Trichomonas: The Forgotten STI
Moderator

Steve Halasey
Chief Editor
Clinical Lab Products
Sponsor

www.sekisuidiagnostiics.com
Speaker

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Disclosures

I have received funding for research grants and/or have been a lecturer for Becton Dickinson, Gen-Probe Hologic, Abbott Molecular, Siemens Health Care Diagnostics, Cepheid, and Quidel.
Estimated prevalence of sexually transmitted infections in the US (total 110,197,000)

Estimated new sexually transmitted infections in the US each year (total 19,738,800)
Objectives

To describe *Trichomonas vaginalis* (TV) and its infections and sequelae

To discuss old and new diagnostic tools available

To address the epidemiology of TV and disease associations

To present research gaps
ASHA Survey: Trichomonas—The Forgotten STD

<table>
<thead>
<tr>
<th>Condition</th>
<th>Very familiar</th>
<th>Somewhat familiar</th>
<th>Not too familiar</th>
<th>Not at all familiar</th>
<th>Don't know</th>
<th>Total Familiar</th>
<th>Total Not Familiar</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV/AIDS</td>
<td>27%</td>
<td>52%</td>
<td>14%</td>
<td>6%</td>
<td>1%</td>
<td>79%</td>
<td>20%</td>
</tr>
<tr>
<td>Herpes or genital herpes</td>
<td>22%</td>
<td>46%</td>
<td>22%</td>
<td>9%</td>
<td>2%</td>
<td>68%</td>
<td>31%</td>
</tr>
<tr>
<td>Human papillomavirus or HPV</td>
<td>21%</td>
<td>43%</td>
<td>24%</td>
<td>11%</td>
<td>2%</td>
<td>64%</td>
<td>35%</td>
</tr>
<tr>
<td>Chlamydia</td>
<td>15%</td>
<td>41%</td>
<td>28%</td>
<td>14%</td>
<td>2%</td>
<td>56%</td>
<td>42%</td>
</tr>
<tr>
<td>Gonorrhea</td>
<td>15%</td>
<td>39%</td>
<td>31%</td>
<td>14%</td>
<td>2%</td>
<td>53%</td>
<td>45%</td>
</tr>
<tr>
<td>Syphilis</td>
<td>13%</td>
<td>37%</td>
<td>34%</td>
<td>13%</td>
<td>2%</td>
<td>51%</td>
<td>47%</td>
</tr>
<tr>
<td>Trichomoniasis or trich</td>
<td>7%</td>
<td>15%</td>
<td>28%</td>
<td>40%</td>
<td>10%</td>
<td>22%</td>
<td>68%</td>
</tr>
</tbody>
</table>

Research Now, an independent research company
Interviews conducted January 28–February 2, 2013
Nationally representative sample of 1000 females aged 18 to 50
**Trichomonas vaginalis 101**

**More prevalent than syphilis or gonorrhea**
- 7–8 million cases annually in US
- WHO global estimates are 173 million cases per year
- Not a reportable disease
- True prevalence unknown

**Women**
- Preterm birth, low birth weight
- Pelvic inflammatory disease
- Post-hysterectomy infection
- HIV (odds ratios 2.7, 1.5, 2.57)
- ~50% asymptomatic or discharge

**Men**
- ~50% asymptomatic NCNGU
- Prostatitis, epididymitis
- Associated with decrease in sperm motility and viability
Pathology of Trichomonas

Trichomonas attaches to epithelial cells
  • Releases proteins which destroy the cell and elicits an intense local cellular immune response with inflammation resulting in
    o Punctate mucosal hemorrhages
    o Lymphocyte recruitment including CD4+ cells
      - Bind HIV to gain access
      - Increases cervical HIV shedding
  • Inflammation-related factors
    o Cytokines
      - Implicated in pathology
        - Prostate cancer
Trichomonas Pathogenesis

Desquamation of vaginal epithelium
- Leukocytic inflammation; may persist for years

Symptoms
- Women: asymptomatic or itching, burning, frothy discharge, worsens after menses, chronic, symptoms and parasite can be persistent
- Men: asymptomatic or mild urethritis; rare to detect by wet prep in men due to urine flow

Strawberry hemorrhage in 5% of infected women with no discharge; pathogenesis is not well understood
How to Dx *Trichomonas vaginalis*

Wet preparation showing motile trichomonads

Stained trichomonas

Electron microscope view of trichomonas on epithelial cell

**Wet Preparation**
- Culture
- Affirm VPIII
- OSOM POC

**Amplified tests (NAAT)**
- Research PCRs
- Aptima *T. vaginalis* (ATV)
- Becton Dickinson (TVQ)
<table>
<thead>
<tr>
<th></th>
<th>Sensitivity (%)</th>
<th>Specificity (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wet prep</td>
<td>55–65</td>
<td>100</td>
</tr>
<tr>
<td>Culture</td>
<td>75</td>
<td>100</td>
</tr>
<tr>
<td>Affirm VPIII</td>
<td>46.3</td>
<td>100</td>
</tr>
<tr>
<td>POCT (OSOM)</td>
<td>83–86</td>
<td>&gt;97</td>
</tr>
<tr>
<td>PCR (LDT)</td>
<td>83–92</td>
<td>100</td>
</tr>
<tr>
<td>TMA Aptima TV</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>ProbTec TVQ</td>
<td>98.3</td>
<td>98.3</td>
</tr>
</tbody>
</table>
## FDA Clearance of Commercial NAAT TV Assay (Gen-Probe ATV)

<table>
<thead>
<tr>
<th>Specimen</th>
<th>Number</th>
<th>Prevalence (%)</th>
<th>Sensitivity (%)</th>
<th>Specificity (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urine</td>
<td>735</td>
<td>11.4</td>
<td>95.2</td>
<td>98.9</td>
</tr>
<tr>
<td>Vaginal Swab</td>
<td>875</td>
<td>12.7</td>
<td>100</td>
<td>99.0</td>
</tr>
<tr>
<td>CX Swab</td>
<td>920</td>
<td>12.4</td>
<td>100</td>
<td>99.4</td>
</tr>
<tr>
<td>ThinPrep Pap</td>
<td>813</td>
<td>11.4</td>
<td>100</td>
<td>99.6</td>
</tr>
</tbody>
</table>

FDA cleared April 2011
# BD TVQ Assay for Vaginal Trichomonas

<table>
<thead>
<tr>
<th>Assay</th>
<th>Test positive/true positive (no.)</th>
<th>Sensitivity (%)</th>
<th>Test negative/true negative (no.)</th>
<th>Specificity (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wet Mount</td>
<td>79/115</td>
<td>68.7</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Culture</td>
<td>113/116</td>
<td>97.4</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>TVQ</td>
<td>114/116</td>
<td>98.3</td>
<td>715/722</td>
<td>99</td>
</tr>
<tr>
<td>ATV</td>
<td>115/115</td>
<td>100</td>
<td>703/715</td>
<td>98.3</td>
</tr>
</tbody>
</table>
Comparison of Specimen Type for Diagnosis of *Trichomonas vaginalis* (TVQ) using the BD Viper System in Extracted Mode

N = 724

Venn Diagram:
- Endocervical (108)
- Vaginal (115)
- Neat Urine (112)

Overlap:
- Endocervical and Vaginal: 4
- Endocervical and Neat Urine: 1
- Vaginal and Neat Urine: 4
- All three: 4
Rapid Antigen Detection

Rapid immunochromatographic POC antigen test, dipstick

• Collection
• Vaginal swab/symptomatic patients only
• Benefits
  o Rapid test
  o Does not require live organism
  o Transit time not an issue
• Sensitivity
  o 76–90% compared to culture
  o 83–86% compared to NAAT
OSOM TV Rapid Antigen Test

- A blue Test Line and a red Control Line is a positive result.

- A red Control Line but no blue Test Line is a negative result.
Trichomonas NAAT Performance in Two Studies $^{12,19}$

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Huppert</th>
<th>Nye</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wet mount</td>
<td>50.8</td>
<td>54.6</td>
</tr>
<tr>
<td>Culture</td>
<td>75.4</td>
<td>75</td>
</tr>
<tr>
<td>OSOM</td>
<td>82.0</td>
<td></td>
</tr>
<tr>
<td>PCR</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>APTIMA</td>
<td>98.4</td>
<td>96.6</td>
</tr>
</tbody>
</table>

% positive
### Correlation between Self- and Clinician-POC TV tests

<table>
<thead>
<tr>
<th>N=209</th>
<th>Clinician-POC test positive</th>
<th>Clinician-POC test negative</th>
<th>Kappa</th>
<th>Agreement (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self–POC test positive</td>
<td>38</td>
<td>4*</td>
<td>0.87</td>
<td>95.7</td>
</tr>
<tr>
<td>Self–POC test negative</td>
<td>5†</td>
<td>162</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cells = number of subjects
* 2 of 4 confirmed positive
† 5 of 5 confirmed positive

Over 99% performed and interpreted the self-test correctly
Audience Poll

How many cases of *Trichomonas vaginalis* did your laboratory diagnose last month?

- > 200
- 100–200
- 51–100
- 0–50
Audience Poll

How many cases of *Trichomonas vaginalis* did your laboratory diagnose last month?

![Bar chart showing the distribution of Trichomonas vaginalis diagnoses.

- 94.5% of respondents reported 0-50 diagnoses.
- 3.7% reported > 200 diagnoses.
- 1.8% reported 51-100 diagnoses.
- 0.0% reported 100-200 diagnoses.
- 0% reported 0-50 diagnoses.

N = 109

Trichomonas Epidemiology and Associations with Other Infections
Prevalence of Trichomonas in NHANES and ADOL Health Studies in the US

3.1% in 3754 women; 13.3% black, 1.3% white\textsuperscript{21}

3.2% in 3648 women; if patient is trichomonas positive, HSV is more common; risk of syphilis is more than 6x greater, risk of HIV is 13x greater; attenuated after adjustment for race, age, PN\textsuperscript{22}

Prevalence 2.3%; males 1.7%; females 2.8%; black females 10.5\%\textsuperscript{23}
National Prevalence Study of Trichomonas Using NAAT

N = 7,593 women
  • Aged 18–89 years
  • 21 states

Overall Prevalence
  • TV 8.7%
  • CT 6.7%
  • NG 1.7%
Prevalence Study of TV, CT, and GC Infections by Age

(N = 7,593; 21 states)
Prevalence of TV: Infections by Collection Site

- ER
- Family Planning
- Family Practice
- In-Patient
- Internal Medicine
- Jail
- OB/GYN
- Other/Unknown
- STD Clinic

% Prevalence

- CT Positive
- GC Positive
- TV POSITIVE
Multivariant Analysis: Trichomonas Risk Factors

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Prevalence (%)</th>
<th>Multivariant OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>18–&lt; 20</td>
<td>8.49</td>
<td>1</td>
</tr>
<tr>
<td>20–&lt; 30</td>
<td>8.33</td>
<td>1.03</td>
</tr>
<tr>
<td>30–&lt; 40</td>
<td>7.92</td>
<td>1.03</td>
</tr>
<tr>
<td>&gt; 40</td>
<td>11.78</td>
<td>1.51*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Race</th>
<th>Prevalence (%)</th>
<th>Multivariant OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>5.70</td>
<td>1</td>
</tr>
<tr>
<td>All others/unknown</td>
<td>6.59</td>
<td>0.92</td>
</tr>
<tr>
<td>Black</td>
<td>20.22</td>
<td>4.04*</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>5.01</td>
<td>0.88</td>
</tr>
</tbody>
</table>

* P < 0.05

N = 7,593
Female Trichomonas via Internet Recruitment

Of 1525 self collected vaginal swabs collected in the home using mailed kits

Tested positive 2006–2010 using NAAT (Gen-Probe) assays

- TV: 10.0%
- CT: 10.0%
- GC: 1.0%
- Any STI: 18.0%
Female Trichomonas via Internet Recruitment using Vaginal Swabs

TV 10%; CT 10%; GC 1.0%; Any STI 18.0%

AGE

10.3% Infected
10.4% Infected
8.3% Infected

RACE

8.6% Infected
5.6% Infected
13.2% Infected

N = 1525
### Female Vaginal Trichomonas via Internet

<table>
<thead>
<tr>
<th>Variable</th>
<th>Characteristic</th>
<th>Adjusted OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>14–19 years</td>
<td>0.80 (0.43–1.46)</td>
</tr>
<tr>
<td></td>
<td>20–24 years</td>
<td>0.62 (0.36–1.07)</td>
</tr>
<tr>
<td></td>
<td>25–29 years</td>
<td>1.18 (0.64–2.17)</td>
</tr>
<tr>
<td></td>
<td>≥30 years</td>
<td>1.0</td>
</tr>
<tr>
<td>Race</td>
<td>Black</td>
<td>2.69 (1.71–4.23)*</td>
</tr>
<tr>
<td></td>
<td>White, Asian, Other</td>
<td>1.0</td>
</tr>
<tr>
<td>Health Insurance</td>
<td>Without</td>
<td>1.57 (1.06–2.35)*</td>
</tr>
<tr>
<td>Education</td>
<td>Without BS Degree</td>
<td>5.53 (2.18–14.00)*</td>
</tr>
</tbody>
</table>

* P<0.05  
N = 1222
## Female Vaginal Trichomonas via Internet

### Table: Variable Characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Characteristic</th>
<th>Adjusted OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condom Use During Sex</td>
<td>Most, Some, Never</td>
<td>3.04 (1.35–6.85)</td>
</tr>
<tr>
<td>PN had STI</td>
<td>Yes</td>
<td>1.71 (1.02–2.86)*</td>
</tr>
<tr>
<td>Number PN Past Year</td>
<td>0–1</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>2–15</td>
<td>1.60 (1.03–2.51)*</td>
</tr>
<tr>
<td></td>
<td>&gt;16</td>
<td>3.51 (1.30–9.47)*</td>
</tr>
<tr>
<td>Bisexual</td>
<td>Yes</td>
<td>2.00 (1.05–3.80)</td>
</tr>
</tbody>
</table>

* Other significant variables in bivariate analysis that were not significant in multivariate analysis: having TV previously, having STI in past.

* P < 0.05

N = 1222
Trichomonas vaginalis infection in men who submit self-collected penile swabs after Internet recruitment

Previous study indicated that self-collected penile-meatal swabs can be used for STI testing. From 2006–2012, 1699 men returned penile swabs after Internet recruitment.

- Age < 25 years: 41%
- Black: 43%
- White: 45%
- TV prevalence: 3.7%
## Risk factors for *Trichomonas vaginalis* infection in men

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Categories</th>
<th>OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>&gt; 20</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>20–24</td>
<td>4.39</td>
</tr>
<tr>
<td></td>
<td>25–29</td>
<td>3.31</td>
</tr>
<tr>
<td></td>
<td>30–39</td>
<td>6.63</td>
</tr>
<tr>
<td></td>
<td>&gt; 40</td>
<td>5.31</td>
</tr>
<tr>
<td>Race</td>
<td>African-American</td>
<td>2.67</td>
</tr>
<tr>
<td>Age at first sex</td>
<td>&lt; 15 years</td>
<td>1.82</td>
</tr>
<tr>
<td>Penile discharge</td>
<td>Yes</td>
<td>2.25</td>
</tr>
</tbody>
</table>

N = 919; prevalence 6.0%
Association of Trichomonas with low birth weight / preterm delivery

% of women

- LBW
- Preterm Del
- Preterm LBW

- BV- TV-
- BV+ TV-
- BV- TV+
- BV+ TV+
Trichomonas treatment reduces vaginal HIV shedding

TV-positive and TV-negative women matched on antiretroviral therapy: TV-positive women treated for TV effectively less likely to shed HIV vaginally at 3 months (RR 0.034; p = 0.03); no change for TV-negative women

Of 60 HIV-positive women, 18.3% were TV-positive after 1 month; of 301 HIV-negative women, 8% were TV-positive after 1 month
Trichomonas and HIV genital shedding

11/14 statistically significant (9 cohort, 2 nested case-control, 3 PN design)
### Trichomonas and Risk for HIV

Relative Risks in per-Act Transmission Probability

<table>
<thead>
<tr>
<th></th>
<th>RR</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HIV Infected PN</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plasma HIV copies/ml</td>
<td>2.89</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Condom Use in F/U</td>
<td>0.22</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>HIV Uninfected PN</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age, per 5 years</td>
<td>0.82</td>
<td>0.006</td>
</tr>
<tr>
<td>HSV-2 + enrollment</td>
<td>2.14</td>
<td>0.012</td>
</tr>
<tr>
<td>GUD</td>
<td>2.65</td>
<td>0.004</td>
</tr>
<tr>
<td>Trichomonas</td>
<td>2.57</td>
<td>0.002</td>
</tr>
<tr>
<td>Cervicitis/vaginitis</td>
<td>3.63</td>
<td>0.005</td>
</tr>
<tr>
<td>Circumcision</td>
<td>0.53</td>
<td>0/37</td>
</tr>
</tbody>
</table>

86 transmissions; MTF 0.0019; FTM 0.0010

N = 3297 couples
HIV patients interviewed about risk factors at baseline, 3 months, and 6 months

Mathematical model to estimate number of HIV infections attributable to TV in care in NC

TV prevalence 7.4%; incidence 2–3% at follow-up

Model predicted that 0.062 HIV transmission events occur per 100 HIV-infected women without TV, versus 0.076 HIV transmissions in women with TV

23% of HIV transmission events may be attributable to TV when 22% of women are coinfected with TV
TV Therapy on Genital HIV Burden

Estimated annual number of new HIV transmissions in US attributable to TV cofactor effect of 2–5 fold increased risk$^{32,33}$

557 women not receiving antivirals; 46 f/u; 80% cured; plasma viral load not significantly different

Genital viral load decreased significantly 0.5 log$_{10}$

After therapy, mean genital tract load decreased from 4.66 to 4.18 log$_{10}$ ($p < 0.01$)$^{34}$
Three city STD clinics tested 49 HPV-infected adolescents

Concurrent infections were measured

Prolonged HPV infection (during the HPV infection) was associated with

- Oncogenic HPV  AHR 0.58 (95% CI 0.39–0.84)
- Low (<60%) condom use  AHR 0.53 (95% CI 0.33–0.84)
- Coinfection with CT  AHR 0.58 (95% CI 0.31–0.89)
- Coinfection with trichomonas  AHR 0.32 (95% CI 0.16–0.64)

HPV infections associated with concurrent *T. vaginalis* were slower to clear than those not associated with the infection (median time to disappearance was 436 days and 172 days, respectively)
Miscellaneous Associations

Association with two-fold increased risk of pelvic inflammatory disease (PID)\(^4\)

Association of TV with increased PID in women with HIV\(^36\)

Risk of subsequent prostate cancer (OR 1.43)\(^37\)

Perinatal transmission (5–6 case reports)\(^38\)
Trichomonas vaginalis infections detected among women during intervals when they were not having sex (3, 6, 9, 12 month follow-up).

Each row represents the history of one woman. Shaded areas are intervals during which the woman reported not having sex.

Positive (+) and negative (−) culture test results for *Trichomonas vaginalis* are indicated for each woman.
Audience Poll

What method of testing does your laboratory use to diagnose *Trichomonas vaginalis* infection?

- Becton Dickinson (TVQ)
- Aptima *T. vaginalis* (ATV)
- Laboratory-developed tests (research PCRs)
- OSOM POC
- Affirm VPIII
- Culture
- Wet preparation
Audience Poll

What method of testing does your laboratory use to diagnose *Trichomonas vaginalis* infection?

- Wet preparation: 60.8%
- Culture: 6.9%
- Affirm VPIII: 3.9%
- Laboratory-developed tests (research PCRs): 2.0%
- OSOM POC: 13.7%
- Becton Dickinson (TVQ): 1.0%

N = 102
Extracted private insurance claims 2001–2005 from Medistat Market Scan database

Outpatient costs: visit $97; drug $9

Most common diagnostic is wet prep

Average total cost for women aged 15–24 ($120) is significantly higher than for all other ages (p <0.01)

Estimate: Overall annual economic burden of trichomonas to be $18.9 million among all US women

Incidence rate: all ages 92/100,000; higher for ages 25–29 (185/100,000)
Mathematical model to estimate probability woman with TV would acquire HIV

746 new HIV cases attributed to TV each year

Cost of $167 million

Cost–effectiveness studies needed
Estimates of Sequelae Costs for Trichomonas in US?

If direct US costs for TV infection among women total $18.9 million annually (7.4 million cases), what are the population-attributable costs of possible sequelae?

- **Premature infant hospitalization (550,000 babies per year)**
  - $49,000 per child in year one
  - $26 billion per year\(^{41,42}\)

- **Pelvic inflammatory disease (1.2 million office visits per year)**
  - $1378–$1410 per case
  - $4 billion per year\(^{43–45}\)

- **HIV (50,000 new HIV infections per year)**
  - $618,900 per year for new infections
  - 1.1 million living with HIV/AIDS

- **Cancer; association with HPV infection?**

Is a cost-effectiveness study needed to convince public health officials and lawmakers of the necessity of a US trichomonas control program?
Knowledge Gaps of TV Outcomes

Studies linking trichomonas to preterm birth

Repeat of the Klebanoff study (metronidazole in pregnancy more harmful than TV infection); metronidazole prescribed at too high dosage?

More studies on the link between TV and HIV, PID, and/or persistent HPV

Economic impact of untreated TV, potential cost savings associated with TV screening
New Tricks Needed

More focus on how TV disrupts the vaginal ecology; natural history/rate of spontaneous clearance studies

Better understanding of epidemiology of TV

Studies to examine TV as a public health priority; develop evidence to meet public health criteria for reportable diseases

Better understanding of high prevalence of TV in older women

Study on the impact of chronic TV infection in men and adverse health outcomes (possible links to prostatitis, BPH, prostate cancer)
Do we have the tools?

We have the diagnostic tests
We have the epidemiologists
We have the capability to perform cost-effectiveness models
We have the researchers
We can obtain the data
Do we have the will? The funds?
How do we influence public health officials?
Priority Research Discussion

1. Adverse birth outcomes
2. HIV association
3. Why persistence?
4. TV in older women; health disparities
5. Public health cost
6. Public health reporting
7. Education and public awareness
Needs for a Promising Future

Fund research for priority areas
- HIV association, adverse birth outcomes

Learning how to effectively use new research to improve the detection of TV and provide cost-effective ways to increase number of patients being treated

Novel approaches include testing outside a clinic, new diagnostic tests, and maybe self-testing (OTC)

Yet, challenges will continue to remove barriers
Summary

Trichomonas is highly prevalent in many populations studied; often associated with race, age, and acquisition of HIV

Diagnostic tests are improving; there are now FDA-cleared, commercially available NAATs

POC tests offer hope for rapid testing and immediate treatment
Conclusions

With new tools available for diagnostic tests, new methods for recruiting patients for STI testing, and new sample types available . . .

Shouldn’t public health officials consider more testing of trichomonas in patients in view of the potential sequelae such as low birth weight babies, PID, and association with HIV acquisition and transmission?

Isn’t it time to do better for our patients?
“Optimal prevention and control strategies for *T. vaginalis* infection should be further explored as a means of closing the racial disparity in prevalence and decreasing other adverse health outcomes associated with this sexually transmitted infection.”

–Madeline Sutton, MD, MPH, FACOG  
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Centers for Disease Control and Prevention
Acknowledgements

• Mary Jett-Goheen
• Mathilda Barnes
• Laura Dize
• Justin Hardick
• Jeff Holden
• Billie Jo Masek
• Perry Barnes
• Brianna Kyburz
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