

# STD Surveillance Network Report

## STD Surveillance Network Overview

Traditionally, sexually transmitted disease (STD) surveillance activities involve collecting basic information on the age, sex, race/ethnicity, and county of residence of cases. However, in order to improve the design of public health programs for the prevention and control of STDs such as gonorrhea, more detailed information is needed on a broad cross-section of patients.

In response to such surveillance needs, the Centers for Disease Control and Prevention (CDC) established the STD Surveillance Network (SSuN). SSuN is intended to be a dynamic, flexible STD surveillance network composed of local enhanced STD surveillance systems following common protocols. The purpose of SSuN is to fill critical gaps in national surveillance as well as improve the capacity of national, state, and local STD programs to detect, monitor, and respond rapidly to trends in STDs through enhanced collection, reporting, analysis, visualization, and interpretation of disease information.

In the first funding cycle of SSuN (10/2005-9/2008), 5 geographically diverse health departments participated in enhanced gonorrhea surveillance in order to better characterize the epidemiology of gonorrhea. In the sec-

ond cycle of SSuN (10/2008-9/2013), the scope of the project was expanded to include all STDs, and 12 sites across the United States now participate in these enhanced surveillance activities. The SSuN project areas currently encompass 42 STD clinics, 115 counties, and 6 laboratories. Data collected as part of SSuN now capture approximately 20% of the total gonorrhea cases diagnosed annually in the United States.

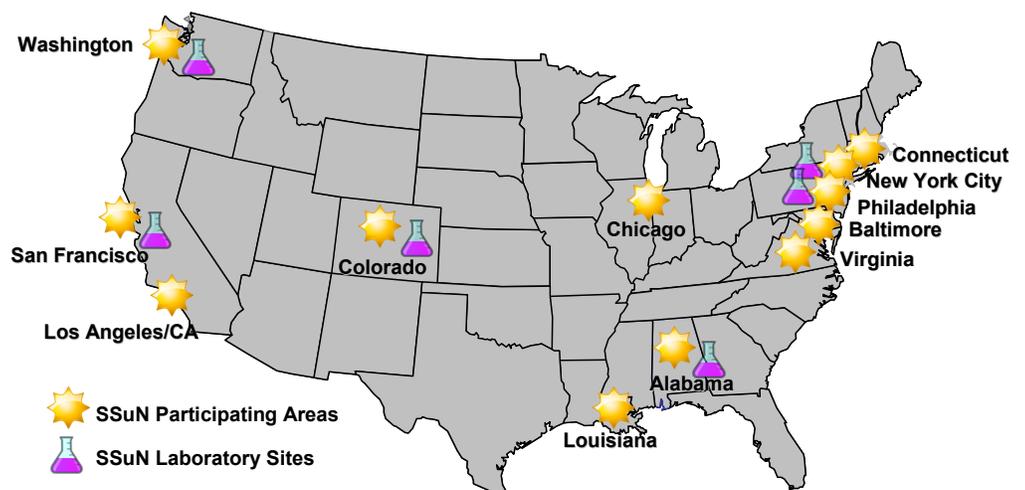
SSuN has two main components: STD clinic surveillance and *Neisseria gonorrhoeae* (NG) population surveillance. The former involves collecting enhanced information on patients presenting to STD clinics, while the latter involves interviewing a random sample of patients diagnosed with gonorrhea in the general population. The data captured as part of SSuN include information not only on STD diagnoses, but also on patient demographics and high-risk behaviors.

In Virginia, three localities participate in the SSuN project: Richmond City, Chesterfield County, and Henrico County. Enhanced surveillance data is captured for approximately 6,000 STD clinic visits and over 1,000 cases of gonorrhea each year in these three localities.

### Report Contents

STDs in Richmond	2
Management & Updates	3
STD Clinic Surveillance	4
By Diagnosis	7
By Sexual Orientation	10
Population Surveillance	12
Interviewed Cases	14
SSuN Analyses	16

Map 1. SSuN Cycle II Participating Project Areas and Labs, 2009-13



## STDs in the Richmond Area

*Chlamydia trachomatis* infection is the most commonly reported notifiable disease in the United States. The national chlamydia rate in 2010 was 426.0 cases per 100,000. The chlamydia rate in Virginia was 390.7 per 100,000.

Gonorrhea (*Neisseria gonorrhoeae* infection) is the second most commonly reported notifiable disease in the United States. In Virginia, the 2010 gonorrhea rate was 93.9 per 100,000 population, compared to a national gonorrhea rate of 100.8 per 100,000.

Rates of chlamydia cases have been increasing over the past decade, while gonorrhea rates have remained mostly stable with only a slight downward trend (Figure 1).

There are approximately 5,000-6,000 cases of chlamydia and 1,000 cases of gonorrhea diagnosed in the Richmond area each year (including the localities of Richmond City, Henrico County, and Chesterfield County).

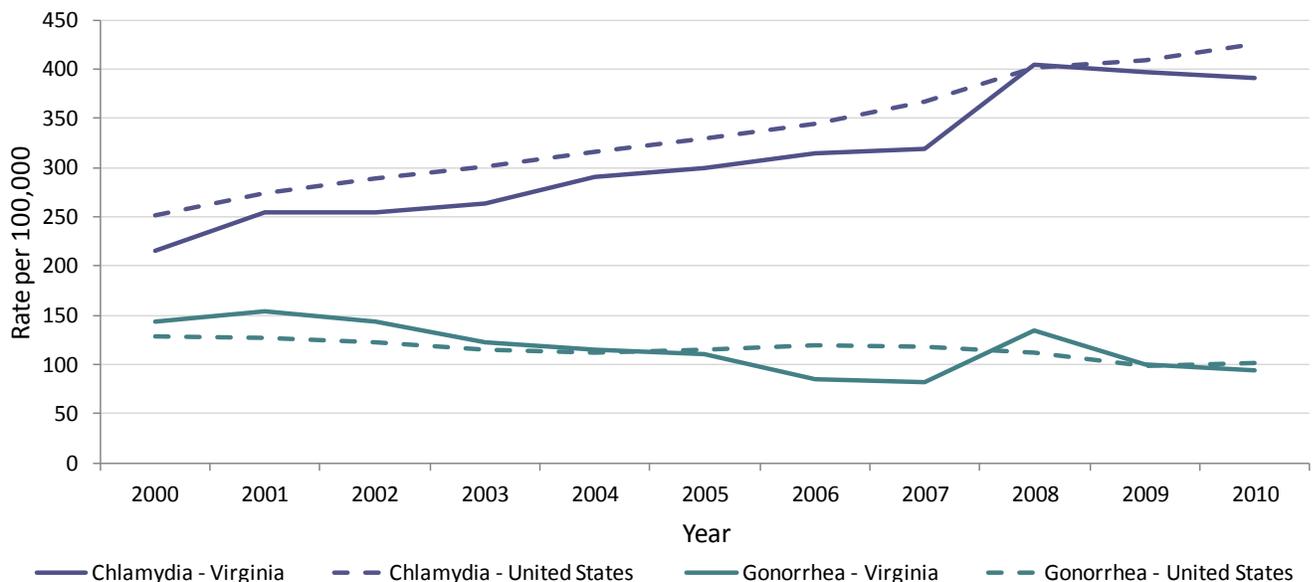
Richmond City has historically experienced one of the highest gonorrhea rates of any city in the United States. There are also large disparities in STD rates

between Richmond City and the surrounding localities. In 2011 the gonorrhea rate for Richmond City was 308.5 per 100,000, significantly higher than the 68.4 and 62.9 per 100,000 observed in Henrico and Chesterfield counties, respectively. That is, Richmond City's gonorrhea rate in 2011 was 4.5 times that of neighboring Henrico County and 5.0 times that of Chesterfield County.

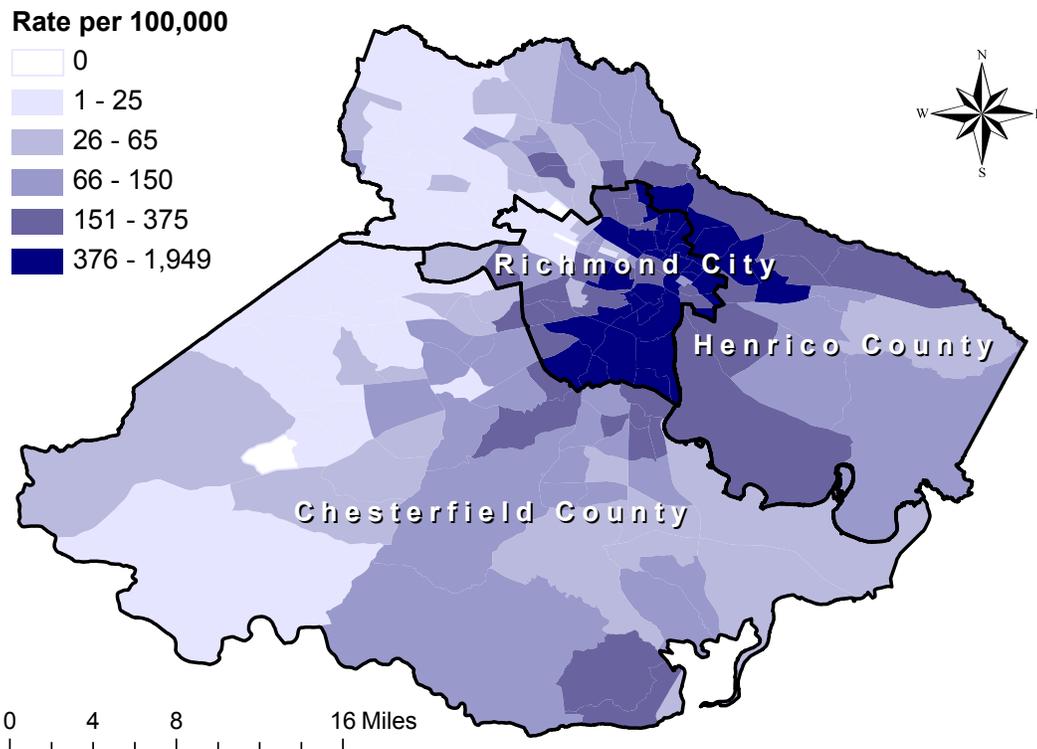
Distinct patterns can be observed in the spatial or geographic distribution of both chlamydia and gonorrhea rates in the Richmond area. High rates of these infections are consistently clustered in the eastern and central areas of the city and radiate outwards (Map 1). These high rates tend to be concentrated in areas with high levels of poverty and economic disadvantage, which are often disproportionately inhabited by minority populations.

For more information on national STD data, see the CDC's report, *Sexually Transmitted Disease Surveillance, 2010*: <http://www.cdc.gov/std/stats10/>

Figure 1. Annual Chlamydia and Gonorrhea Rates, 2000-2010



Map 1. 5-Year Average Gonorrhea Rates by Census Tract, 2006-2010



Source: Annual population estimates for each census tract were obtained from GeoLytics, Inc.

## Managing SSuN Activities in Virginia

SSuN project activities in Virginia are coordinated by Health Informatics and Integrated Surveillance Systems (HISS) staff within the Division of Disease Prevention (DDP) at the Virginia Department of Health's Central Office.

SSuN STD Clinic data collection activities involve collaboration with the health department STD clinics in the three participating Virginia health districts. Clinical staff at these local STD clinics distribute self-administered interview forms during the registration process to all patients visiting the clinic.

These completed interview forms are then sent to the central office for data entry into the SSuN data system. Data quality assurance and management activities also occur at the central office, including the integration of patient interview data with information on

STD diagnoses and treatment from other STD and HIV/AIDS surveillance data systems.

For SSuN NG population surveillance activities, HISS staff attempt to contact gonorrhea patients via phone to conduct interviews. These interviews include questions similar to those on the paper-based interview forms collected from STD clinics. Up to 10 attempts are made to contact each patient, and interviews are conducted within 60 days of the gonorrhea diagnosis.

The SSuN grant funds a full-time STD epidemiologist to coordinate SSuN activities in Virginia. In addition, masters of public health (MPH) students are often hired to assist with additional data collection activities such as conducting phone interviews with patients diagnosed with gonorrhea. These students also assist with data analyses and reports.

# STD Clinic Surveillance Data Summary

Interviews were captured for 19,952 patient visits to the three participating STD clinics during the 3 year period between January 1, 2009 and December 31, 2011 (out of 26,961 total clinic visits).

All patients presenting to these STD clinics were asked to complete a SSuN interview form during the registration process. This interview form captures information on patient demographics, risk behaviors, and STD history. Data from these interviews are later merged with patient diagnoses and treatment information from other STD reporting systems.

On average, 128 interviews were collected per week from 2009-2011, representing 74% of all clinic visits. The Richmond City STD clinic had the largest volume of patient visits, followed by Chesterfield and Henrico County clinics (Figure 2).

The majority of patients attended STD clinics within their own localities of residence, however there was considerable crossover between neighboring areas (Table 1). For example, approximately 20% of Richmond City and Henrico patients were residents of the opposite locality.

Figure 2. Summary of STD Clinic Visits by Quarter and Facility, 2009-2011

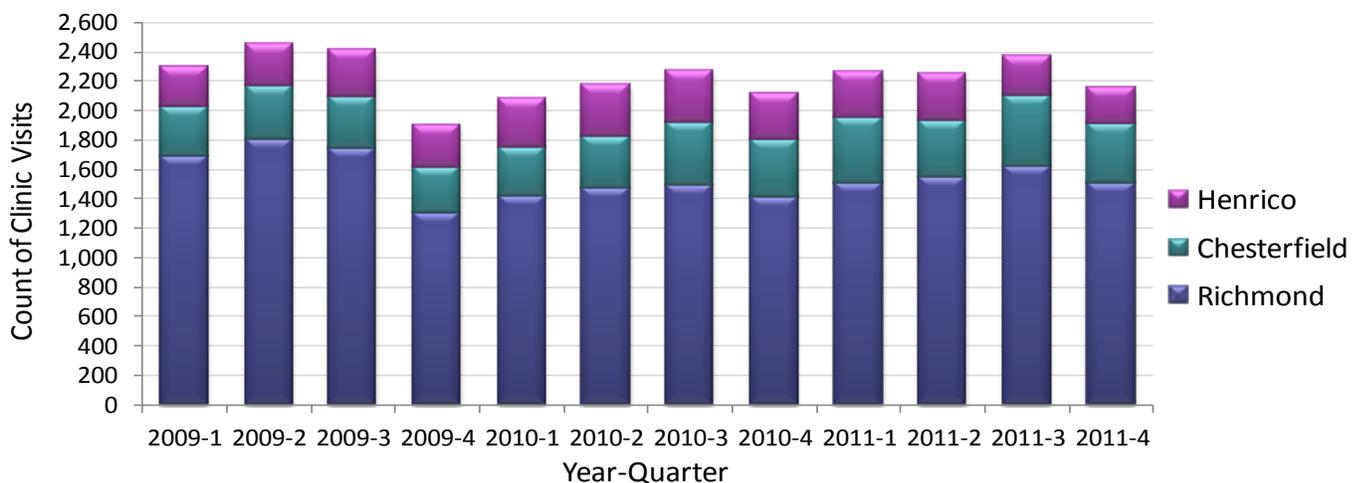


Table 1. Patient Locality of Residence by STD Clinic, 2009-2011

Locality of Residence	Overall		Richmond Clinic		Henrico Clinic		Chesterfield Clinic	
	N	%	N	%	N	%	N	%
Richmond City	9,148	45.9	8,234	56.1	509	20.0	405	14.8
Henrico County	5,207	26.1	3,416	23.3	1,712	67.3	79	2.9
Chesterfield County	3,426	17.2	1,489	10.1	93	3.7	1,844	67.5
Hanover County	313	1.6	230	1.6	79	3.1	4	0.1
Petersburg City	246	1.2	106	0.7	11	0.4	129	4.7
Colonial Heights	132	0.7	21	0.1	4	0.2	107	3.9
Other	759	3.8	535	3.6	95	3.7	129	4.7
Unknown	721	3.6	646	4.4	42	1.7	33	1.2
<b>Totals</b>	<b>19,952</b>		<b>14,677</b>		<b>2,545</b>		<b>2,730</b>	

## STD Clinic - Demographics by Facility

The demographic characteristics of interviewed patients attending SSuN-participating STD clinics are presented in Table 2.

STD clinic patients were fairly evenly distributed between males and females. However, the Richmond City STD clinic patients were more likely to be male than either the Henrico or Chesterfield County clinic patients (52% compared to 41-42% respectively).

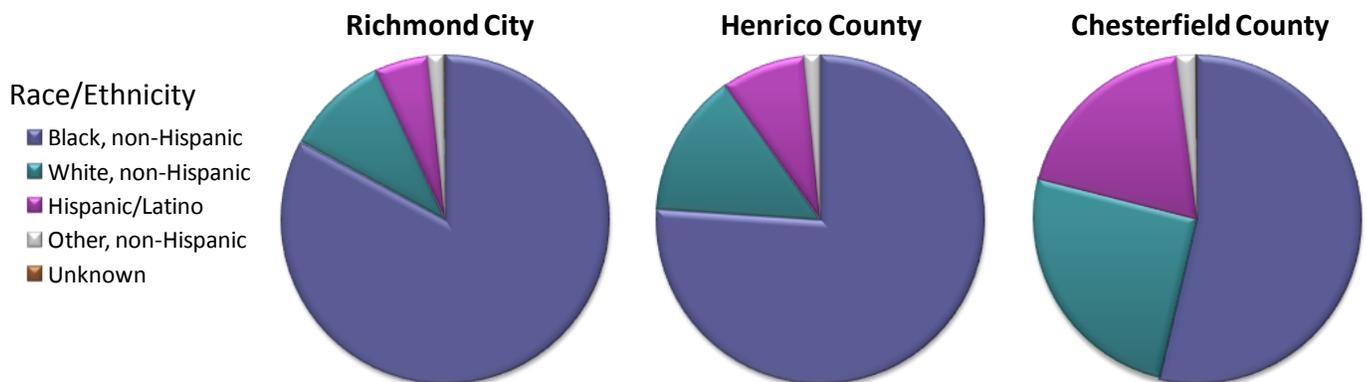
The majority of STD clinic patients were black, non-Hispanic (78%), but there were significant differences between clinics (Figure 3). Richmond City had the highest proportion of black patients; 83% of Richmond City patients were black compared to 76% of Henrico County patients. The Chesterfield County clinic had the lowest proportion of black patients

(54%) and the highest proportion of Hispanic/Latino patients (19%).

Consistent across the three clinics, most patients were between 20-24 (32%) or 25-34 (41%) years of age. Fifteen percent had less than a high school education, while 27% were either full- or part-time students. Thirty-five percent of clinic patients were unemployed at the time of their visit.

Most clinic patients had been previously tested for HIV, including 79% of patients at the Richmond City and Henrico County clinics and 68% at the Chesterfield County clinic (Table 3). Approximately 10% of all female patients reported being fully vaccinated for HPV, and another 7% were partially vaccinated.

Figure 3. Comparison of STD Clinic Patient Race/Ethnicity by Clinic, 2009-2011



### Summary of STD Clinic Patient Characteristics by Facility

- 73% of all STD clinic patients were between 20-34 years of age.
- Richmond City had the highest proportion of black patients (83%) compared to Henrico County (76%) and Chesterfield County (54%).
- Chesterfield County had the highest proportion of Hispanic patients (19%) compared to Richmond City (5%) and Henrico County (8%).
- 58-59% of patients attending the Chesterfield and Henrico STD clinics were female, while only 49% of Richmond City clinic patients were female.
- Approximately 16% of females reported being fully or partially vaccinated against Human Papillomavirus (HPV).

**Table 2. Characteristics of Patients Attending Richmond Area STD Clinics, 2009-2011**

Characteristic	Overall		Richmond		Henrico		Chesterfield	
	N	%	N	%	N	%	N	%
<b>Gender</b>								
Male	9,753	48.9	7,567	51.6	1,033	40.6	1,153	42.2
Female	10,173	51.0	7,088	48.3	1,509	59.3	1,576	57.7
Transgender	26	0.1	22	0.1	3	0.1	1	0.0
<b>Race/Ethnicity</b>								
Black, non-Hispanic	15,556	78.0	12,159	82.8	1,935	76.0	1,465	53.7
White, non-Hispanic	2,552	12.8	1,502	10.2	360	14.1	690	25.3
Hispanic/Latino	1,508	7.6	776	5.3	211	8.3	521	19.1
Other, non-Hispanic	319	1.6	229	1.6	39	1.5	51	1.9
Unknown	17	0.1	14	0.1	0	0.0	3	0.1
<b>Age</b>								
15-19 years	592	3.0	396	2.7	105	4.1	91	3.3
20-24 years	6,364	31.9	4,642	31.6	789	31.0	933	34.2
25-34 years	8,110	40.6	5,875	40.0	1,049	41.2	1,186	43.4
35-44 years	2,772	13.9	2,021	13.8	391	15.4	360	13.2
45+ years	2,114	10.6	1,743	11.9	211	8.3	160	5.9
<b>Education</b>								
Less than HS/GED	2,889	14.5	2,087	14.2	375	14.7	427	15.6
High school/GED	7,752	38.9	5,709	38.9	1,047	41.1	996	36.5
Some college	6,708	33.6	4,875	33.2	871	34.2	962	35.2
4+ years college	231	1.2	1,474	10.0	229	9.0	231	8.5
Unknown	114	0.6	532	3.6	23	0.9	114	4.2
<b>Employment</b>								
Employed	10,210	51.2	7,316	49.8	1,472	57.8	1,422	52.1
Unemployed	6,907	34.6	5,167	35.2	850	33.4	890	32.6
Other*	1,466	7.3	1,113	7.6	141	5.5	212	7.8
Unknown	1,369	6.9	1,081	7.4	82	3.2	206	7.5
<b>Student Status</b>								
Full-time student	3,605	18.1	2,636	18.0	447	17.6	522	19.1
Part-time student	1,745	8.7	1,286	8.8	233	9.2	226	8.3
Not a student	13,581	68.1	9,973	67.9	1,785	70.1	1,823	66.8
Unknown	1,021	5.1	782	5.3	80	3.1	159	5.8
<b>Totals</b>	<b>19,952</b>		<b>14,677</b>		<b>2,545</b>		<b>2,730</b>	

\* Includes retired, homemaker, and unable to work

Note: These data represent patient visits, but not necessarily unique patients. Individual patients may have attended participating STD clinics multiple times during the study period.

**Table 3. Testing and Vaccination History of STD Clinic Patients, 2009-2011**

	Overall		Richmond		Henrico		Chesterfield	
	N	%	N	%	N	%	N	%
Ever tested for HIV								
Yes	15,484	77.6	11,613	79.1	2,016	79.2	1,855	67.9
No	3,797	19.0	2,564	17.5	498	19.6	735	26.9
Unknown/Missing	671	3.4	500	3.4	31	1.2	140	5.1
HPV Vaccination Status*								
Not vaccinated	6,712	66.0	4,609	65.0	1,093	72.4	1,010	64.1
Partially vaccinated	690	6.8	489	6.9	88	5.8	113	7.2
Fully vaccinated	974	9.6	677	9.6	145	9.6	162	10.3
Unsure	1,151	11.3	880	12.4	88	5.8	183	11.6
Missing	636	6.3	443	6.3	95	6.3	108	6.9

\* Women only

## STD Clinic - Diagnosis Rates

Chlamydia was the most frequently diagnosed STD in the clinics, with a positivity rate of 14% (2,742 cases) between Jan. 1, 2009 and Dec. 31, 2011. The gonorrhea positivity rate during this period was 4% (837 cases). There were slight variations in positivity rates between clinics (Table 4). For example, the chlamydia rate was highest in Chesterfield County, while the gonorrhea rate was highest in Richmond City.

STD positivity rates were highest among patients who were male, black, younger ages, and with less education (Table 5). For example, 6% of male clinic patients were diagnosed with gonorrhea compared to 3% of females. Fifteen percent of non-Hispanic black pa-

tients were diagnosed with Chlamydia compared to 9% of non-Hispanic white patients and 10% of Hispanic patients.

Younger patients were significantly more likely to be diagnosed with both chlamydia and gonorrhea. Positivity rates were highest among 15-19 year olds, and decreased steadily with increasing age (Figure 4).

STD positivity rates also increased with increased engagement in high-risk behaviors (Table 6), such as not using a condom at last sex and marijuana use. Having multiple sex partners was also associated with an increased STD positivity rate (Figure 5).

**Table 4. Patient Diagnoses by STD Clinic, 2009-2011**

Diagnosis	Overall		Richmond		Henrico		Chesterfield	
	N	%	N	%	N	%	N	%
Chlamydia	2,742	13.7	1,965	13.4	345	13.6	432	15.8
Gonorrhea	837	4.2	663	4.5	86	3.4	88	3.2
Syphilis	72	0.4	53	0.4	14	0.6	5	0.2
Totals	19,952		14,677		2,545		2,730	

Table 5. STD Positivity Rates by Patient Characteristics, 2009-2011

Characteristic*	Total	Chlamydia		Gonorrhea		Syphilis	
	N	N	%	N	%	N	%
<b>Gender</b>							
Male	9,753	1,535	15.7	538	5.5	56	0.6
Female	10,173	1,205	11.8	299	2.9	14	0.1
Transgender	26	2	7.7	0	0.0	2	7.7
<b>Race/Ethnicity</b>							
Black, non-Hispanic	15,556	2,309	14.8	786	5.1	62	0.4
White, non-Hispanic	2,552	239	9.4	22	0.9	2	0.1
Hispanic/Latino	1,508	157	10.4	18	1.2	7	0.5
Other, non-Hispanic	319	36	11.3	10	3.1	1	0.3
Unknown	17	1	5.9	1	5.9	0	0.0
<b>Age</b>							
15-19 years	592	156	26.4	34	5.7	0	0.0
20-24 years	6,364	1,334	21.0	358	5.6	18	0.3
25-34 years	8,110	1,005	12.4	352	4.3	23	0.3
35-44 years	2,772	178	6.4	54	1.9	18	0.6
45+ years	2,114	69	3.3	39	1.8	13	0.6
<b>Education</b>							
Less than HS/GED	2,889	458	15.9	150	5.2	9	0.3
High school/GED	7,752	1,253	16.2	385	5.0	30	0.4
Some college	6,708	814	12.1	235	3.5	24	0.4
4+ years college	1,934	133	6.9	26	1.3	7	0.4

\* Some unknown/missing categories not shown

Figure 4. STD Positivity Rates by Patient Age, 2009-2011

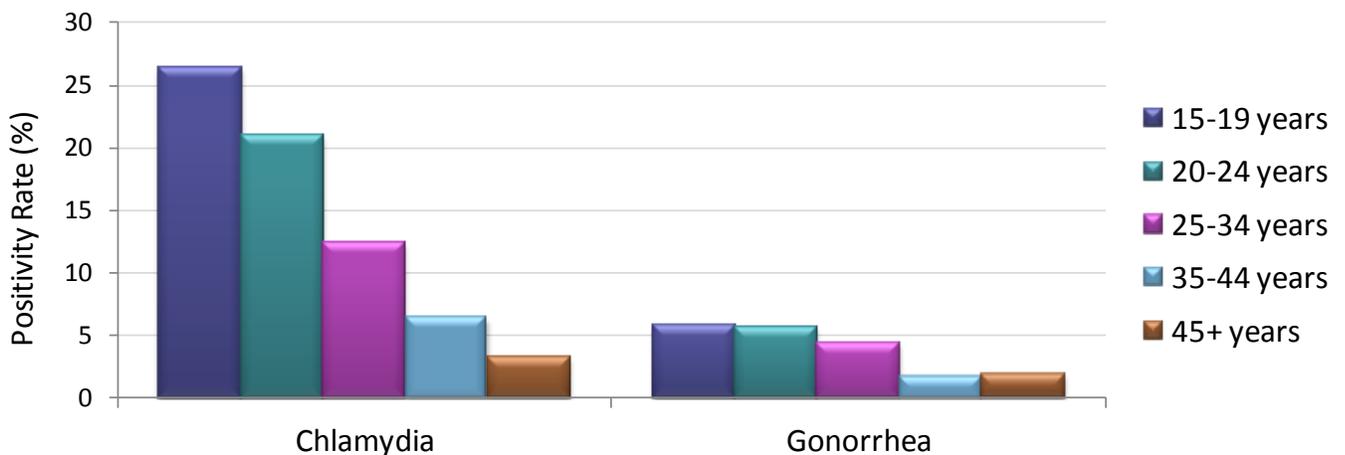


Table 6. STD Positivity Rates by Patient Risk Behaviors, 2009-2011

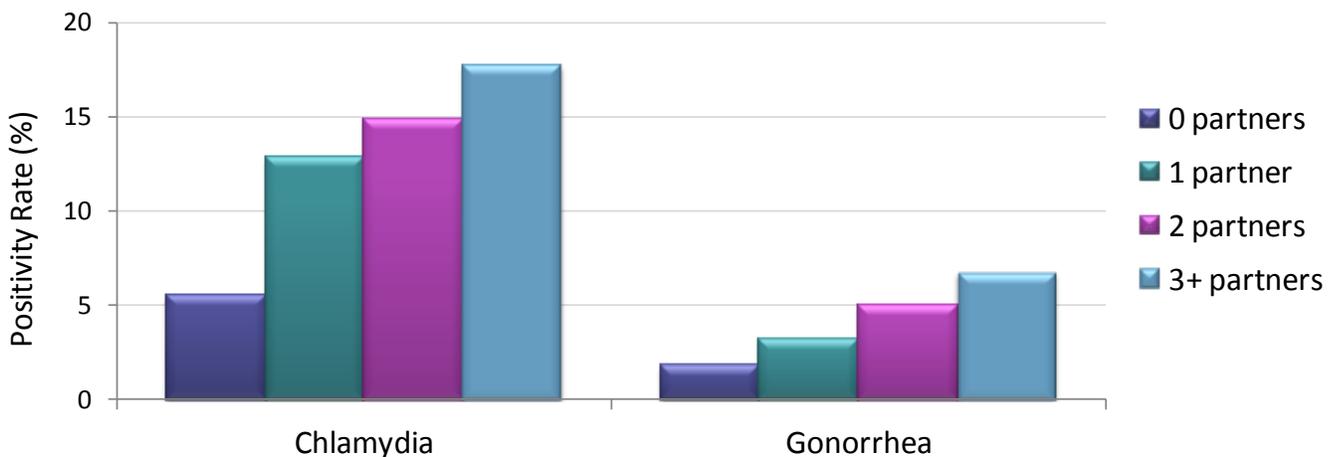
Characteristic*	Total	Chlamydia		Gonorrhea		Syphilis	
	N	N	%	N	%	N	%
Used condom last sex							
Yes	6,968	836	12.0	262	3.8	27	0.4
No	11,723	1,748	14.9	517	4.4	36	0.3
Anonymous Sex <sup>†</sup>							
Yes	1,523	196	12.9	71	4.7	5	0.3
No	10,282	1,351	13.1	343	3.3	7	0.1
Marijuana use <sup>†</sup>							
Yes	5,521	941	17.0	314	5.7	17	0.3
No	7,505	884	11.8	222	3.0	7	0.1
Incarcerated <sup>†</sup>							
Yes	1,357	206	15.2	67	4.9	3	0.2
No	10,822	1,412	13.0	379	3.5	12	0.1
Number of sex partners <sup>‡</sup>							
0 partners	1,030	57	5.5	19	1.8	18	1.7
1 partner	9,681	1,243	12.8	309	3.2	24	0.2
2 partners	4,903	727	14.8	245	5.0	17	0.3
3+ partners	2,979	530	17.8	203	6.8	9	0.3

\* Unknown/missing categories not shown

<sup>†</sup> In the previous 12 months

<sup>‡</sup> In the previous 3 months

Figure 5. STD Positivity Rates by Number of Sex Partners in Previous 3 Months, 2009-2011



## STD Clinic - Sexual Orientation

The SSuN interview form solicits patient information about sexual orientation as well as the gender of their most recent sexual partners. Based on these data, 7% of male patients and 2% of female patients reported being homosexual, while 3% and 7% of males and females respectively reported being bisexual (Figure 6).

Overall, men who have sex with men (MSM) represented 3.5% of all clinic visits, while bisexual individuals comprised 5% of all clinic patients (Table 7).

STD positivity rates varied by patient sexual orientation (Table 8). Chlamydia rates were highest among men who have sex with women (MSW), and lowest among MSM (17% compared to 3%). Gonorrhea rates

were higher among MSW, MSM, and bisexuals compared to women (~5% vs. 3%). Syphilis rates were highest among MSM.

Patient high-risk behaviors also varied by sexual orientation (Table 9, Figure 7). MSM and bisexuals were more likely to report condom use relative to MSW or women. MSM were also most likely to report engaging in anonymous sex (18%) and meeting sex partners on the internet (35%). MSW reported the highest frequency of being incarcerated in the past year (12%). Approximately 25% of MSM and bisexuals had 3 or more sex partners in the previous 3 months, compared to 21% of MSW and 8% of women.

Figure 6. STD Clinic Patient Sexual Orientation by Gender, 2009-2011

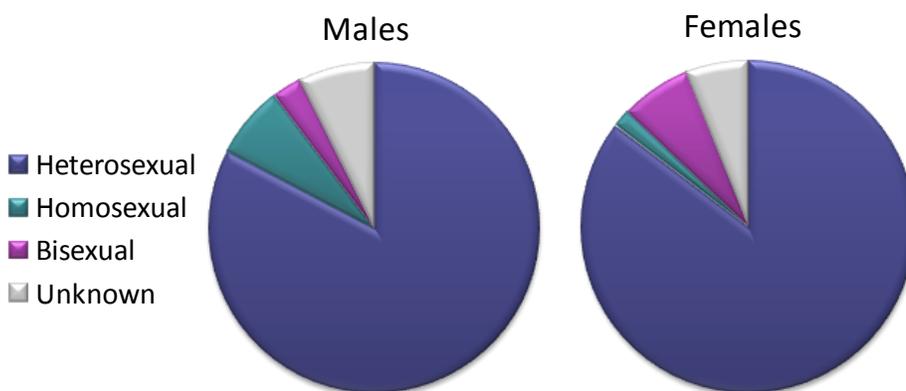


Table 7. STD Clinic Patient Sexuality, 2009-2011

Sexuality	N	%
MSM*	695	3.5
MSW <sup>†</sup>	8,196	41.1
Women	9,466	47.4
Bisexual <sup>‡</sup>	988	5.0
Transgender <sup>‡</sup>	26	0.1
Unknown	581	2.9

\* Men who have sex with men

† Men who have sex with women

‡ Includes both men and women

Table 8. STD Positivity Rates by Sexual Orientation, 2009-2011

Sexual Orientation	Total	Chlamydia		Gonorrhea		Syphilis	
	N	N	%	N	%	N	%
MSM*	695	21	3.0	36	5.2	24	3.5
MSW <sup>†</sup>	8,196	1,409	17.2	449	5.5	18	0.2
Women	9,466	1,104	11.7	274	2.9	14	0.1
Bisexual <sup>‡</sup>	988	110	11.1	46	4.7	9	0.9
Transgender <sup>‡</sup>	26	2	7.7	0	0.0	2	7.7
Unknown	581	96	16.5	32	5.5	5	0.9

\* Men who have sex with men

† Men who have sex with women

‡ Includes both men and women

Table 9. STD Clinic Patient Risk Behaviors by Sexual Orientation, 2009-2011

Risk Behavior*	MSM <sup>†</sup>		MSW <sup>‡</sup>		Women		Bisexual <sup>§</sup>	
	N	%	N	%	N	%	N	%
Used condom last sex	398	57.3	3,004	36.7	3,032	32.0	418	42.3
Ever tested for HIV	625	89.9	5,971	72.9	7,677	81.1	831	84.1
Anonymous sex <sup>  </sup>	128	18.4	848	10.3	435	4.6	106	10.7
Met sex partner on internet <sup>  </sup>	241	34.7	346	4.2	180	1.9	123	12.4
Marijuana use <sup>  </sup>	229	32.9	3,002	36.6	1,802	19.0	400	40.5
Incarcerated <sup>  </sup>	38	5.5	941	11.5	290	3.1	82	8.3
Exchanged money or drugs for sex <sup>  </sup>	10	1.4	95	1.2	82	0.9	30	3.0
Number of sex partners <sup>¶</sup>								
0 partners	54	7.8	414	5.1	467	4.9	53	5.4
1 partner	262	37.7	3,503	42.7	5,558	58.7	340	34.4
2 partners	184	26.5	2,264	27.6	2,131	22.5	315	31.9
3+ partners	173	24.9	1,740	21.2	797	8.4	258	26.1
<b>Totals</b>	<b>695</b>		<b>8,196</b>		<b>9,466</b>		<b>988</b>	

\* Data exclude interviews where information on patient gender or sexuality is missing (N = 581). Transgender individuals are also excluded due to small numbers (N = 26). Unknown/missing data on risk behaviors is not shown.

† Men who have sex with men

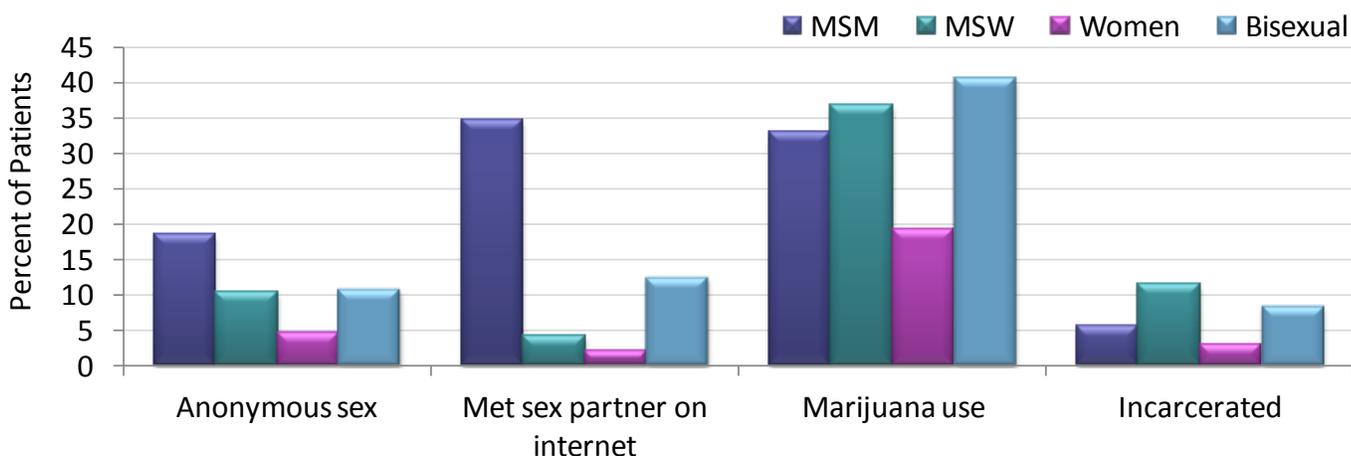
‡ Men who have sex with women

§ Includes both men and women

|| In the previous 12 months

¶ In the previous 3 months

Figure 7. Risk Behaviors in Past Year by Sexual Orientation, 2009-2011



## NG Population Surveillance

In the Richmond metropolitan area (including the localities of Richmond City, Henrico and Chesterfield counties), there were 2,018 cases of gonorrhea diagnosed in 2010-2011 and reported to the Virginia Department of Health who were eligible to be interviewed for SSuN population surveillance.

Of these cases, the majority were black and between 15-34 years of age (Figure 10, Table 12). Approximately 43% of all diagnosed cases were male and 57% were female.

Most cases were diagnosed by emergency rooms or urgent care clinics (36%), followed by family planning or reproductive health facilities (25%), and STD clinics (24%).

There were some notable differences in diagnosing facility by gender (Figure 11). Men were most likely to be diagnosed with gonorrhea at emergency rooms or urgent care clinics (46%), while women were more likely to be diagnosed at reproductive health facilities (42%).

As part of SSuN *Neisseria gonorrhoeae* (NG) population surveillance activities, HISS staff attempt to contact all individuals diagnosed with gonorrhea in the general population and ask these patients to participate in a brief phone interview. These interviews capture information on patient demographics and risk behaviors similar to that collected in the STD clinics.

A total of 480 gonorrhea cases were interviewed in the Richmond area from 2010-2011. Most of these cases were black, heterosexual, and between 20-24 years of age (Table 13).

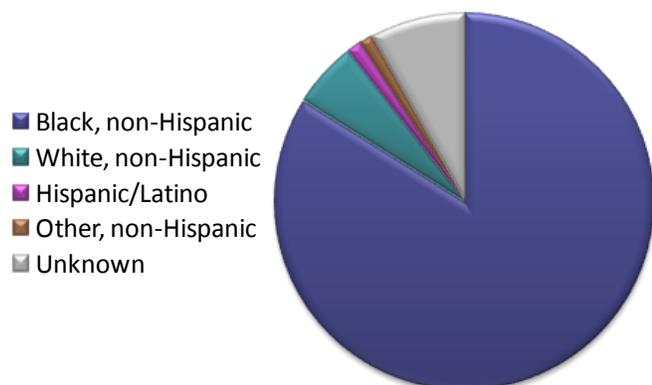
Women diagnosed with gonorrhea tended to be younger than men (Figure 12). Forty-nine percent of cases were unemployed at the time of the interview, although unemployment was higher among women (55%) than among men (39%) (Figure 13).

A large proportion of interviewees reported engaging in high-risk behaviors (Table 14), such as not using a condom at last sexual encounter (68%), having sex with someone they were not able to contact again (14%), using marijuana (27%), and having more than one sex partner in the previous 3 months (40%).

Similar to the STD clinic surveillance data, reported engagement in these behaviors varied significantly by gender. For example, men were more likely to be older, employed, engage in anonymous sex, and report having 3 or more sexual partners in the previous 3 months. Women were less likely to report condom use at last sexual intercourse (27% vs. 39%).

Approximately 20% of interviewed men reported homosexual or bisexual orientation. Behaviors varied slightly by sexual orientation (not shown), although the small numbers of homosexual or bisexual individuals interviewed precluded meaningful analysis.

Figure 10. Gonorrhea Cases by Race, 2010-11



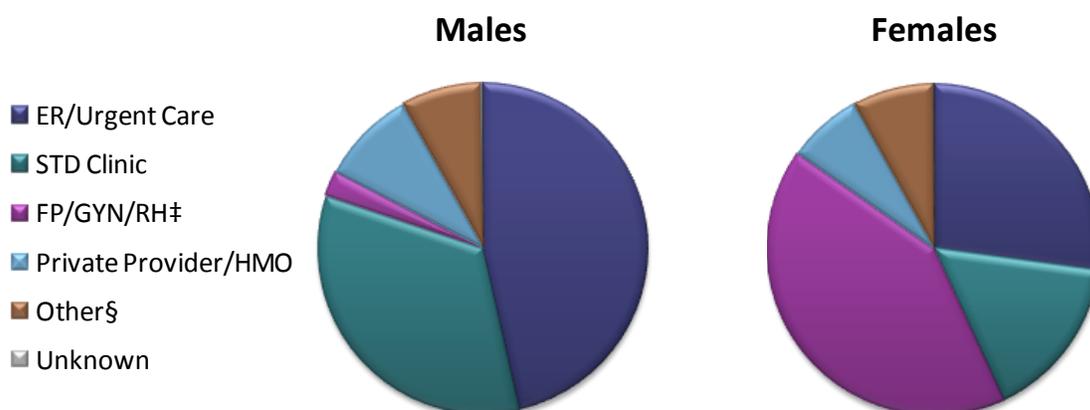
### 2010-2011 Overview

- 2,018 cases of gonorrhea
  - 84% black
  - 57% female
  - 36% diagnosed by ER/Urgent Care
  - 67% between 15-24 years of age
- 480 phone interviews conducted
  - 89% black
  - 60% female
  - 69% between 15-24 years of age

Table 12. Characteristics of Gonorrhea Cases, SSuN Population Surveillance, 2010-2011

Characteristic	Total*		Male†		Female†		
	N	%	N	%	N	%	
<b>Race</b>							
Black, non-Hispanic	1,694	83.9	728	83.7	965	84.4	* Includes all cases of gonorrhea diagnosed in the localities of Richmond City, Henrico County, and Chesterfield County between 01/01/2010 and 12/31/2011 who were eligible to be interviewed for SSuN (these data may exclude some cases due to reporting delays)
White, non-Hispanic	113	5.6	52	6.0	60	5.2	
Hispanic/Latino	26	1.3	11	1.3	15	1.3	
Other, non-Hispanic	23	1.1	9	1.0	14	1.2	
Unknown	162	8.0	70	8.0	90	7.9	
<b>Age</b>							
0-9 years	1	0.0	1	0.1	0	0.0	† Male and female totals exclude 2 transgender cases and 2 cases with missing gender
10-14 years	7	0.3	3	0.3	4	0.3	
15-19 years	589	29.2	172	19.8	416	36.4	
20-24 years	769	38.1	326	37.5	441	38.5	
25-34 years	458	22.7	231	26.6	226	19.8	
35-44 years	129	6.4	92	10.6	37	3.2	
45+ years	63	3.1	44	5.1	19	2.2	
Unknown	2	0.1	1	0.1	1	0.1	
<b>Provider Type</b>							
ER/Urgent Care	719	35.6	404	46.4	313	27.4	‡ Family planning / OB GYN / reproductive health facility
STD Clinic	478	23.7	293	33.7	185	16.2	
FP/GYN/RH‡	502	24.9	22	2.5	480	42.0	§ Includes hospital, public clinic (non-STD), school, jail/prison, military, outreach, HIV care clinic, and other
Private Provider/HMO	166	8.2	81	9.3	84	7.3	
Other§	150	7.4	68	7.8	91	8.0	
Unknown	3	0.1	2	0.2	1	0.1	
<b>Totals</b>	<b>2,018</b>		<b>870</b>		<b>1,144</b>		

Figure 11. Provider Type Diagnosing Gonorrhea Cases by Gender, 2010-2011



**Table 13. Characteristics of Interviewed Gonorrhea Cases, 2010-2011**

Characteristic	Total		Male†		Female‡	
	N	%	N	%	N	%
<b>Race</b>						
Black, non-Hispanic	427	89.0	164	85.9	263	91.3
White, non-Hispanic	28	5.8	17	8.9	10	3.5
Hispanic/Latino	14	2.9	5	2.6	9	3.1
Other, non-Hispanic	10	2.1	4	2.1	6	2.1
Unknown	1	0.2	1	0.5	0	0.0
<b>Age</b>						
10-14 years	2	0.4	1	0.5	1	0.3
15-19 years	144	30.0	32	16.8	112	38.9
20-24 years	186	38.8	75	39.3	111	38.5
25-34 years	105	21.9	48	25.1	56	19.4
35-44 years	24	5.0	21	11.0	3	1.0
45+ years	19	4.0	14	7.3	5	1.7
<b>Sexuality</b>						
Heterosexual	427	89.0	151	79.1	276	95.8
Homosexual	27	5.6	25	13.1	2	0.7
Bisexual	24	5.0	14	7.3	9	3.1
Unknown	2	0.4	1	0.5	1	0.3
<b>Education</b>						
Less than HS/GED	136	28.3	41	21.5	95	33.0
High school/GED	179	37.3	81	42.4	98	34.0
Some college	137	28.5	53	27.7	83	28.8
4 years college or more	27	5.6	16	8.4	11	3.8
Unknown	1	0.2	0	0.0	1	0.3
<b>Employment</b>						
Employed	222	46.3	104	54.5	117	40.6
Unemployed	234	48.8	75	39.3	159	55.2
Other‡	19	4.0	10	5.2	9	3.1
Unknown	5	1.0	2	1.0	3	1.0
<b>Student Status</b>						
Full-time student	123	25.6	38	19.9	85	29.5
Part-time student	42	8.8	9	4.7	33	11.5
Not a student	315	65.6	144	75.4	170	59.0
<b>Totals</b>	<b>480</b>		<b>191</b>		<b>288</b>	

† Excludes 1 transgender individual

‡ Includes retired, homemaker, and unable to work

Figure 12. Age of Interviewed Gonorrhea Cases by Gender, 2010-2011

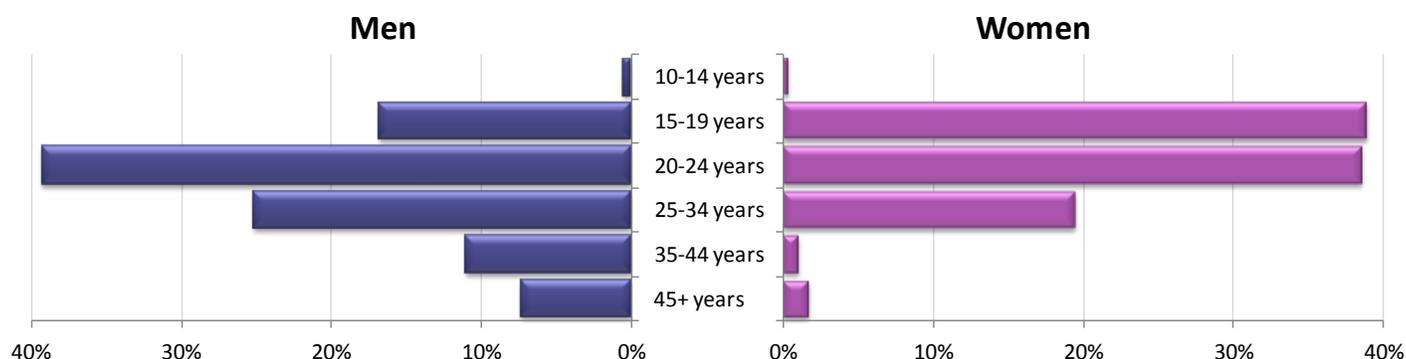


Figure 13. Employment Status of Interviewed Gonorrhea Cases by Gender, 2010-2011



Table 14. Risk Behaviors of Interviewed Gonorrhea Cases by Gender, 2010-2011

Risk Behaviors*	Total		Male†		Female†	
	N	%	N	%	N	%
Used condom last sex	155	32.3	75	39.3	79	27.4
Anonymous sex‡	67	14.0	41	21.5	26	9.0
Exchanged sex‡	4	0.8	0	0.0	4	1.4
Incarcerated‡	42	8.8	26	13.6	16	5.6
Marijuana use‡	131	27.3	60	31.4	71	24.7
Number of sex partners§						
0 partners	7	1.5	5	2.6	2	0.7
1 partner	271	56.5	76	39.8	195	67.7
2 partners	129	26.9	62	32.5	66	22.9
3+ partners	64	13.3	44	23.0	20	6.9
Totals	480		191		288	

\* Unknown/missing categories not shown

† In the previous 12 months

‡ Excludes 1 transgender individual

§ In the previous 3 months

# Recent SSuN Publications & Presentations

SSuN activities include not only collecting enhanced surveillance data on STD clinic patients and gonorrhea cases, but also analyzing these data. Research and data analysis is an important component of the SSuN grant.

VDH staff have collaborated with researchers at the Centers for Disease Control and Prevention (CDC), along with researchers from other SSuN-participating sites across the US, to produce several analyses which have recently been published in scientific journals. Below is a sample of some recent manuscripts on which VDH staff have contributed:

- Newman, Dowell, Bernstein, et al. A tale of two gonorrhea epidemics: Results from the STD Surveillance Network. *Public Health Reports*. 2012: 127.
- Dowell, Tian, Stover, et al. Changes in fluoroquinolone use for gonorrhea following publication of revised treatment guidelines. *American Journal of Public Health*. 2012: 102(1).
- Meites, Llata, Hariri, et al. HPV vaccine implementation in STD clinics-STD Surveillance Network. *Sexually Transmitted Disease*. 2012: 39(1).
- Llata, Kerani, Braxton, et al. Prevalence of genital warts among STD clinic patients - STD Surveillance Network, United States, January 2010 - December 2011. [Under Review]
- Pugsley, Chapman, Kennedy, Hongjie, Lapane. A multi-level assessment of disproportionate population sex ratios and high risk sexual behaviors among STD clinic patients. [Under Review]

**If you are interested in learning more about any of these analyses, please contact River Pugsley ([river.pugsley@vdh.virginia.gov](mailto:river.pugsley@vdh.virginia.gov))**



In addition, the following analyses, conducted by DDP staff, were presented at the National STD Prevention Conference held in Minneapolis, MN in March 2012.

- Pugsley, Vasiliu, Stover. Broken windows and sex in the city: A multi-level assessment of neighborhood physical conditions and high-risk sexual behaviors.
- Pugsley, Vasiliu, Carter, Stover. Associations between age of sexual initiation, high-risk sexual behaviors, and area-based social determinants of health.
- Phelan, Stover, Pugsley, Bissette. Using sentinel surveillance data as added value to traditional STD prevention strategies.

VDH staff also collaborated on the following SSuN analyses, also presented at this national conference:

- Stenger et al. Toward a social ecology of *N. gonorrhoeae*: Association of incidence in females with neighborhood characteristics in five geographically disparate states, 2006-2008.
- Llata et al. New HIV diagnoses among men who have sex with men attending STD clinics in the STD Surveillance Network (SSuN) - July 1, 2010 to June 30, 2011.

Health Informatics & Integrated Surveillance Systems  
Division of Disease Prevention  
Office of Epidemiology  
Virginia Department of Health

<http://www.vdh.virginia.gov/epidemiology/DiseasePrevention/data/>

109 Governor Street  
P.O. Box 2448, Room 326  
Richmond, VA 23218-2448

SSuN Coordinator: River Pugsley  
[river.pugsley@vdh.virginia.gov](mailto:river.pugsley@vdh.virginia.gov)  
SSuN Principal Collaborator: Jeff Stover  
[jeff.stover@vdh.virginia.gov](mailto:jeff.stover@vdh.virginia.gov)