TV or Not TV: Using NAATs to Improve the Cost Effectiveness of Testing

Audit of the Management of Patients with Trichomonas Vaginalis, Using Nucleic Acid Amplification Technique (NAAT) testing in a high TV Prevalence area

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BACKGROUND AND RATIONALE

Nucleic Acid Amplification tests (NAATs) offer the **highest sensitivity** for the detection of Trichomonas Vaginalis (TV). NAATs should be the test of choice where resources allow and are becoming 'gold standard'. In April 2016, our service changed from TV culture to BD Viper NAATs (combined triple Lower vaginal swab NAAT testing for TV, Chlamydia and Gonorrhoea). **Clinic protocol changed from testing all women to only testing women who were symptomatic**, plus asymptomatic pregnant women, HIV positive women, STI contacts, previous TV diagnosis and testing male contacts of TV. Haringey Sexual Health Service comprises a Hub-Spoke model and NAAT testing (unlike microscopy) is feasible to perform throughout the four satellite clinics.

Key points:

- **Commercially available NAATs** tests have **shown increased sensitivity** in comparison to both microscopy and culture for TV
- Combined NAATs (for TV, Chlamydia and Gonorrhoea) offer **convenient patient self-sampling**
- There is **cost reduction** and increased convenience related to storage and transportation for NAATs compared to culture
- **No additional staff resources** required and likely to **improve patient experience**

METHODS

Laboratory data and SHHAPT codes retrospectively identified all patients diagnosed with TV between **1 May - 30 November 2016**. Electronic patient records (EPR) were reviewed and data analysed in Excel. St Ann's Sexual health clinic (the hub) and community clinics (including Sexual Health Outreach Clinic (SHOC) (the spokes) **performance for the management of TV were audited to national and local standards** (Table 1). Standards 1-3 are national standards set by British Association for Sexual Health and HIV (BASHH)¹ and Standard 4; a local audit standard as per clinic policy. Data was compared with that of previous audit periods using TV culture for diagnosis.

RESULTS

There were **96 new diagnoses**, 93 females and 3 males, **median age 31** (IQR 24-40). **66% Black Afro-Caribbean**; 3 were sex workers. Of the male patients tested; 2 were asymptomatic epidemiological contacts, the other was symptomatic and treated for Non-specific urethritis.

Of the **91% symptomatic patients** (the majority presented with vaginal discharge or vulval-vaginal itching), **22% had STI co-infection**, **26% bacterial vaginosis**, 7% candida and **32% previous TV**.

Wet-prep microscopy (WPM) **detected 65% of symptomatic cases**. Treatments were **Metronidazole** or Tinidazole. 2/3rd of patients received appropriate treatment on the same day of initial attendance and all had appropriate first line treatment with Metronidazole. The audit standards achieved within the service (BASHH performance standards target- 97%) are shown in Figure 2.

TABLE 1: NATIONAL AND LOCAL AUDIT CRITERIA

Audit Criteria		
1.	First-line treatment for all patients found to have TV infection should be with metronidazole (with allergy as an exception), either as a single dose of 2 g or 400 mg twice daily for at least 5 days.	97%
2.	Individuals should be provided with written information about their diagnosis and treatment.	97%
3.	Partner notification should be performed and documented according to BASHH Statement on Partner Notification for Sexually Transmissible infections.	97%
4.	All patients with TV should be tested for HIV at diagnosis or within the next 3 months.	97%

FIGURE 2: CHART SHOWING PERFORMANCE MEASURES AT ST ANN'S SEXUAL HEALTH CLINIC

TABLE 2: COST ANALYSIS OF CULTURES VERSUS NAATs

	2015 (Culture)	2016 (NAATs)
Tested	3054	1859
Positive	84	117
New infections	73	96
Total cost of the tests	£19,851	£15,486

CONCLUSION

Changing our clinic practice to the use of TV NAATs **reduced the overall cost** whilst **increasing the number of new diagnoses**; enabling us to **target testing** to patients at highest risk. Although microscopic detection rates were above national average, 35% (27) cases of TV were missed on WPM. 9.3% (9) were asymptomatic and detected because of testing as contacts of TV / sex worker / cervical cytology detection, this highlights the value of a more sensitive test in a high prevalence area. Table 2 shows a cost analysis comparison between TV culture (used until 2015) versus NAAT testing commenced in 2016.

Key points:

- TV NAATs are **more sensitive and reliable** than culture
- By changing our local clinic protocol, we were able to **detect more TV infection, at lower cost**
- **Lower vaginal swabs** are both **acceptable** (to patients) and practical to use throughout our hub –spoke service

FIGURE 1. INFOGRAPHIC SHOWING KEY FINDINGS, WITH COMPARISONS MADE ACROSS 3 AUDIT PERIODS (YEARS: 2006, 2009 AND 2016)

2006* n = 131 2009* n = 147 2016[‡] n = 96

* Audit period: 1 year [‡] Audit period: 7 months

1. Previous Diagnosis of TV

2. Microscopic detection of TV

3. BASHH Standards for Treatment

4. BASHH Standards for Partner Notification

5. STI Co-infection

KEY AUDIT RECOMMENDATIONS

- **Improve documentation** for giving patient information
 - Additional field in EPR
 - Ensure availability of leaflets
- **Staff training** to improve PN documentation
- **Roll out** above protocol to community clinics (ensuring clinicians are aware of this criteria for asymptomatic testing).
- **TV NAAT urine testing heterosexual men**, contacts of STIs, or confirmed NSU (although TV NAATs are not validated to be performed on urine specimens in men, lab will issue report stating this), but as a highly sensitive and specific PCR method it's strongly predicted to give clinically significant results.