

A Tale of Two Populations: *Chlamydia trachomatis* among men attending Region X Infertility Prevention Project STD clinics, 2000-2006

SL Bogan, DN Fine;
Center for Health Training, 1809 Seventh Avenue Ste 400, Seattle WA

Background

Chlamydial infections are among the most common reproductive tract infections health care providers see in male patients. It is estimated that *Chlamydia trachomatis* causes approximately 50% of reported cases of nongonococcal urethritis (NGU) among men. In most parts of the United States, chlamydia has an estimated incidence several times that of gonococcal urethritis. Chlamydia is also responsible for about half of the estimated 500,000 cases of acute epididymitis seen each year in the United States.^[1]

Since the early 1990's the U.S. Public Health Service Region X Infertility Prevention Project (IPP) has implemented broad-based screening and treatment for *Chlamydia trachomatis* in sexually transmitted disease (STD) clinics in Alaska, Idaho, Oregon and Washington. Universal chlamydia (CT) screening is standard practice at these STD sites. This provides an opportunity to explore trends in CT positivity, demographics, risk behaviors, and clinical exam findings stratified by sexual orientation among male STD clinic patients.

[1] Infertility Prevention Project Regional Manual & Guidelines – 2005
Developed by the Region X IPP Regional Advisory Committee Produced by the Region X IPP Center for Health Training, Seattle, Washington

Objectives

- 1) Assess chlamydia CT trends and risk factors for men attending Region X IPP STD clinics from 2000-2006;
- 2) Explore correlates of and differences in CT positivity by sexual orientation

Methods

Data sources

We analyzed CT test records (N=99,413) from 112 Region X STD clinics providing universal screening of male patients, 2000-2006. All Region X STD clinics used a common medical record form. Information collected included age, race, ethnicity, specimen collection date, clinical findings (urethritis, epididymitis self-reported sexual risk behaviors (having had a new sex partner in the past 60 days, having had multiple sex partners in the past 60 days, having had a symptomatic sex partner in the past 60 days, having had a sex partner who was diagnosed with CT, and condom use during last sex), having had chlamydia in the past year, laboratory test type, and chlamydia test result.

Statistical Analyses

We calculated chlamydia positivity by demographics, sexual orientation, risk behaviors, and clinical findings. Among the variables collected, potential predictors of chlamydial infection were identified by odds ratios and 95% confidence intervals that were significant at p-value <0.05. Multivariate logistic regression analyses assessed CT trends and risk factors independently associated with infection for the total population and two sub-populations—men who have sex with men (MSM) (n=15,769) and heterosexual males (n=79,224).

Results

Of the 99,413 male patient test records from 2000-2006, overall CT positivity was 12.5%. CT+ in 2000 was 11.5% and 13.0% in 2006. During the study period, NAAT testing was conducted on 67% of patients. Forty-one percent of tests were conducted on men age 30 or older, yet CT positivity was highest among males age 15-19 (19.3%) followed by those 20-24 (18.0%). Table 1 highlights additional selected descriptive findings and includes chlamydia positivity for each sample characteristic. Asian/Pacific Islanders had the highest CT+ (18.1%), followed by Hispanics (16.9%), non-Hispanic Blacks (16.0%), American Indian/Alaskan Natives (13.2%), and non-Hispanic whites (10.2%).

Men reporting a symptomatic sex partner in the last 60 days were more likely to test positive for chlamydia (27.1% vs. 9.7%) as well as those reporting exposure to CT (42.3% vs. 8.0%). Condom use during last sex was protective (10.3% vs. 14.2%). Men reporting a new sex partner in the last 60 days were slightly less likely to test positive for Chlamydia (12.3% vs. 13.3%) as well as those reporting sex with multiple partners in the last 60 days (12.4% vs. 12.8%). Men with clinical signs had an increased likelihood of chlamydial infection, such as epididymitis (17.2% vs. 11.6%) and urethritis (31.1% vs. 10.3%).

The two populations of interest, men who have sex with men (MSM) and heterosexuals varied in CT positivity. MSM CT+ was lower than that of heterosexuals (8.7% vs. 13.1%). MSM testing volume increased from 1,800 (CY2000) to 3,033 (CY2006); annual heterosexual testing volume remained stable during this same time period. See Table 2 for highlighted differences in MSM and heterosexuals demographic characteristics and risk factors.

The multivariate results highlighted both common and disparate risk factors for MSM and heterosexuals. Common risk factors included reasons for clinic visit; these reasons included presenting symptoms or reporting sex partners with symptoms. Key risks for heterosexuals were age<30 (OR=2.55), exposure to CT as visit reason (OR=7.72), and urethritis (OR=3.23). Factors that were relatively less important for predicting CT among MSM included: age<30 (OR=1.37), exposure to CT (OR=3.23), condom use at last sex (OR=0.97) and urethritis (OR=1.53). A slight downward trend of CT positivity occurred among heterosexuals during the 200-2006 time period while testing volume remained relatively stable. For MSM, CT fell significantly from 2000 to 2006 (visit year OR=0.89) while testing volume increased.

Table 1 – Characteristics of Men attending STD Clinics and CT+

Characteristic	No.	Percent	Chlamydia Positivity
All Men	99413	100	12.5
State			
Alaska	7,354	7.4	17.9
Idaho	4,414	4.4	18.1
Oregon	39,324	39.6	12.9
Washington	48,321	48.6	10.8
Age group (years)			
10-14	176	0.2	9.7
15-19	10725	10.8	19.3
20-24	27277	27.5	18
25-29	29452	29.6	13.3
>29	40881	41	8.5
Race / Ethnicity			
White	61847	63.9	10.2
Black	15986	16.5	16
Am. Ind / AK	1339	1.4	13.2
Native	3224	3.3	18.1
Asian/Pacific Islander	14379	14.9	16.9
Hispanic			
Sexual partner			
Sex with males	15769	15.9	8.7
Sex with females	79224	79.7	13.1

Table 2 – Multivariate analysis -Risk of chlamydial infection in MSM and heterosexual males.

Characteristic	Heterosexual		MSM	
	N = 71,257	N = 13,906	N = 15,769	N = 13,906
	ACR	95% CI	ACR	95% CI
Race				
NH White	Ref.		Ref.	
NH Black	1.73	1.62, 1.84	1.28	1.02, 1.60
Asian	1.12	.91, 1.37	1.38	.86, 2.27
API	1.99	1.76, 2.25	1.4	1.07, 1.83
Hispanic	1.55	1.45, 1.65	0.78	.61, 1.00
Age group				
<30	2.55	2.40, 2.71	1.37	1.22, 1.55
30+	Ref.		Ref.	
Exposure to CT as visit reason	7.72	7.29, 8.17	3.23	2.62, 3.97
Symptoms as reason for visit				
None	Ref.		Ref.	
One or more	2.1	1.95, 2.25	2.37	2.02, 2.78
Multiple sex partners (>1 in past 60 days)	1.13	1.07, 1.19	1.2	1.05, 1.37
Symptomatic sex partner	1.23	1.16, 1.31	1.1	.90, 1.36
Condom use, last sex	0.75	0.71, 0.80	0.97	.83, 1.13
Positive chlamydia test, past year	1.07	.98, 1.17	1.61	1.33, 1.94
Chlamydia test type				
NAAT	1.21	1.14, 1.29	1.48	1.30, 1.69
Non-NAAT	Ref.		Ref.	
Urethritis	3.23	2.98, 3.50	1.53	1.22, 1.92
Years since 2000 (CT+)	0.97	0.96, 0.99	0.89	0.86, 0.92

Conclusions

The diagnosis and treatment of sexually transmitted infections (STI) such as chlamydia among men is critical due to the association of STIs and HIV transmission. CT risk factors differed significantly for MSM and heterosexuals. For MSM, CT positivity decreased over time while testing increased. However, for the larger heterosexual population of men seeking care at STD clinics, CT positivity remained relatively stable and testing volume was also stable. For heterosexuals, visit reason and clinical signs suggest more recent CT acquisition. In addition, young age was a more important risk factor for heterosexuals than for MSM. Racial/ethnic differences remained after adjusting for all other risks, therefore more work needs to be done to determine potential differences between specific groups within racial/ethnic communities. Given the declining MSM CT trend, additional work is needed to assess contributing factors to this decline, including individual, sexual network and community factors.