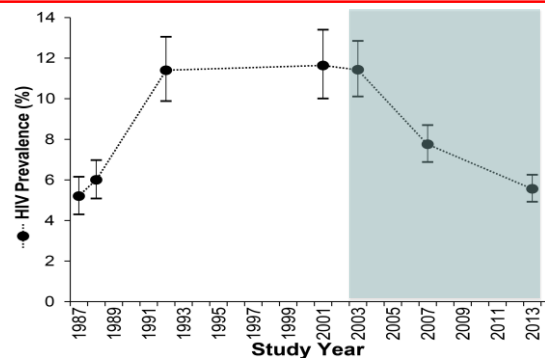
Methods

- A 6-8 week identity-unlinked serosurvey was conducted in the JHED in: 1987, 1988, 1992, 2001, **2003**, **2007**, and **2013**. A total of 18,144 patients were surveyed.
- Eligible patients were ≥18 years of age, required blood drawn for a medical reason, and had matched chart review data collected in real time.
- For patients who attended the JHED multiple times within the study period, only one visit was included in the study population.
- Excess sera was collected and assigned a unique study ID, devoid of any patient identifiers.
- Serologic analysis was conducted after all samples were irretrievably stripped of all protected health information.
- All studies were approved by the Johns Hopkins IRB.

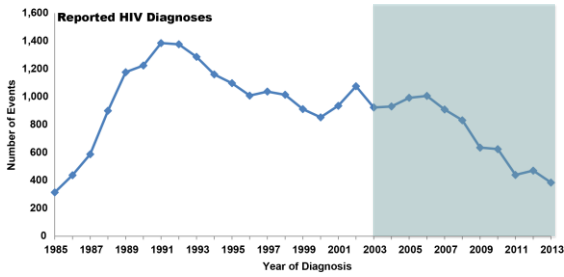
Laboratory Testing



HIV Prevalence



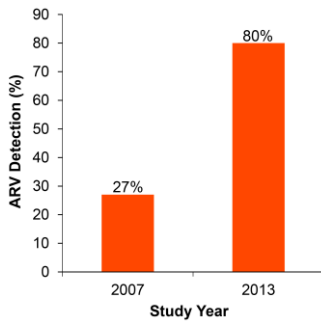
Trends in Reported HIV Diagnoses in Baltimore City



Study Population

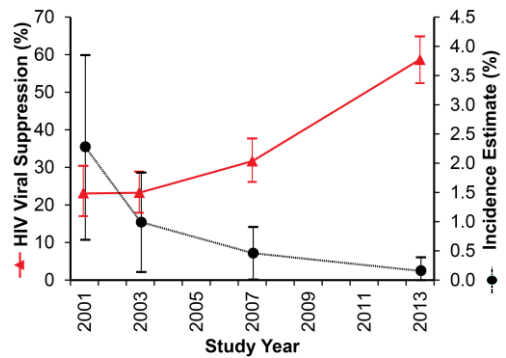
Characteristic	Study Year		
	2003 N=2144	2007 N=3417	2013 N=4713
Sex			
Male	45.5	46.0	45.1
Female	54.5	54.0	54.9
Race			
Black	69.0	67.3	63.1
White	26.4	26.9	29.4
Other	4.6	5.9	7.6
Age (years)			
Mean (SD)	48.0±17.1	46.3±16.8	46.5±17.5
15-24	9.8	11.3	11.3
25-34	14.0	16.5	19.4
35-44	22.0	21.4	15.3
45-54	22.3	22.5	21.6
≥55	31.7	28.2	32.3

Proportion of HIV+ with Detectable ARVs

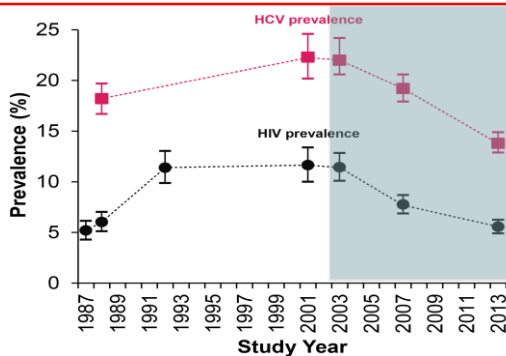


HPLC-tandem mass spectrometry (2007) and HPLC-high resolution accurate mass spectrometry (2013).

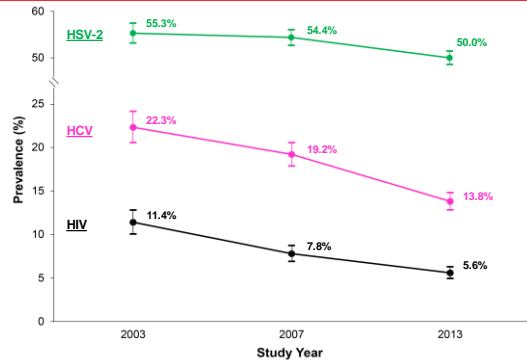
Viral Suppression and HIV Incidence



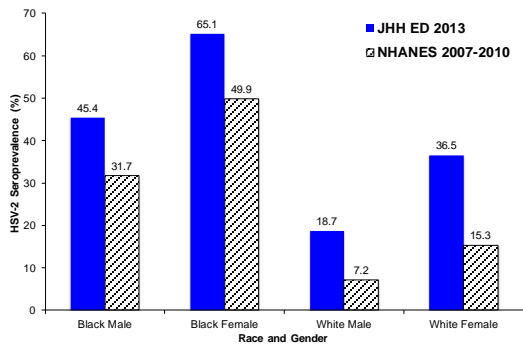
HIV & HCV Prevalence



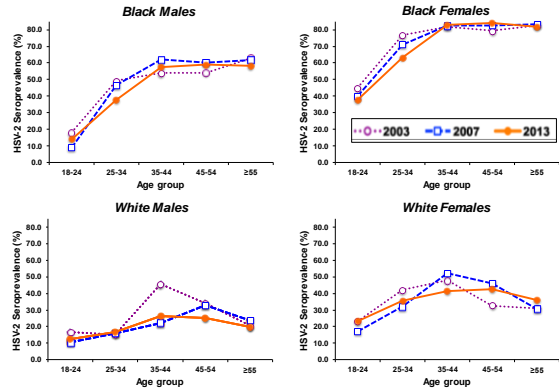
Prevalence of HIV, HCV and HSV-2 in ED Patients in 2003, 2007 and 2013



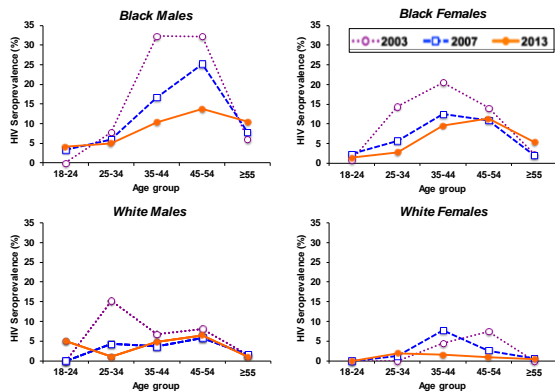
Comparison of HSV-2 in ED vs NHANES



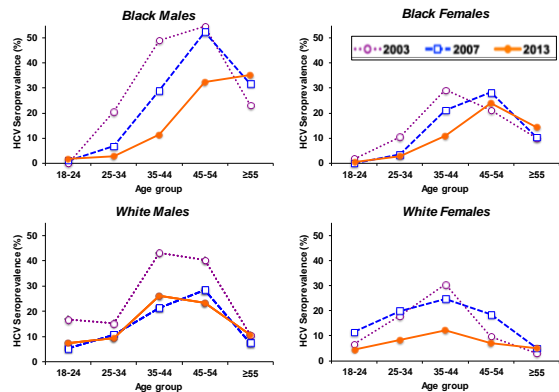
HSV-2 Prevalence in the JHH-ED From 2003-2013



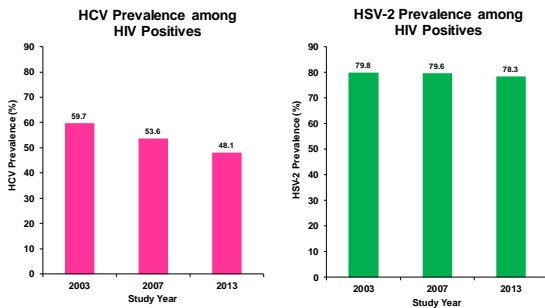
HIV Prevalence in the JHH-ED From 2003-2013



HCV Prevalence in the JHH-ED From 2003-2013



HIV Co-infection



Associations with HIV infection (2013)

	N (% HIV)	PRR (95% CI)
Age		
18-24	500 (2.2)	(ref)
25-34	800 (3.0)	1.32 (0.65, 2.68)
35-44	662 (7.4)	3.32 (1.75, 6.32)
45-54	971 (10.2)	4.58 (2.48, 8.46)
≥55	1417 (4.8)	2.15 (1.15, 4.04)
Gender		
Female	2432 (4.2)	(ref)
Male	1946 (6.9)	1.68 (1.32, 2.14)
Race		
White	1350 (1.9)	(ref)
Black	2987 (7.0)	3.87 (2.61, 5.74)
Co-infection		
Neither	1933 (1.5)	(ref)
HSV-2+ only	1855 (5.5)	3.55 (2.36, 5.34)
HCV+ only	214 (11.2)	7.24 (4.30, 12.21)
Both	410 (23.4)	15.12 (10.12, 22.59)

Conclusion

- The decline in HIV prevalence and incidence observed in the JHH ED population is most likely not attributable to changes in sexual behavior since age-based HSV-2 prevalence remained unchanged.
- Reductions in parenteral transmission, indicated by parallel declines in HCV seroprevalence, may have contributed to this waning HIV epidemic, in addition to increased ARV treatment and viral suppression.
- Interventions to reduce sexual risk behaviors, along with continued efforts to prevent parental transmission are needed to further drive the decline in HIV.

Acknowledgements

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