

# Incident Sexually Transmitted Infections in Adolescent Males Participating in the Young Men's Project

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## Background

The goal of the Young Men's project is to characterize the urethral microbiome in a cohort of multi-ethnic adolescent males as they progress through puberty. Participants were enrolled into this study via community based recruitment, were provided with a cell phone at study initiation, and asked to use the phone to complete a web-based diary each day. Information regarding sexual behavior, relationship quality, and symptoms was captured using the diary. To increase our understanding of the urethral micro-environment in this population, urine samples were collected from each participant at monthly visits and more frequently during event driven intensive collection periods. Multiple aliquots were made from each urine sample with one being used for *Chlamydia trachomatis* (CT), *Neisseria gonorrhoeae* (NG), and *Trichomonas vaginalis* (TV) testing in real-time by NAAT. Automated urinalysis was performed on a portion of each monthly urine sample to determine white blood cell (WBC) count. To characterize the urethral micro-environment at the molecular level, nucleic acid was extracted from frozen, stabilized aliquots of urine and used to perform deep sequencing to identify the microflora present in each sample. The remaining aliquots of urine were archived for future use.

The objective of this analysis was to estimate the incidence of sexually transmitted infections (STI) and to have a better understanding of the association between WBC count and STI status in this newly established cohort of adolescent males.

## Methods

- Adolescent males, ages 14-17, were enrolled from an urban setting using community based recruitment
- Figure 1-Specimen collection and testing
- Urine samples were collected monthly from each participant and tested for CT, NG, and TV by NAAT (CT/NG by Abbott *m2000*, TV as described previously<sup>1</sup>)
- Automated urinalysis was performed on each sample to assess WBC count (Iris iQ200 system)
  - WBC was considered abnormal if > 28 per ul
- The rate of incident infection was expressed as the number of new infections for CT, NG, or TV identified per 100 person months of follow-up
- A Mantel-Haenszel Common Odds Ratio Estimate was used to assess the association between WBC count and STI status

## Conclusions

- This study provides the first known estimates of STI incidence using community based recruitment of adolescent males
- Incident STI infection was high in this cohort of adolescent males
- There was a strong association between urine WBC count and STI status
- This study may lead to a better understanding of the relationship between STI, immune response, and the microflora found in maturing adolescent males

## Results

- 73 participants contributed a total of 1092 months of follow-up
- Incident infection was determined to be 1.1, 0.09, and 0.3 per 100 person months of follow-up for CT, NG, and TV, respectively
- In table 1, the proportion of males with an STI and abnormal WBC was 4/27 (14.8%) whereas those with an STI and normal WBC was 11/1121 (1.0%),  $p < 0.001$
- An individual was 17.6 (95% CI 5.2, 59.2) times more likely to have an abnormal WBC result if they had an STI at the same visit
- Survival analysis is shown in Figure 2

Figure 1

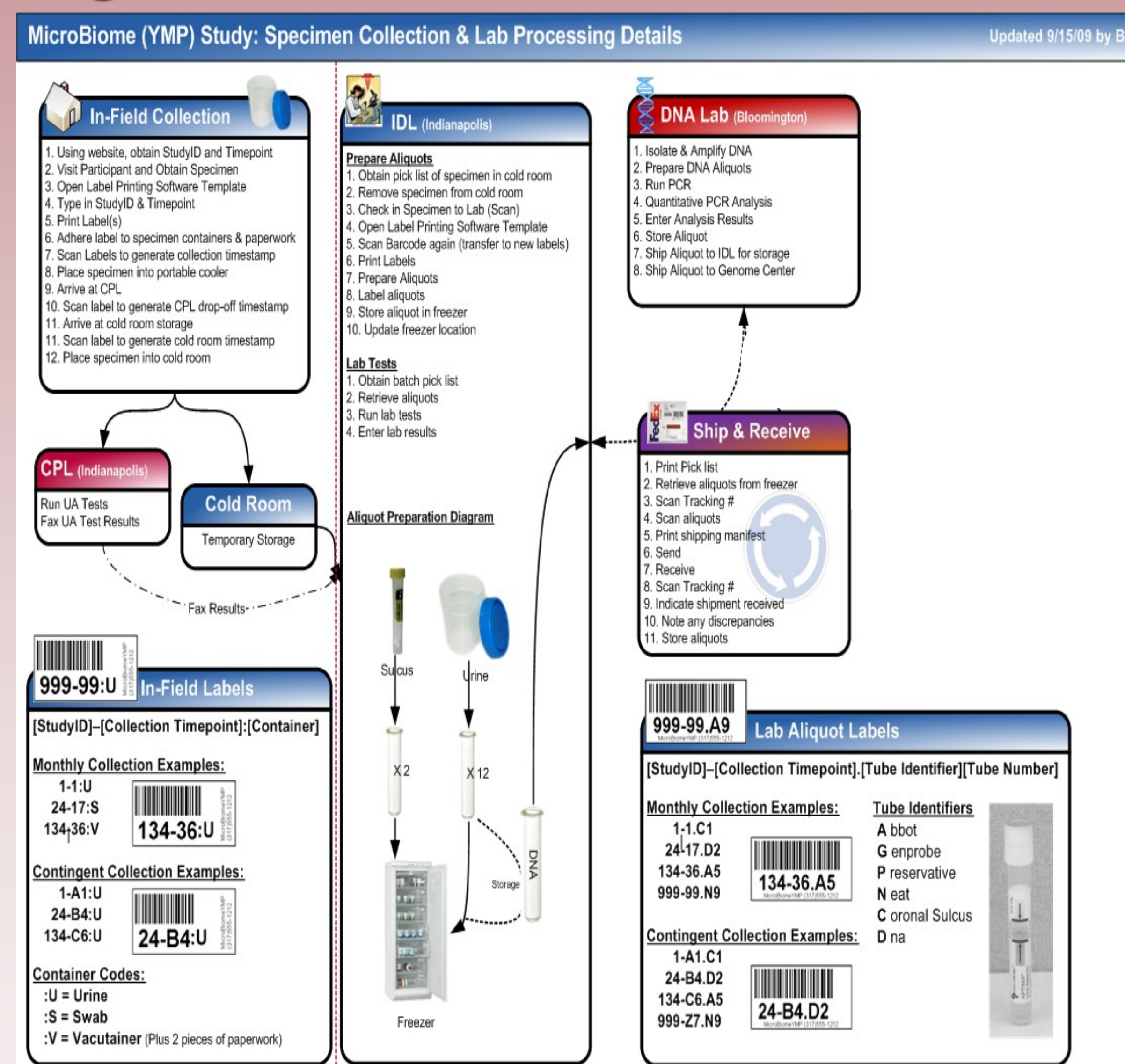
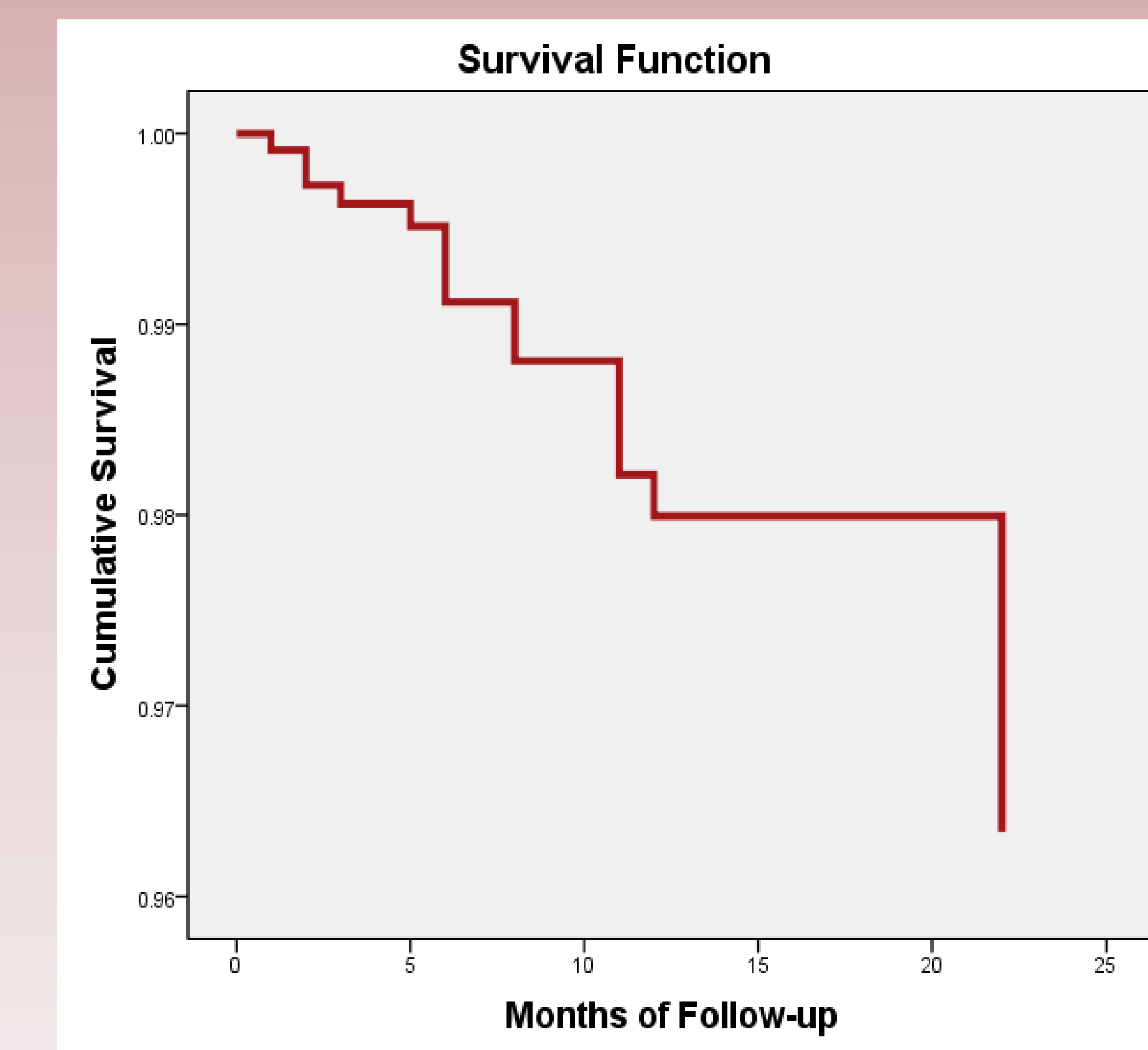


Table 1

$p < 0.001$	Normal WBC ( $\leq 28$ per ul)	Abnormal WBC ( $> 28$ per ul)
No STI at visit	1110/1121	23/27
Any STI at visit	11/1121 (1.0%)	4/27 (14.8%)

Figure 2



## Implications

- Adolescent males showed a willingness to participate and provide urine samples for testing
- Cumulative experience in this cohort may improve targeting and participation of adolescent males in community based screening programs
- The majority of episodes of pyuria were not associated with one of the three STI tested for in this study; future research is essential to elucidate the natural history and correlates of pyuria in adolescent males

<sup>1</sup> Use of an Adaptation of a Commercially Available PCR Assay Aimed at Diagnosis of Chlamydia and Gonorrhea to Detect *Trichomonas vaginalis* in Urogenital Specimens. JCM 44(2):366-373.

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