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Abstract

Background: HIV-positive adolescents and young adults (AYAs) are disproportionately affected by sexually transmitted infections (STIs). Despite national recommendations, STI screening remains low. Incomplete screening in addition to inconsistent reported sexual practices may lead to missed infections. This study aimed to determine the incidence and reinfection rates of co-STIs in HIV-positive AYAs and the discrepancy between site positivity and self-reported sexual history in this group.

Methods: Retrospective chart review was conducted for all patients aged 13-24 at Grady Ponce and Family Youth Clinic in Atlanta, GA from 2009-2018. Data were collected on demographics and STI events. STIs included gonorrhea (GC), chlamydia (CT), human papillomavirus (HPV), syphilis, trichomonas, herpes simplex virus (HSV), lymphogranuloma venereum (LGV), hepatitis C (HCV), bacterial vaginosis (BV), and chancroid. First STI incidence and incidence of reinfections were calculated by dividing new cases over corresponding person follow-up time.

Results: 621 sexually active HIV-positive AYAs were included. The mean age at first observation was 18.9 (± 2.8) years. 72% of patients were male, 92.3% were Black, and 79.7% were horizontally infected. 83.9% of patients had at least one STI during the study period. The overall first STI incidence rate for any STI was 45.2 per 100 person-years, with HPV, GC, CT, and syphilis as the most common STIs reported (Table 2). The overall recurrent incidence rate for any STI was 120.17 per 100 person-years with GC, CT, and syphilis as the most common recurrent infections (Table 2). Of all GC and CT infections, the majority were rectal (48.8% and 49.4%, respectively). Only 65.9% of patients with rectal GC and 68.9% with rectal CT infections reported recent receptive anal sex (Table 3).

Conclusions: Our study demonstrates disproportionately high incidence and reinfection rates of co-STIs in HIV-positive AYAs. Furthermore, many patients did not report exposure at their site of infection. If screening is done based off reported exposure history alone, many infections may be missed. Our data support the urgent need for increased STI screening in this population, including routine extragenital testing for GC and CT, even without reported exposure at these sites.

Introduction

- Individuals aged 15-24 account for half of all STIs diagnosed in the US
- HIV-infected adolescents and young adults are disproportionately affected by co-STIs, with a previously reported incidence of 35 STIs per 100 person-years in this group (Brownstein et al., *PIDJ*, 2015)
- The CDC recommends annual screening for STIs at sites of exposure
- Routine STI screening remains low in this population
- Incomplete screening and inconsistent reported sexual practices may lead to missed infections

Results

Table 1: Patient Characteristics

	N=621
Age at first observation (years), Mean \pm SD	18.9 \pm 2.8
Gender	
Male	447 (72%)
Female	148 (23.8%)
Transgender Female	25 (4%)
Transgender Male	1 (0.2%)
Race	
African American	573 (92.3%)
White	16 (2.6%)
Other	32 (5.1%)
Mode of HIV transmission	
Horizontal	495 (79.7%)
Vertical	123 (19.8%)
Not Documented	3 (0.5%)
Sexuality	
Homosexual	314 (50.6%)
Heterosexual	201 (32.4%)
Other	106 (17%)

Table 3: Concurrence Between Reported Sexual History and STI Site Positivity

Reported Sexual History		Gonorrhea		Chlamydia	
Oral		Positive Pharyngeal (N=186)	P-Value	Positive Pharyngeal (N=33)	P-Value
Yes		104 (55.9%)	0.031	17 (51.5%)	<0.001
No/Unknown		82 (44.1%)		16 (48.5%)	
Anal Receptive		Positive Rectal (N=317)		Positive Rectal (N=257)	
Yes		209 (65.9%)	<0.001	177 (68.9%)	<0.001
No/Unknown		108 (34.1%)		80 (31.1%)	
Anal Insertive¹		Positive Urogenital (N=211)		Positive Urogenital (N=136)	
Yes		113 (53.5%)	0.029	60 (44.1%)	0.127
No/Unknown		98 (46.5%)		76 (55.9%)	
Vaginal²		Positive Urogenital (N=106)		Positive Urogenital (N=168)	
Yes		30 (28.3%)	<0.001	83 (49.4%)	<0.001
No/Unknown		76 (71.7%)		85 (50.6%)	

¹Cis-male and transgender women only; ²Cis-female and transgender men or cis-male and transgender women who are not homosexual

Table 2: First and Recurrent Incidence Rates of Any STI and Individual STIs

Type (N=621)	Confirmed First STI	First STI Incidence (95% CI) per 100 Person-Years	Recurrent STI Incidence (95% CI) per 100 Person-Years
Any STI	521 (83.9%)	45.20 (41.44, 49.21)	120.17 (113.95, 126.65)
Individual STIs			
HPV	341 (54.9%)	19.21 (17.25, 21.34)	
Gonorrhea	301 (48.5%)	15.09 (13.46, 16.87)	53.25 (47.88, 59.06)
Chlamydia	283 (45.6%)	14.08 (12.51, 15.80)	36.96 (32.47, 41.89)
Syphilis	231 (37.2%)	11.04 (9.69, 12.54)	34.34 (29.24, 40.10)
LGV	77 (12.4%)	3.08 (2.45, 3.83)	16.33 (11.08, 23.25)
HSV	72 (11.6%)	2.86 (2.26, 3.58)	
BV	65 (10.5%)	2.66 (2.07, 3.37)	24.07 (18.32, 31.08)
Trichomonas	44 (7.1%)	1.73 (1.28, 2.30)	23.40 (16.11, 32.95)
Hepatitis C	11 (1.8%)	0.42 (0.22, 0.72)	
Chancroid	1 (0.2%)	0.04 (0.003, 0.17)	0.00 (-0.09, 144.94)

Abbreviations: STI, sexually transmitted infection; HPV, human papilloma virus; LGV, lymphogranuloma venereum; HSV, herpes simplex virus; BV, bacterial vaginosis

Conclusions

- HIV-infected youth in Atlanta have disproportionately high first and recurrent incidence rates of STIs compared to previously reported data in this group
- Many patients did not report exposure at their site of infection with statistically significant disagreement between reported exposure history and site positivity for most sites
- If screening is done based on reported exposure history alone, many co-STIs may be missed
- Missed infections can lead to increased transmission of HIV and co-STIs, worsening of HIV disease, or disseminated infection
- There is considerable need for routine screening, including extragenital testing for GC and CT, even without reported exposure at these sites in HIV-infected youth