

Prevalence of Asymptomatic Infections in a Probability Sample of Baltimore, USA

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BACKGROUND

- The asymptomatic nature of many STIs is a major factor in the “invisible” spread of these infections.
- Most estimates of the prevalence of asymptomatic infections are derived from studies of special populations.
- Population surveys using NAAT assays provide estimates of the relative prevalence of asymptomatic infection circulating in the general population.
- We report results from an ongoing population survey of Baltimore, USA – an urban community with historically high incidence and prevalence of STIs.

MONITORING UNDIAGNOSED STIs IN THE POPULATION (MSSP), 2006–09

- The Monitoring STIs Survey Program (MSSP) monitors the prevalence of undiagnosed STIs in annual probability samples of the adolescent and young adult population (15-35) of Baltimore, MD.
- Urine specimens were obtained using mail-out and mail-back specimen collection kits.
- Specimens are tested for *Chlamydia trachomatis* (CT) using the Gen-Probe APTIMA system and for *Trichomonas vaginalis* (TV) using transcription mediated amplification (TMA) using analyte-specific reagents (ASR).
- Self reports of previous diagnosed STIs and other survey data are collected using telephone audio-CASI (T-ACASI) to provide complete privacy to respondents.

STATISTICAL ANALYSES

- Results are reported from the first two years of the MSSP research program. All analyses restricted to persons supplying biospecimens.
- All analyses use sample weighting to adjust for survey stratification and the varying probabilities of selection, plus post-stratification weighting to adjust for the impact of survey and specimen nonresponse.
- All statistical analyses use algorithms that take account of the MSSP’s complex sample design (Stata v.10).

OBJECTIVES

- Estimate the population prevalence of current (undiagnosed) asymptomatic infection.
- Determine whether symptom profiles differ for TV versus CT infections.
- Compare symptom profile for current (undiagnosed) infections to that for diagnosed infections.

RESULTS

- Interviews were completed with 2,281 of 3,878 eligible respondents (59%) during the first two years of MSSP. 71.8% (1,637) of survey respondents provided urine specimens suitable for testing.

Current (undiagnosed) infection:

- We estimate that: 6.3% (CI: 5.0, 7.8); of Baltimore adolescents and young adults have undiagnosed TV infections; 3.9% (CI: 2.9, 5.3) have undiagnosed CT infections; and 0.5% (CI: 0.3, 1.0) have both TV and CT infections.
- Current TV and/or CT infections are more common among females (13.0%, CI: 10.6, 15.8) than males (6.1%, CI: 4.1, 8.9) [$p < 0.001$].
- The overwhelming majority (77%–82%) of infections are asymptomatic; see Table 1.
- Discharge (occurring alone or in combination with dysuria) is the most commonly reported symptom; see Table 1.
- Discharge in the past 3 months is a reliable predictor of current (undiagnosed) infection, but dysuria without discharge is not; see Fig. 1.
- Discharge was more common among females with current CT and/or TV infections (24.8%, CI: 16.2, 36.1) than males (6.4% CI: 1.9, 19.1) [$p = 0.014$].

STIs diagnosed in Past 30 days:

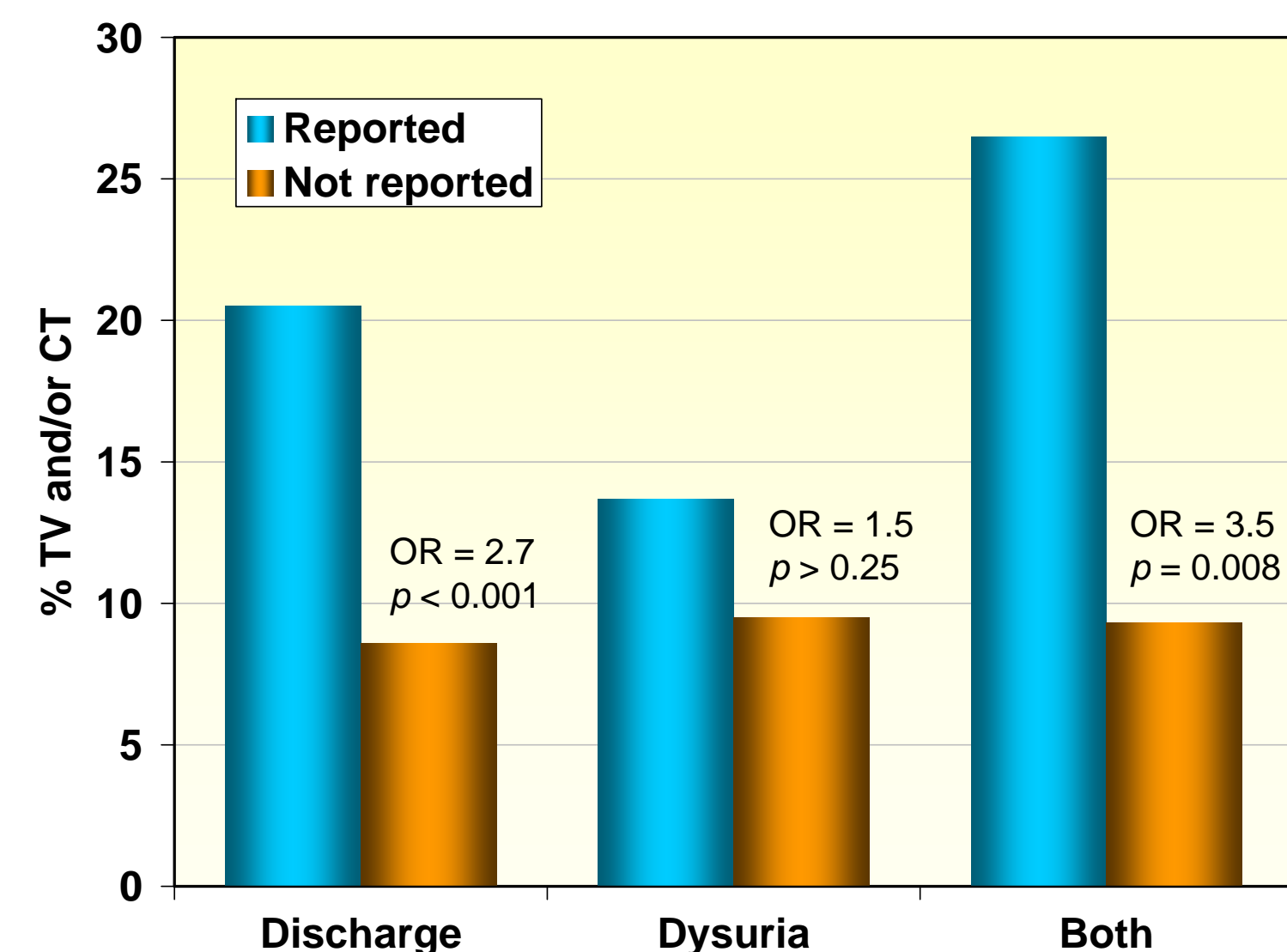
- 2.3% (CI: 1.6, 3.5) of respondents reported a diagnosis of TV and/or CT in the 30 days prior to completing the survey.
- 50.6% of the 36 persons with TV and CT infections diagnosed in the past 30 days were asymptomatic, reporting neither dysuria nor discharge in the past 30 days.
- As with current infections, discharge was more frequently reported (40.1%, CI: 23.4, 60.8) than dysuria (12.1%, CI: 4.6, 28.3) although this result was not statistically significant due to the small number of diagnosed infections ($n = 36$).
- Discharge (with or without dysuria) was reliably associated with diagnosis of infection during the past 30 days (OR = 7.2, CI: 3.1, 16.7), while dysuria was not (OR = 2.3, CI: 0.8, 7.0).

Table 1: Symptoms (3 mo.) by current infection status

<u>SYMPTOMS</u>		<u>CT-, TV-</u>	<u>TV+</u>	<u>CT+</u>
Asymptomatic	% CI	88.6 (86.7, 90.4)	76.9 (64.8, 85.7)	82.3 (67.8, 91.2)
Dysuria	% CI	3.4 (2.4, 4.7)	2.1 (0.4, 10.0)	1.3 (0.2, 9.1)
Discharge	% CI	6.3 (5.0, 7.8)	15.1 (8.3, 25.9)	11.1 (4.3, 25.6)
Dysuria and Discharge	% CI	1.7 (1.1, 2.7)	6.0 (1.9, 17.0)	5.2 (1.7, 14.7)
TOTAL^a (Unwt'd Base N)		100 (1,483)	100 (99)	100 (45)

^aExcludes 10 cases that are both CT+ and TV+

Figure 1. Symptoms (3 mo.) and Current Infection with TV and/or CT



CONCLUSIONS

- The overwhelming majority of current (undiagnosed) infections and one-half of diagnosed infections are asymptomatic.
- Discharge is a much more reliable indicator of infection than dysuria.
- Symptom profiles are similar for TV and CT infection.
- Given the high prevalence of undiagnosed CT and TV infections — particularly among women (13%) — and the lack of symptoms, aggressive screening programs are appropriate.