

# Risk Factors for Gonorrhea and Chlamydia Co-infection, New Haven and Hartford Counties – Connecticut, 2009–2011

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## INTRODUCTION

- After several years of a steady decline, gonorrhea cases increased 20% in 2008 (n=2,793). Since then, cases have decreased in 2009 (n=2,558) and 2010 (n=2,568) but are still high.
- Almost one-third of gonorrhea case-patients are co-infected with chlamydia.
- In Connecticut, 71% of gonorrhea cases and 63% of chlamydia cases are reported from Hartford and New Haven counties.
- The purpose of this study was to determine risk factors associated with gonorrhea and chlamydia co-infection.

## METHODS

- Since 2009, the Connecticut Department of Public Health has participated in the Centers for Disease Control and Prevention's Sexually Transmitted Disease (STD) Surveillance Network (SSuN). As part of the SSuN project, a random sample of newly diagnosed gonorrhea case-patients from Hartford and New Haven counties are interviewed each month to determine demographic information of sex partners and behavioral risk factors.
- Data for this analysis were obtained from these interviews and the Connecticut STD Control Program database.
- Univariate analysis was used to examine demographic information and risk factors for infection of the interviewed population.
- Bivariate analyses were performed using chi-square tests to measure associations between case-patients with gonorrhea infection only and gonorrhea and chlamydia co-infection. Variables with significant associations (P<.05) were included in a logistic regression model.
- All analyses were performed using Statistical Analysis System, v9.2, software (SAS Institute, Inc., North Carolina).

## RESULTS

- Between July 1, 2009–June 30, 2011, 28.5% (110/386) of gonorrhea case-patients interviewed were co-infected with chlamydia (Table 1).
- Median age of case-patients was 23 years; median age of partners was 24 years.
- Case-patients and their partners were mainly non-Hispanic blacks (Figure ).
- In the model, younger age (15–29 years old), non-Hispanic black, Hispanic ethnicity and residence in Hartford County were associated with co-infection.
- Not using a condom at last sexual encounter was the only behavioral risk factor associated with a co-infection diagnosis (Table 2).

Table 1. Bivariate associations between gonorrhea and gonorrhea + chlamydia, New Haven and Hartford Counties, Connecticut, July 1, 2009 - June 30, 2011

Characteristic	Gonorrhea (n=276)		P†
	N (%)*	GC CC (n=110)	
Sex of cases			0.70
Male	101 (36.59)	38 (34.55)	
Female	175 (63.41)	72 (65.45)	
Sex of partners			0.87
Male	183 (66.30)	72 (65.45)	
Female	88 (31.88)	36 (32.73)	
Age of cases (years)			0.29
15-19	56 (20.29)	27 (24.55)	
20-24	99 (35.87)	45 (40.91)	
25-29	59 (21.38)	22 (20.00)	
30+	62 (22.46)	16 (14.55)	
Age of partners (years)			0.14
15-19	42 (15.22)	21 (19.09)	
20-24	100 (36.23)	45 (40.91)	
25-29	67 (24.28)	15 (13.64)	
30+	66 (23.91)	29 (26.36)	
Race/Ethnicity of cases			0.02
NH White	37 (13.41)	3 (2.73)	
NH Black	157 (56.88)	70 (63.64)	
Hispanic	53 (19.20)	24 (21.82)	
Other/Unknown	29 (10.51)	13 (11.82)	
Race/Ethnicity of partners			0.38
NH White	36 (13.04)	9 (8.18)	
NH Black	134 (48.55)	194 (54.55)	
Hispanic	83 (30.07)	29 (26.36)	
Other/Unknown	23 (8.33)	12 (10.91)	
County of residence			0.01
New Haven	128 (46.38)	35 (31.82)	
Hartford	148 (53.62)	74 (67.27)	

\*Number may not sum to totals due to missing data, and column percentages may not sum to 100% due to rounding; † P-value for  $\chi^2$  test

Table 2. Multivariate analyses of demographic and behavioral predictors by gonorrhea + chlamydia co-infection, Hartford and New Haven Counties, Connecticut, July 1, 2009 - June 30, 2011

	Odds Ratio (95% CI)
Age of cases (years)	
<29	1.92 (1.00 - 3.69)
>29	1.000
Race/Ethnicity	
NH Black	5.34 (1.56 - 18.21)
Hispanic	4.57 (1.25 - 16.63)
Other/Unknown	4.95 (1.25 - 19.56)
NH White	1.000
Condom use before test	
No	1.75 (1.06 - 2.92)
Yes	1.000
County of residence	
Hartford	1.92 (1.17 - 3.17)
New Haven	1.000

## CONCLUSIONS

- Almost one-third of gonorrhea cases interviewed from these two counties were co-infected with chlamydia.
- A significant proportion of co-infections occurred among the black and Hispanic populations residing in Hartford County.
- Not using a condom was associated with an increased risk of chlamydia co-infection.

## IMPLICATIONS

- With decreasing resources to address STDs, identifying and describing risk factors and characteristics at the local level associated with gonorrhea and chlamydia co-infection can help STD Control Programs produce targeted public health intervention strategies for high risk groups.

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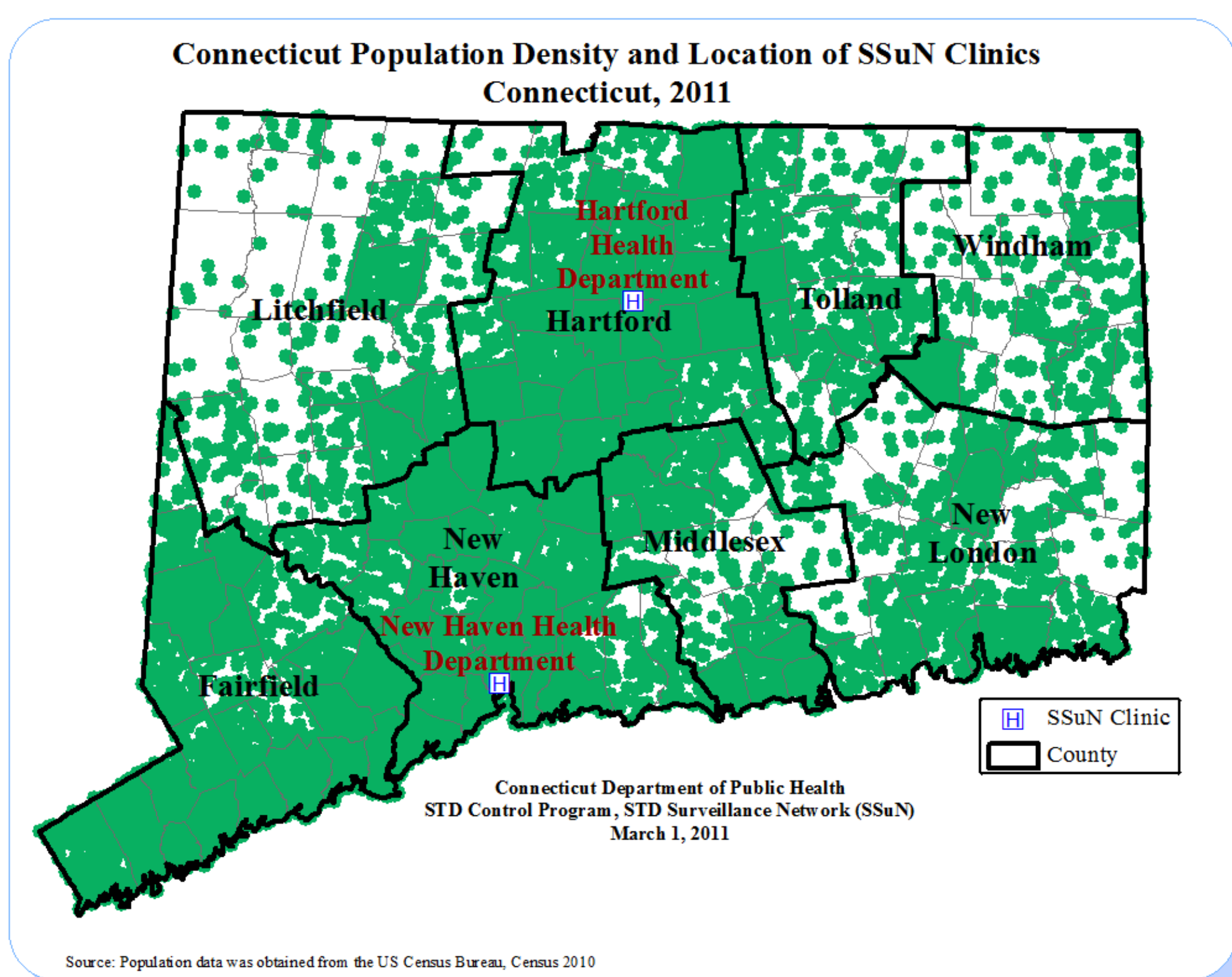


Figure 1: Race/ethnicity by all cases vs all partners New Haven & Hartford county, Connecticut July 1, 2009–June 2011 [n=386]

