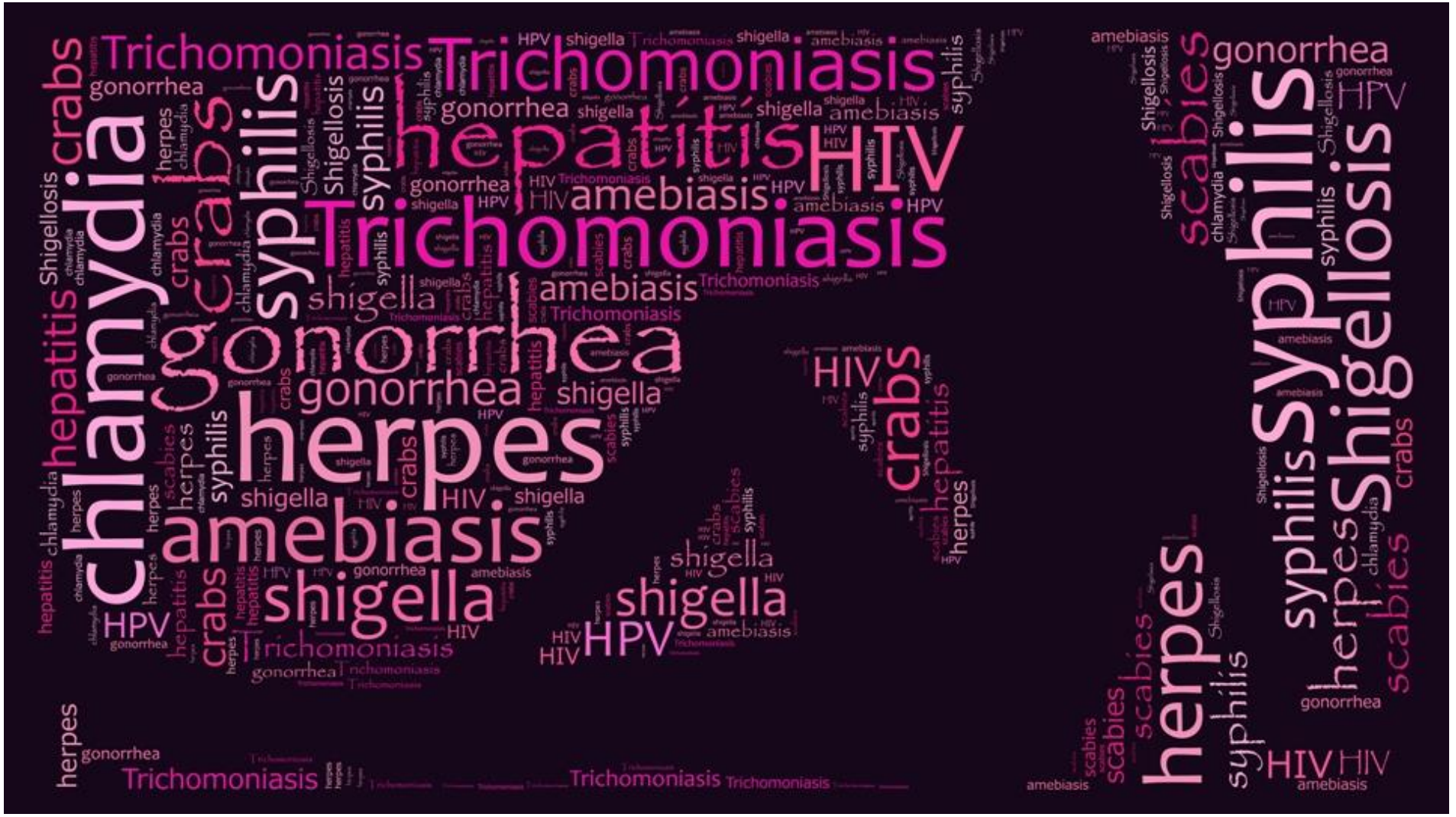
Towards STI control in South Africa

Prof Remco Peters

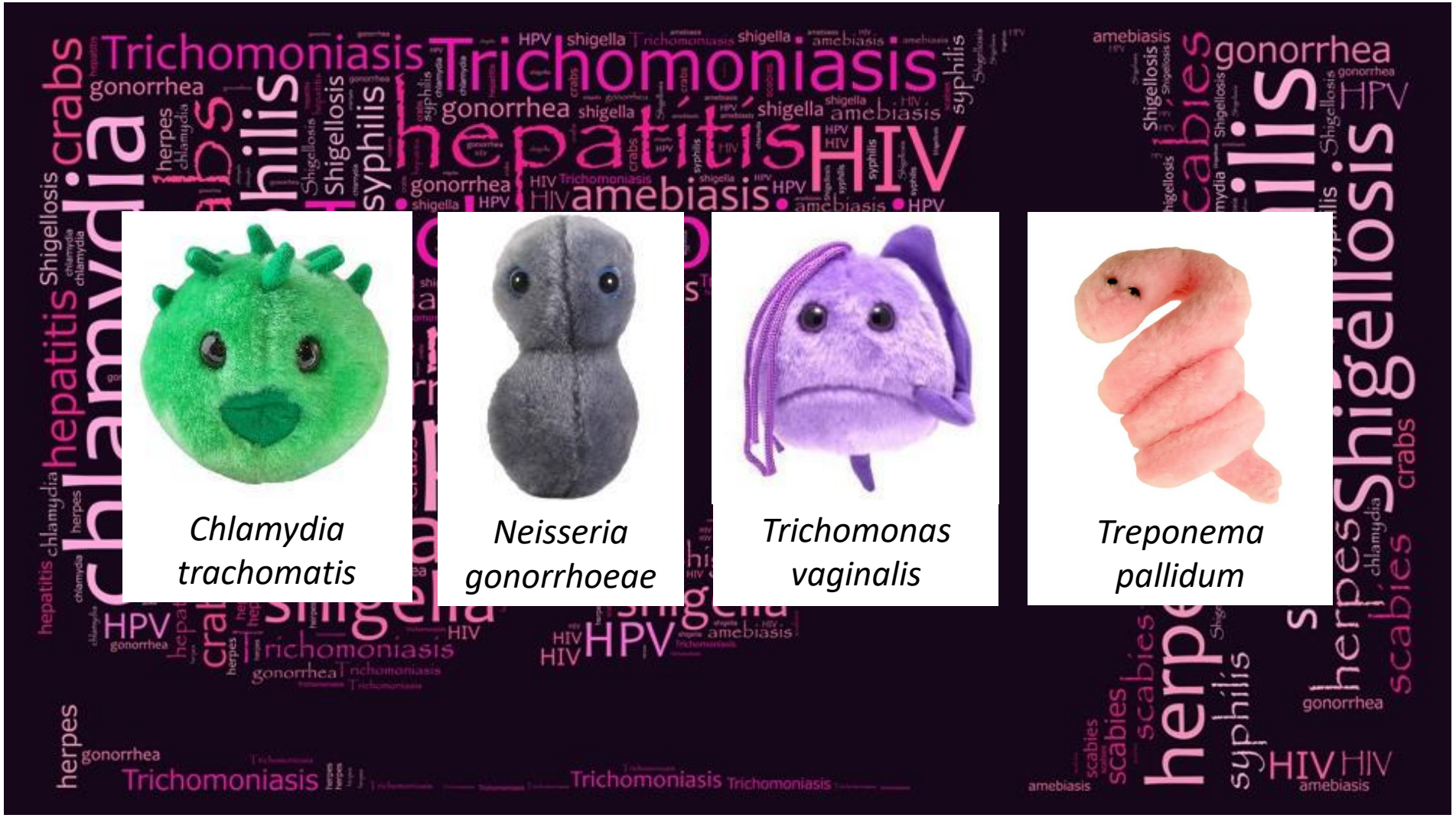
19 October 2023

The spectrum of STIs



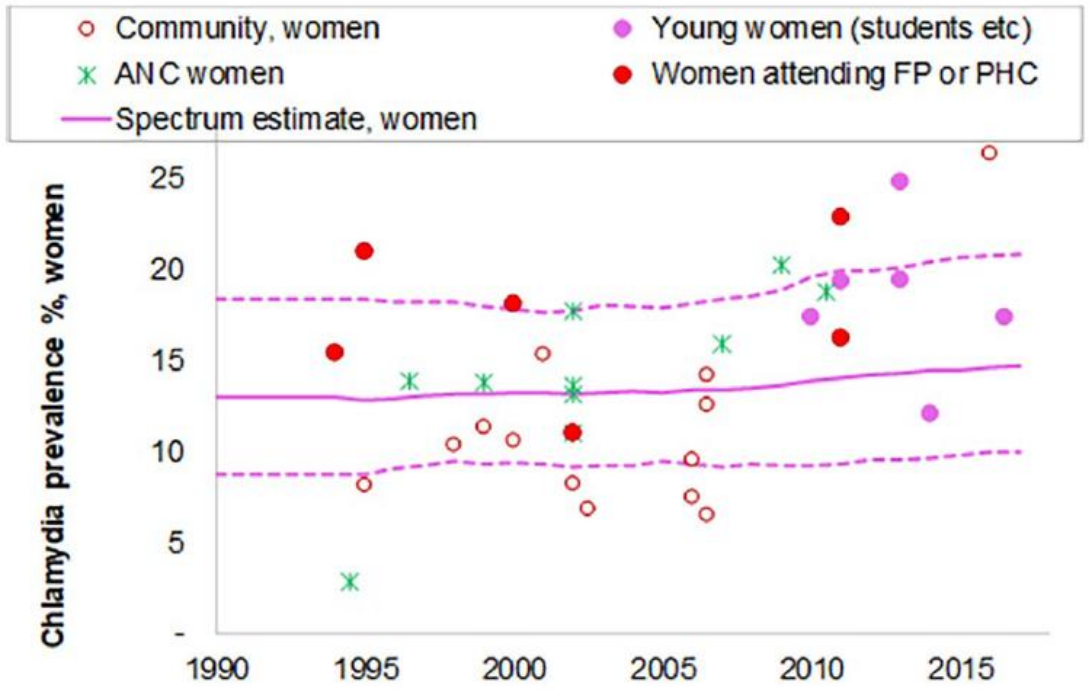
Source: thewellproject

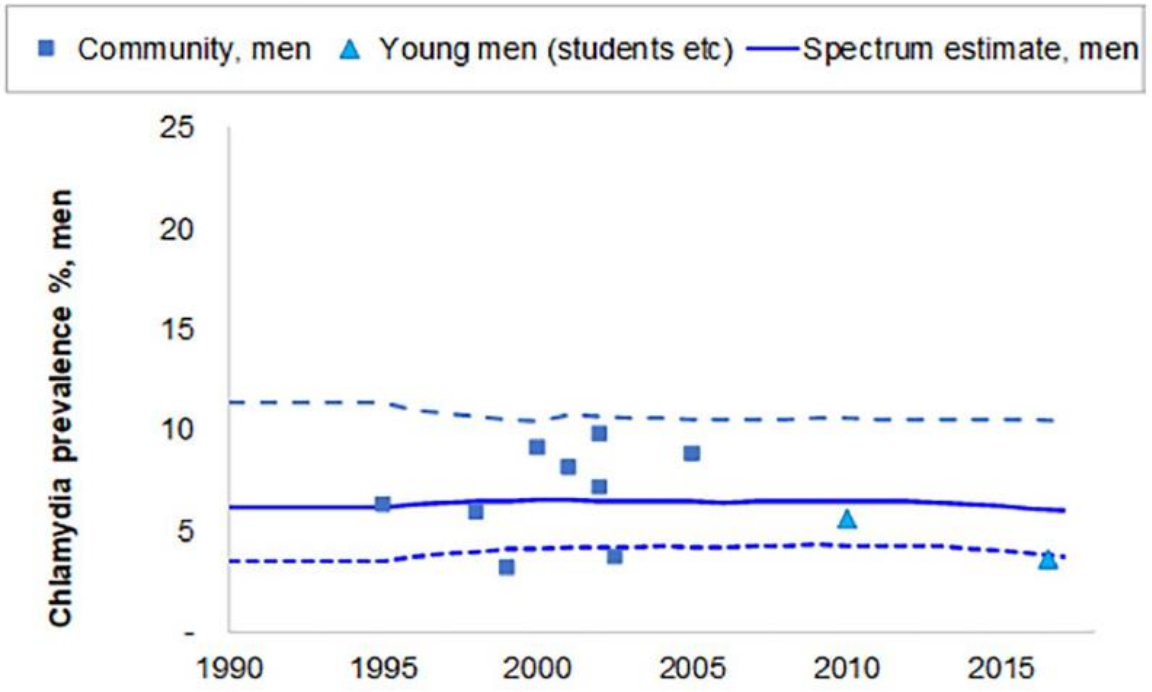
The spectrum of STIs



Source: thewellproject

STI prevalence: high and unchanged for 30 years





Women
Chlamydia trachomatis: 14.7%
Neisseria gonorrhoea: 6.6%

Men
Chlamydia trachomatis: 6.0%
Neisseria gonorrhoea: 3.5%

Kularatne R et al. PLoS One 2018

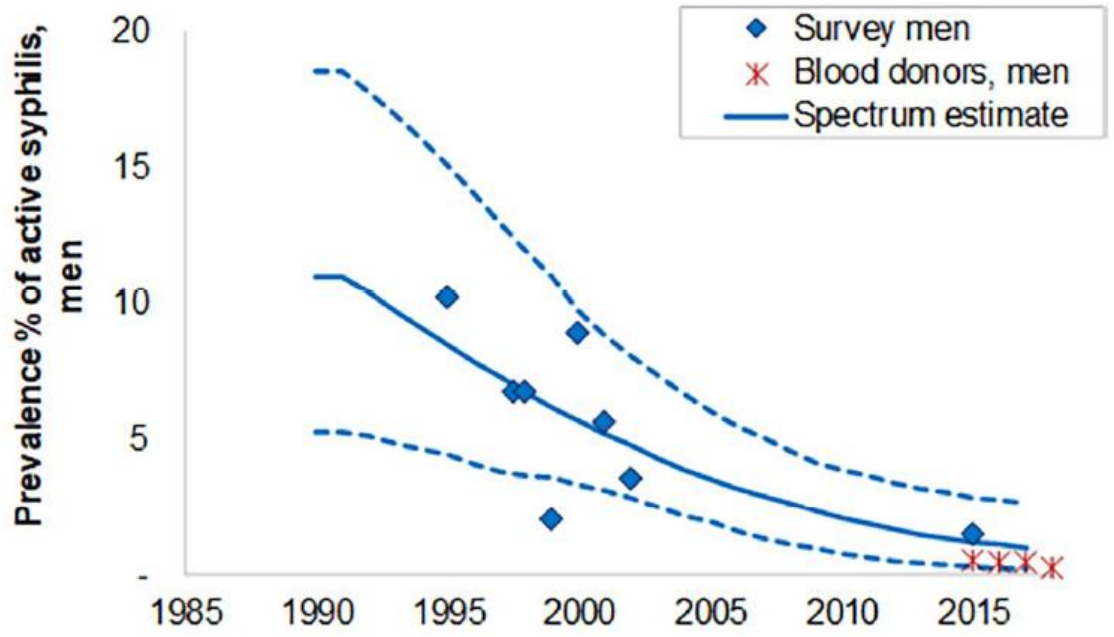
STI burden in South Africa

- **Majority of the 6 million cases remain untreated**
  - Patient and provider-related barriers and stigma
  - Syndromic management (treatment failure)
  - Asymptomatic infection remains untreated due to lack of diagnostic testing

	Neisseria gonorrhoeae	*Chlamydia trachomatis*
Estimated incident cases	2.21 million	3.87 million
Estimated symptomatic cases	1.42 million	1.28 million
Estimated cases treated	850 000 (38%)	765 000 (20%)

Hoffman CM et al. Trop Med Int Health 2019
Kularatne RS et al. PLoS One 2019

Syphilis remains a challenge (1)

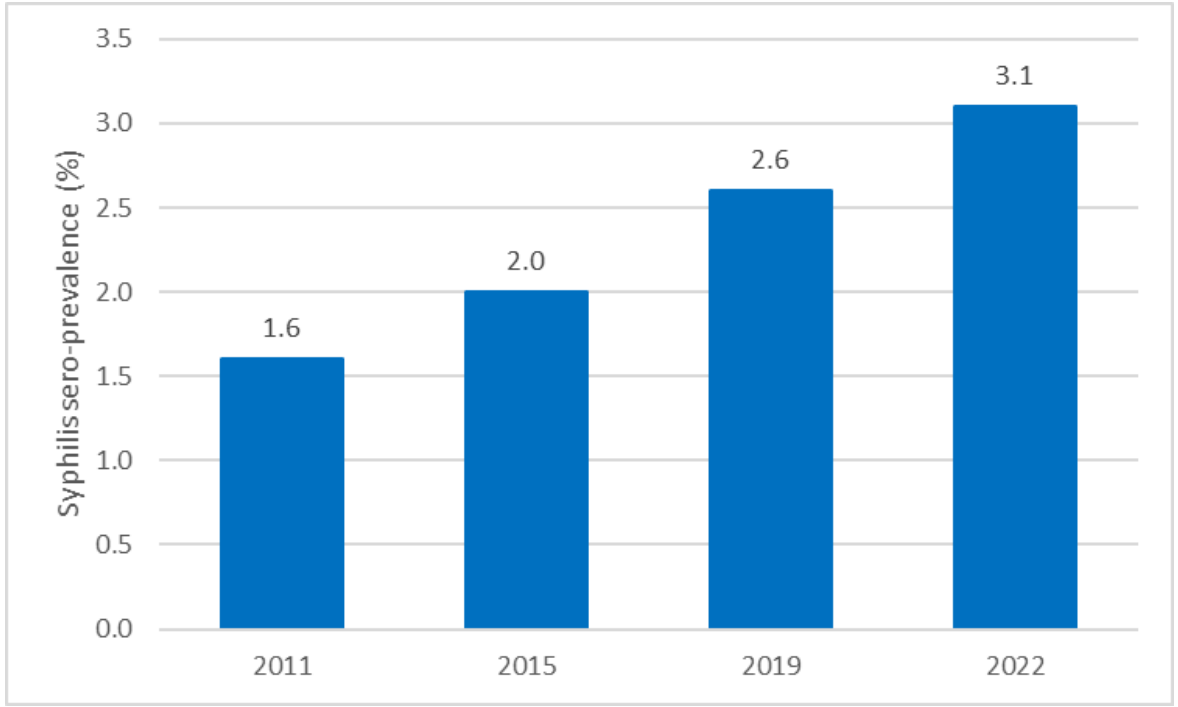


WHO Spectrum model

- Syphilis prevalence <2% in ANC and <1% in general population
  - Introduction of ANC screening
  - Introduction of syndromic management
  - HIV-associated mortality

Johnson LF et al. Sex Reproduct Healthc 2011; Kularatne R et al. PLoS One 2018

Syphilis remains a challenge (2)



Recent data, however:

- Concerning increase in syphilis prevalence in national ANC survey
- Concerning increases in the numbers of congenital syphilis cases

Peters RPH, in preparation

Impact of (untreated) STIs

- Genital tract morbidity and psychological burden
- Adverse pregnancy outcomes
- Reproductive tract complications
- Facilitate HIV transmission and acquisition

Impact of (untreated) STIs

- Antimicrobial resistance

Drug-resistant gonorrhoea is a growing threat: a South African case study

Published: October 27, 2020 4.23pm SAST

Illustration of Neisseria gonorrhoeae bacteria. GettyImages

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Gonorrhoea is a sexually transmitted infection caused by a bacterium called *Neisseria gonorrhoeae*. This infection affects 87 million people every year across the world. It can lead to genital discharge, pregnancy complications and infertility. Gonorrhoea can be treated successfully with antibiotics.

Current first-line treatment is a ceftriaxone injection combined with azithromycin given as oral tablet. But in recent years, alarming reports emerged of these drugs failing to treat gonorrhoea patients. Drug-resistance has been reported in Asia, Europe and Australia.

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Disclosure statement

Remco Peters is affiliated with the Research Unit of the Foundation for Professional Development in East London, South

https://theconversation.com/drug-resistant-gonorrhoea-is-a-growing-threat-a-south-african-case-study-148012

The Enhanced Gonococcal Surveillance Programme, Cambodia

Antimicrobial resistance in *Neisseria gonorrhoeae* is a global public health threat, exemplified by increasing reports of isolates with high minimum inhibitory concentrations (MICs) to cephalosporin antibiotics, the last remaining first-line agent.[1] Since 2015, there have been sporadic reports of *N gonorrhoeae* isolates with elevated ceftriaxone MIC values from several countries. The overwhelming majority of these isolates harbour the *penA*-60.001 allele (a gene encoding the gonococcal penicillin binding protein 2, associated with ceftriaxone resistance) and are closely related to the original described resistant strain, FC428.[2,3] An increase in the detection of such isolates from returned travellers was reported in the UK and Australia.[3,4]

The Enhanced Gonococcal Antimicrobial Surveillance Programme (EGASP) uses standardised methods for antimicrobial resistance surveillance[5] and was established in Cambodia in 2020. In 2021–22, *N gonorrhoeae* was isolated from 93 urethral specimens collected from symptomatic males in Cambodia where the clinical guidelines recommend a single oral 400 mg dose of cefixime. The *N gonorrhoeae* isolates were referred to the partnering WHO collaborating centre in Australia for confirmation and genomic analysis (see appendix pp 7–8).

76 (82%) of these 93 specimens were viable after transport. Ceftriaxone MIC values 0·125 mg/L or greater were detected in 38% of isolates (29 [38%] of 76). All 29 isolates were also resistant to penicillin, ciprofloxacin, and cefixime, and harboured the *penA*-60.001 allele across 9 different multi-locus sequence types on genomic analysis. Moreover, three (4%) of 76 isolates met the criteria for the extensive drug resistant phenotype with high level azithromycin co-resistance (MIC ≥256 mg/L) and all were ST-16406 as previously reported.[4] Placing these within the global context of all previously reported *penA*-60.001 strains revealed that few Cambodian isolates clustered with the FC428 strain (figure). Two clusters exclusively contained Cambodian isolates, suggesting previously unrecognised emergence events across multiple new genomic backbones. These cluster however, were interspersed by other sequences originating from other countries in the region. This indicates that *penA*-60.001 carriage within *N gonorrhoeae* is more extensive than previously reported in the global literature, signifying that widespread dissemination across the region might have already occurred.

Genomic analysis of the Cambodia EGASP *N gonorrhoeae* isolates identified a further 29 new emergent *penA*-60.001-associated resistant isolates from a single setting, including three extensive drug resistant isolates that are of significant concern. Given the *N gonorrhoeae* antimicrobial resistance surveillance gaps in Asia-Pacific, if this pattern and proportion of resistant genotypes is indicative of the situation elsewhere, the future role of cephalosporins as first-line therapy is questioned. This report confirms the urgent need for ongoing and expanded enhanced culture-based antimicrobial resistance surveillance and shows the usefulness of genomic sequencing to enhance our understanding of antimicrobial resistance evolution and spread. Moreover, these results highlight the need for urgent actions and strategies,

Lancet Infect Dis 2023
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See Online for appendix

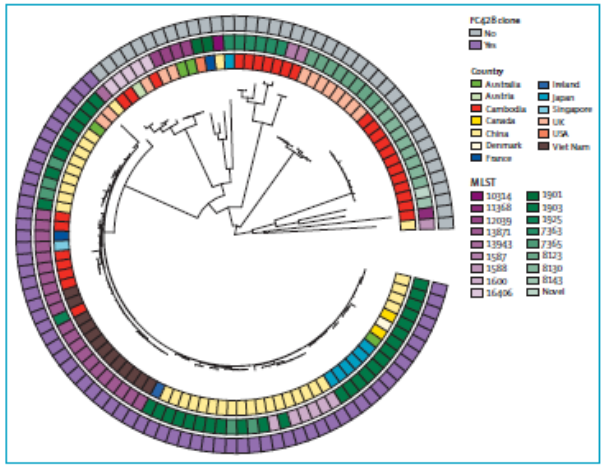
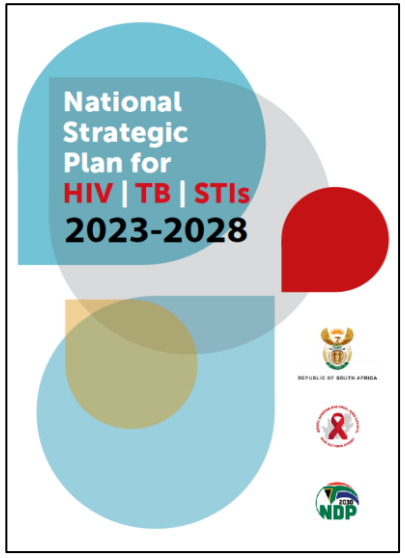


Figure: Genomic context of Cambodian ceftriaxone resistant isolates
Midpoint-rooted maximum likelihood phylogeny following masking of recombination of global ceftriaxone resistant isolates secondary to the presence of the *penA*-60.001 allele (see appendix pp 4–6 for included isolate details). Associated metadata are depicted by concentric rings with country of isolation (inner ring), MLST (middle ring), and relatedness to the archetypal ceftriaxone resistant isolate FC428 (outer ring). MLST=Multi-locus sequence type.

Ouk V et al. Lancet Infect Dis 2023

Key components of STI strategy in NSP

Objective: *Increase detection and treatment of four curable STIs through systems strengthening, service integration and diagnostic testing; achieve elimination targets of neonatal syphilis; and scale up human papillomavirus (HPV) vaccination and cervical cancer screening*



Subobjective 2.8.1. Reduce the annual number of new cases of four curable STIs (*Chlamydia trachomatis*, *Neisseria gonorrhoea*, trichomoniasis and syphilis)

Subobjective 2.8.2. Achieve elimination of neonatal syphilis

Key components of STI strategy in NSP

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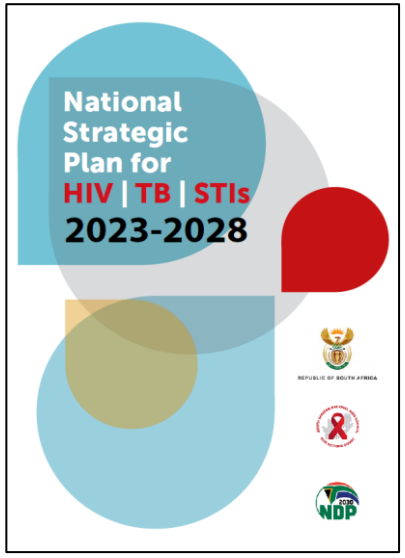


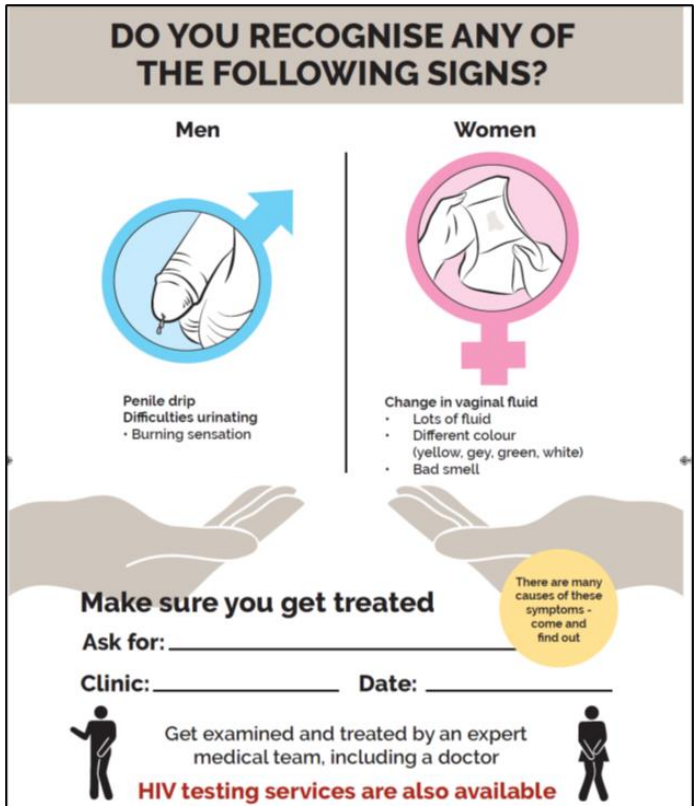
1. Education and awareness: “doing the basics and getting it right”
2. Implement diagnostic testing
3. Strengthen case management including partner strategies
4. Novel biomedical interventions

“Getting the basics right”

- **Addressing the unmet need for STI care**
  - Healthcare access and service provision
  - Fidelity to treatment guidelines

Patient awareness and perceptions

- **Community mobilisation of individuals with genital discharge in Limpopo**
  - Clinic poster
  - Traditional leaders
  - Community healthcare workers
- **Mobilised a large number of symptomatic individuals at two specific clinic days**
  - 1:350 people living in the catchment area
  - Majority (71%) of individuals had STI diagnosed



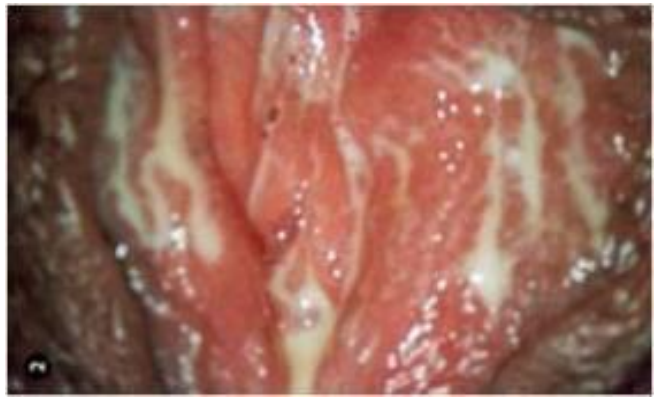
Hoffman CM et al. Trop Med Int Health 2019

Patient awareness and perception

Table 4 Reasons reported by participants for not seeking health care for their STI-associated symptoms

	Women (n = 134)	Men (n = 43)	Total (n = 177)
Patient knowledge and beliefs	64 (48)	16 (37)	80 (46)
Not aware of symptoms	50 (37)	10 (23)	60 (34)
Clinic is too far/ no money to visit	2 (1)	2 (5)	4 (2)
Embarrassed or afraid of reaction clinic staff	10 (7)	1 (3)	11 (6)
Traditional beliefs	0 (0)	3 (7)	3 (2)
Partner does not allow	2 (1)	0 (0)	2 (1)
Healthcare-associated factors	14 (11)	14 (33)	28 (16)
Do not trust clinic staff	0 (0)	1 (2)	1 (1)
Disappointed with health services previously	14 (10)	4 (9)	18 (10)
Lack of male healthcare workers	0	9 (21)	9 (5)
Treatment-related factors	54 (41)	13 (30)	67 (38)
Disappointed with previous quality of care as symptoms are persistent	35 (26)	6 (14)	41 (23)
Disappointed with previous quality of care as symptoms are recurrent	19 (14)	7 (16)	26 (15)

- **Complex set of factors play a role for non-engagement with care**
  - Unawareness of symptoms
  - Disappointed with previous services
  - Persistent or recurrent symptoms



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Hoffman CM et al. Trop Med Int Health 2019

Screening for STIs

1. **Provider-initiated STI-symptom screening**: To identify symptomatic individuals that require further treatment
   - To overcome lack of awareness, stigma and systems barriers

2. **STI screening using diagnostic tests:** To diagnose STIs in asymptomatic individuals to avert long-term complications

TABLE 2: Recommended diagnostic screening frequency for specific sexually active population groups.

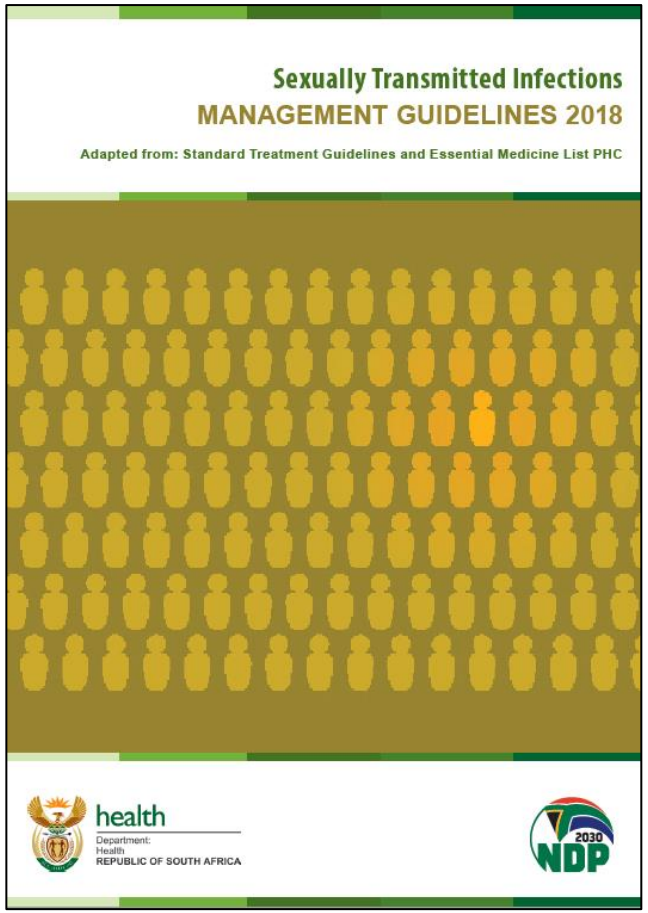
Population group	CT NAAT	NG NAAT	TV NAAT	TP Serology	Suggested screening frequency
Adolescent girls and young women	x	x	-	x	At least annually based on risk assessment†
Commercial sex workers	x	x	x	x	3–6 monthly
Individuals at increased risk†	x	x	-	x	At least annually
Men who have sex with men	x	x	-	x	At least annually, at least 6 monthly if increased risk†
People living with HIV	x	x	-	x	At least annually, and especially on entry to care
Pregnant women	x	x	x	x	At first antenatal visit, and repeat in third trimester (32 weeks)
PrEP users	x	x	-	x	At PrEP initiation then at least annually
Transgender and gender diverse	x	x	-	x	At least annually, more frequently based on risk assessment†

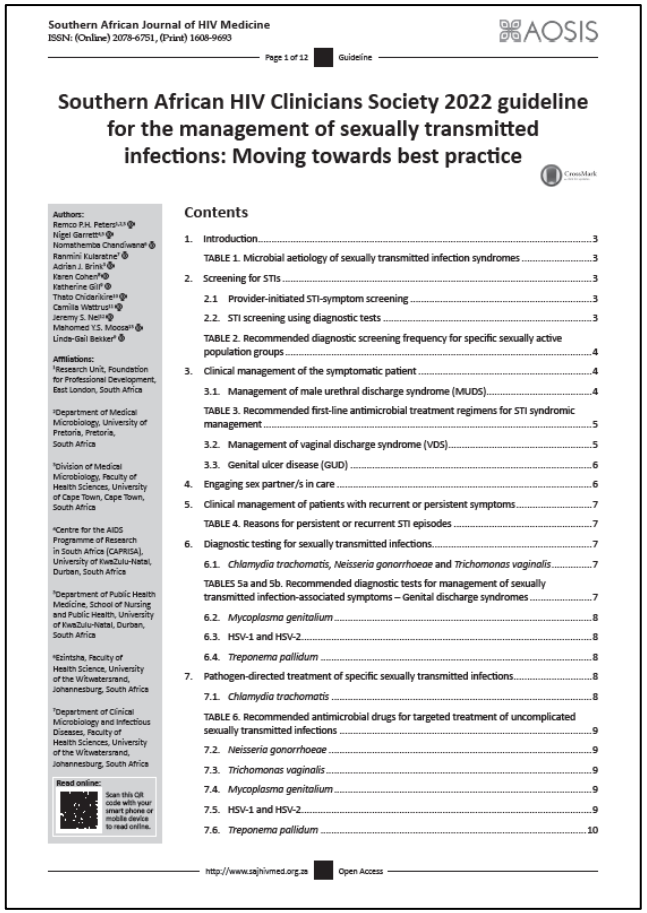
CT, *Chlamydia trachomatis*; NAAT, nucleic acid amplification test; NG, *Neisseria gonorrhoeae*; TV, *Trichomonas vaginalis*; TP, *Treponema pallidum*; PrEP, pre-exposure prophylaxis.

†, Individuals are considered at increased risk if: multiple sex partners, engaging in transactional sex, sex under influence of drugs, sexually transmitted infection diagnosis in the last year.

Peters RPH et al. S Afr J HIV Med 2022

Syndromic management of STIs





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AOSIS

Southern African HIV Clinicians Society 2022 guideline for the management of sexually transmitted infections: Moving towards best practice

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Contents

Pros and cons of syndromic management of STIs

- **Combination of empirical antimicrobial that covers the most likely treatment aetiology for each syndrome**
  - Male urethral discharge syndrome and vaginal discharge syndrome
  - Genital ulcer syndrome

Advantages	Disadvantages
• Relatively cheap • Easy to implement	• Asymptomatic infections untreated (50-70%) • Poor antimicrobial stewardship • Management of treatment failure • Antimicrobial resistance

Fidelity to STI treatment guidelines

- Doing the basics right: physical examination

Services provided to SP actors	Total % (95% CI)	Men % (95% CI)	Women % (95% CI)
Delivery of STI services			
Offered a physical genital exam	50.2 (36.2 to 64.3)	43.4 (27.6 to 60.8)	56.9 (41.1 to 71.3)
Treatment consistent with national guidelines*	60.7 (49.1 to 71.3)	70.7 (54.8 to 82.8)	50.9 (38.7 to 63.0)
Received ≥1 condom*	31.4 (21.3 to 43.8)	37.2 (23.0 to 54.0)	25.8 (16.0 to 38.9)
Partner notification slip or counselling*	70.2 (61.5 to 77.6)	79.9 (69.0 to 87.7)	60.6 (48.1 to 71.9)
Provided counselling about safer sex	62.5 (49.4 to 74.0)	70.9 (54.7 to 83.1)	54.2 (37.9 to 69.7)

Kohler PK et al. Sex Transm Infect 2017

Fidelity to STI treatment guidelines

- **Doing the basics right: provide treatment in line with the guidelines**

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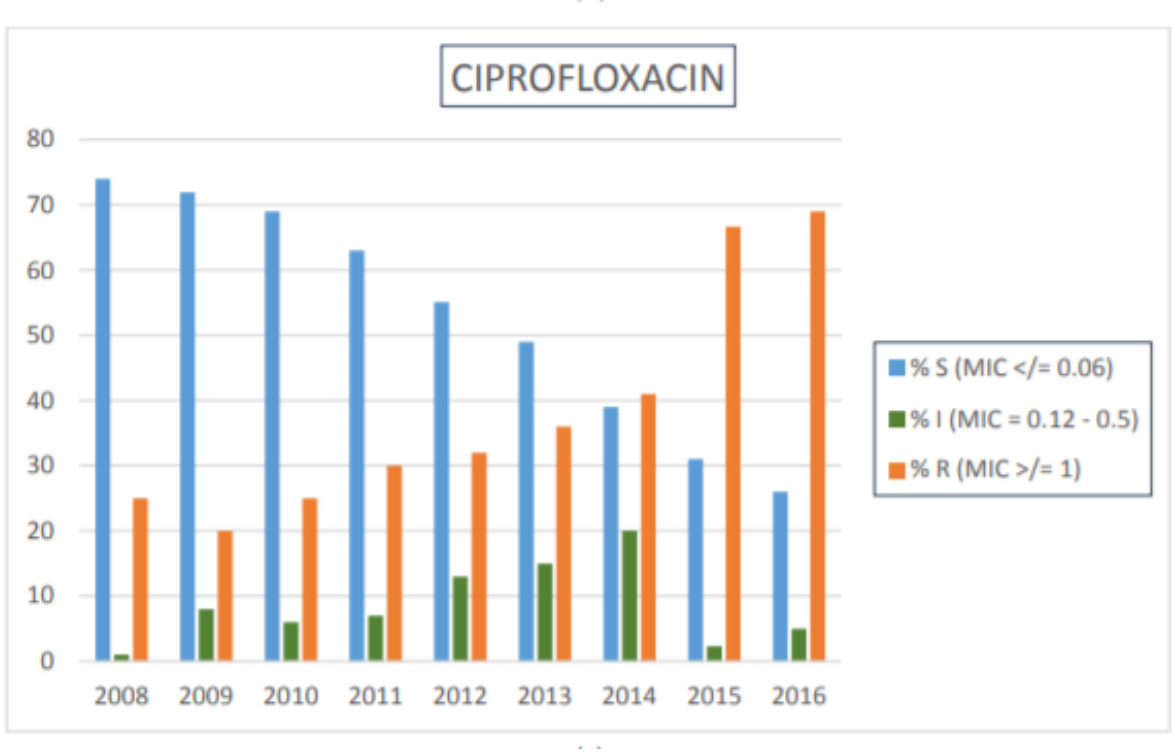
Kohler PK et al. Sex Transm Infect 2017

Fidelity to STI treatment guidelines

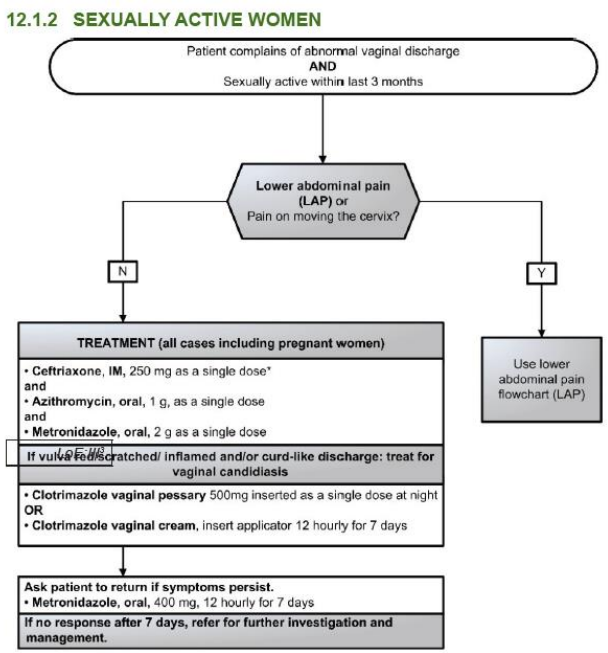
- Ensure that ceftriaxone injections are given - remove barriers
  - No ciprofloxacin!

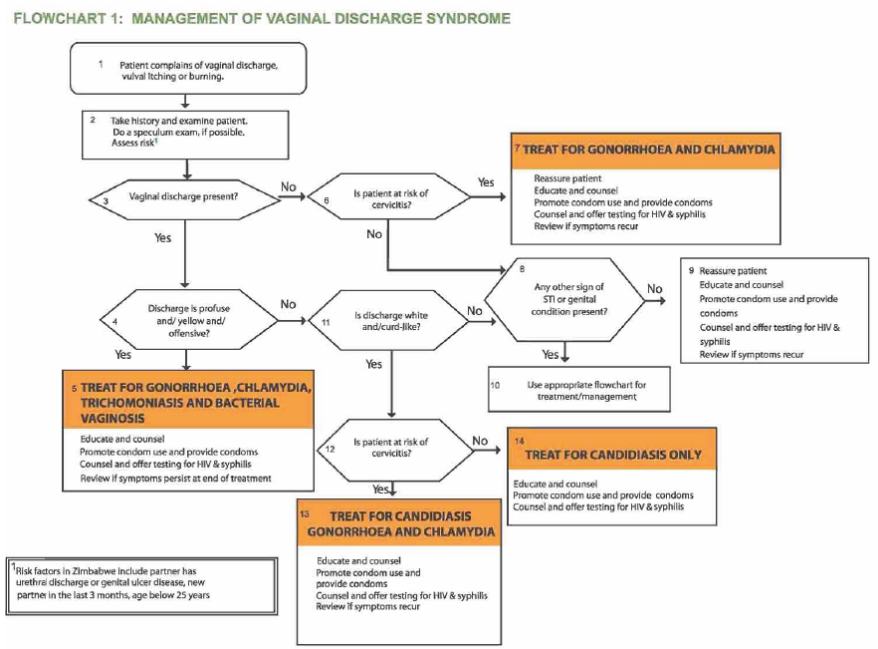


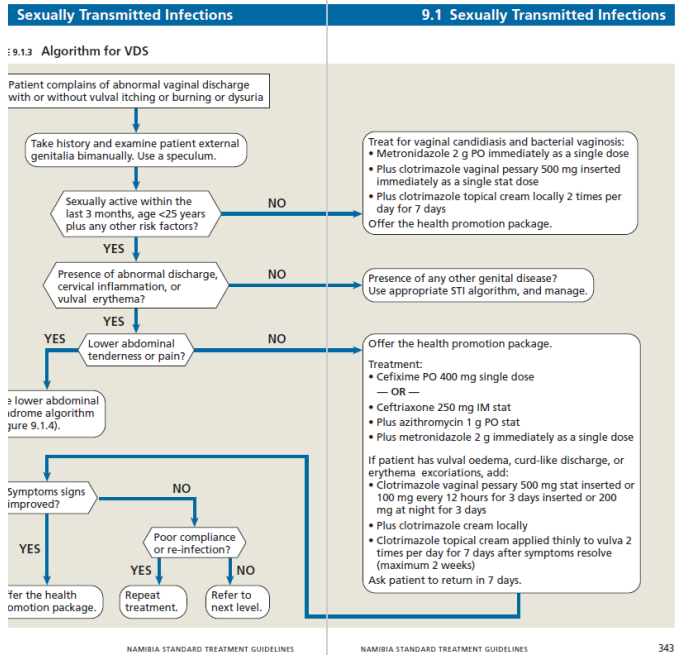
Kularatne R et al. Antibiotics 2018

Syndromic management of VDS

- Different algorithms: same performance and challenges







South African DoH guideline
Zimbabwe MOH guidelines
Namibia MOH guidelines

Linking STI syndrome with microbial aetiology

TABLE 1: Microbial aetiology of sexually transmitted infection syndromes.

Syndrome	Common aetiology (> 10% of cases)	Less common aetiology (< 10% of cases)
Male urethral discharge syndrome	*Neisseria gonorrhoeae* *Chlamydia trachomatis*	*Mycoplasma genitalium* *Trichomonas vaginalis* Other aetiology
Vaginal discharge syndrome	*Neisseria gonorrhoeae* *Chlamydia trachomatis* *Trichomonas vaginalis* Bacterial vaginosis Candidiasis	*Mycoplasma genitalium* Non-infectious aetiology
Genital ulcer syndrome	HSV-1 and HSV-2 *Treponema pallidum*	*Chlamydia trachomatis* biovar Lymphogranuloma venereum *Haemophilus ducreyi* *Klebsiella granulomatis*

HSV, herpes simplex virus.

However: multiple aetiology is common in genital discharge, especially VDS

Peters RPH et al. S Afr J HIV Med 2022

Diverse aetiology of VDS

- 40-50% of VDS cases is caused by STI
  - Local differences in epidemiology
  - Approximately 30% of STI cases is caused by a mixed infection

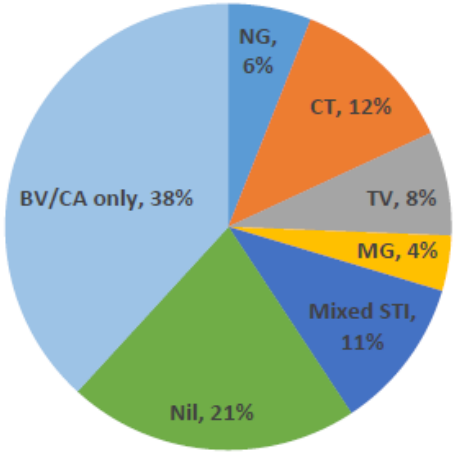


TABLE 2. Prevalence of STI Etiologies by Recruitment Site and Frequency of Coinfections

	All Clinics		Harare		Bulawayo		Beitbridge/Gutu		
	N	%	N	%	N	%	N	%	*P*
Total	**200**		**69**		**69**		**62**		
Pathogen									
N. gonorrhoeae	48	24.0	13	18.8	17	24.6	18	29.0	NS
C. trachomatis	28	14.0	6	8.7	11	15.9	11	17.7	NS
T. vaginalis	38	19.0	10	14.5	17	24.6	11	17.7	NS
M. genitalium	14	7.0	5	7.2	4	5.8	5	8.1	NS
Any Infection	90	45.0	26	37.7	31	44.9	33	53.2	NS
No Infection	110	55.0	43	62.3	38	55.1	29	46.8	NS

NG, *N. gonorrhoeae;* TV, *T. vaginalis;* CT, *C. trachomatis;* MG, *M. genitalium.*

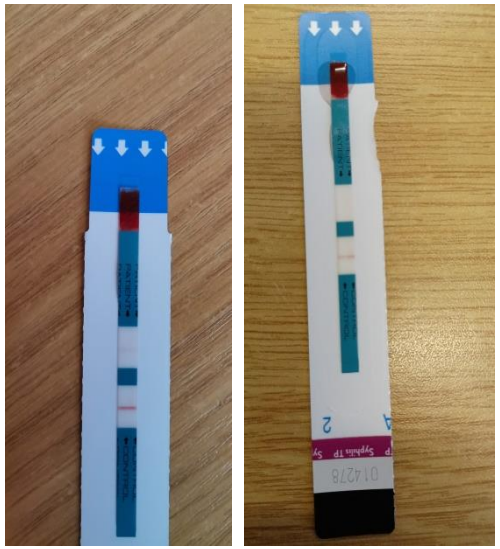
- Aetiological surveillance (South Africa)
  - 41% of VDS cases due to STI
  - 27% of STI cases is mixed infection
- Research study (3 cities Zimbabwe)
  - 45% of VDS cases due to STI
  - 31% of STI cases is mixed infection

Kularatne R et al. Sex Transm Dis 2022
Chirenje ZM et al. Sex Transm Dis 2018

Can diagnostic testing make a difference?

Smear microscopy useful but generally not available

- Presumptive NG
- *Trichomonas vaginalis*
- Bacterial vaginosis
- Candida



Syphilis rapid antibody test

- Rapid syphilis screening

GeneXpert® testing mainly used in research settings

- *Chlamydia trachomatis*
- *Neisseria gonorrhoeae*
- *Trichomonas vaginalis*

Diagnostic tests for curable STIs

- **STI NAAT in symptomatic individuals:**
  - Confirm diagnosis and optimize treatment regimen
  - Strengthen partner management
- **STI NAAT in asymptomatic individuals:**
  - Identify and treat asymptomatic infections
  - Who should be tested? How frequently?
- **Important data gaps:**
  - Point-of-care vs. in-facility vs. lab-based testing
  - Cost-effectiveness of STI NAAT testing
  - Service delivery and programme integration models

STI testing in pregnancy optimizes treatment

- **Diagnostic testing increases treatment coverage:** 65% of women with STI was asymptomatic
- **Diagnostic testing reduces overtreatment with antibiotics:** 54% of women with symptoms did not have an STI

		STI +	STI-	Total
Reported any STI symptom in pregnancy	Yes	27	32	59
	No	51	132	183
	Total	78	164	242

Joseph Davey DL et al. PLoS One 2017

STI testing in pregnancy optimizes treatment

- **Diagnostic testing increases treatment coverage:** 65% of women with STI was asymptomatic
- **Diagnostic testing reduces overtreatment with antibiotics:** 54% of women with symptoms did not have an STI

		STI +	STI-	Total
Reported any STI symptom in pregnancy	Yes	27	32	59
	No	51	132	183
	Total	78	164	242

Joseph Davey DL et al. PLoS One 2017

STI testing reduces burden of STIs in pregnancy

- Diagnostic testing reduced STI prevalence from 40% at 1st ANC visit to 14% at time of delivery
- Diagnostic testing and more effective than syndromic management in reducing STI burden

Table 2. Prevalence of sexually transmitted infections at antenatal care and postnatal care visits in HIV-infected pregnant women in Tshwane, South Africa (n = 841)

	Antenatal care visit		Postnatal care visit		RR (95% CI)*	aRR (95% CI)*
	Aetiological testing (n = 427)	Syndromic management (n = 414)	Aetiological testing (n = 219)	Syndromic management (n = 201)		
Any STI	172 (40%)	ND	30 (14%)	48 (24%)	0.70 (0.52–0.94)	0.61 (0.35–1.05)
Chlamydia trachomatis	126 (30%)	ND	20 (9.1%)	37 (18%)	0.64 (0.44–0.92)	0.57 (0.31–1.07)
Neisseria gonorrhoeae	24 (5.6%)	ND	10 (4.6%)	4 (2.0%)	1.4 (0.98–2.0)	2.7 (0.77–9.4)
Trichomonas vaginalis	86 (20%)	ND	7 (3.2%)	18 (9.0%)	0.52 (0.28–0.99)	0.36 (0.14–0.95)

Peters RPH et al. BJOG 2021

STI testing and partner management

- Diagnostic testing reduced STI prevalence from 45% to 2.6% in young, HIV-negative women
- Good example of successful model of POC STI testing, immediate treatment and expedited partner therapy

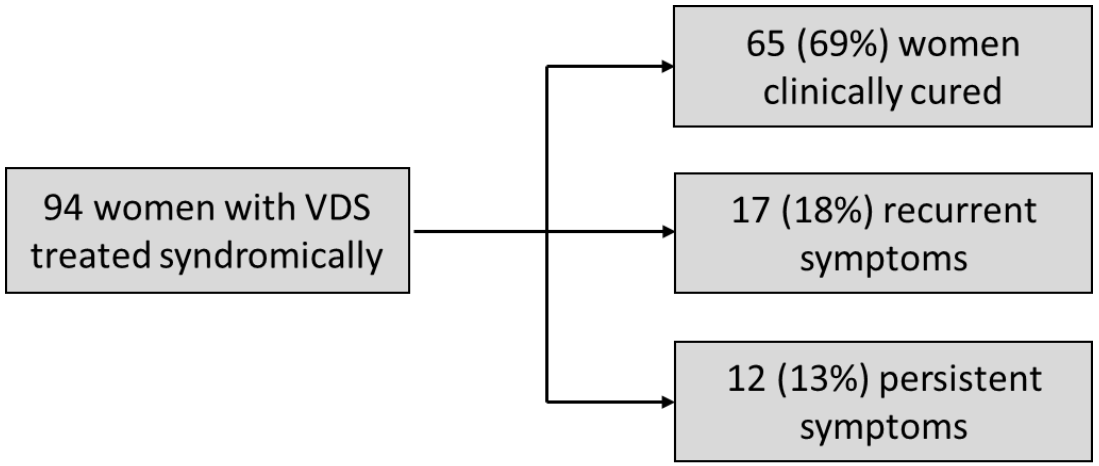
Table 4. STI detection after POC STI testing, immediate treatment and EPT intervention.

Pathogen (N = 77) [a]	Baseline N (%)	Week 6 N (%)	Week 12 N (%)	p-value
C. trachomatis (CT)	35 (45.5)	4 (5.2)	2 (2.6)	<0.001
N. gonorrhoeae (NG)	10 (13.0)	0 (0)	1 (1.3)	0.041
T. vaginalis (TV)	5 (6.5)	2 (2.6)	0 (0)	0.013
Any of CT, NG or TV	46 (59.7)	6 (7.8)	3 (3.9)	<0.001

Garrett NJ et al. PLoS One 2017

In practice: STI testing ≠ STI control

- **Repeat or persistent symptoms and infection are common**
  - Clinical guidance and access to diagnostic testing required for better outcomes



Clinical failure

	First test-of-cure (ToC1)	
	Tested at ToC1 N	Positive at ToC1 n (%)
Any CT, NG or TV at baseline	136	36 (26.5%)
CT positive at baseline	102	27 (26.5%)
NG positive at baseline	16	1 (6.3%)
TV positive at baseline	66	11 (16.7%)

Microbiological failure

Dunaiski CM et al. Submitted
Medina-Marino A et al. Int J STD AIDS 2021

In practice: same-day treatment is challenging

Table 1. Time to Treatment Initiation After Point-of-Care Sexually Transmitted Infection Testing at 4 Primary Healthcare Facilities in South Africa

	Women, No. (%)				
Timing of Treatment Initiation Relative to Testing	Facility A (n = 27)	Facility B (n = 39)	Facility C (n = 34)	Facility D (n = 25)	Total (n = 125)
Same day	26 (96)	7 (18)	9 (26)	7 (28)	49 (39)
After 1–7 d	0	19 (49)	13 (38)	11 (44)	43 (34)
After >7 d	0	10 (26)	7 (21)	4 (16)	21 (16)
No return for treatment	1 (4)	3 (8)	5 (15)	3(12)	12 (10)

RESEARCH ARTICLE Open Access

"It was difficult to offer same day results": evaluation of community-based point-of-care testing for sexually transmitted infections among youth using the GeneXpert platform in Zimbabwe

Kevin Martin[1,2*], Chido Dziva Chikwari[2,3], Constance R. S. Mackworth-Young[2], Mutsawashe Chisenga[3], Tsitsi Bandason[3], Ethel Dauya[3], Ioana D. Olaru[2,3], Suzanna C. Francis[4], Constancia Mavodza[4,5], Portia Nzombe[3], Rangarirayi Nyamwanza[3], Fadzanai Hove[3], Maureen Tshuma[3], Anna Machiha[6], Katharina Kranzer[2,3,7†] and Rashida A. Ferrand[2,3†]

Mdingi MM et al. Clin Infect Dis 2022
Martin K et al. BMC Health Serv Res 2022

Point-of-care test for same-day treatment

- **Pipeline available of molecular and non-molecular tests**
- **Lateral flow assay for POC detection of *Neisseria gonorrhoeae***

  - Sensitivity meets optimal requirement and specificity the minimal requirement in WHO target product profile for rapid and affordable point-of-care test


Prepare buffer


Prepare specimen

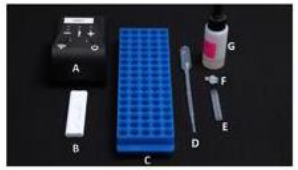

Mix specimen and buffer


Prepare cartridge while waiting


Inoculate cartridge


Do other things while waiting


Use reader for result

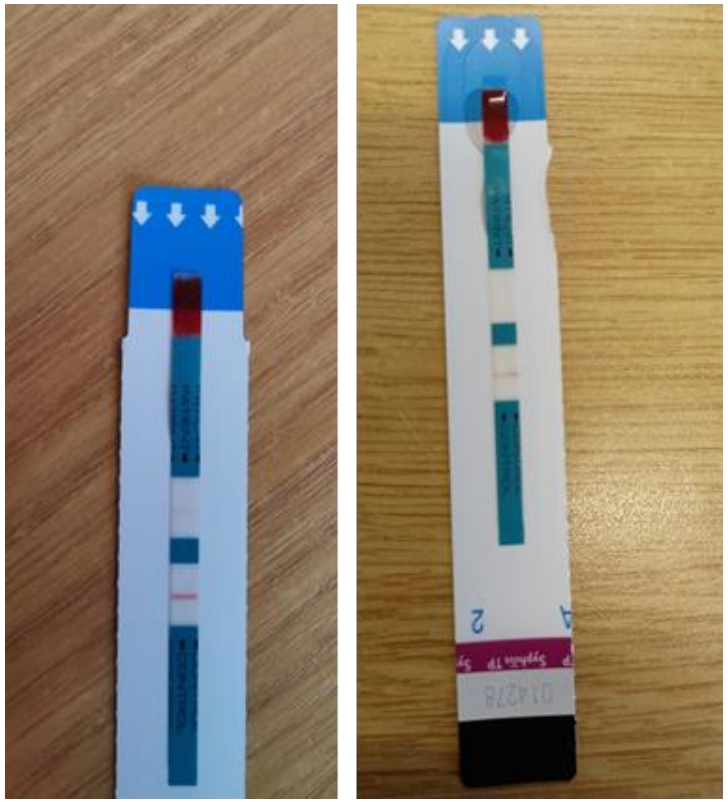


Overview of NG LFA kit and testing set-up
(A) NG-LFA Reader
(B) NG-LFA cassette
(C) Test tube rack
(D) Transfer pipette
(E) Sample tube
(F) Dropper cap
(G) Extraction buffer with dropper


RESULT!

Peters RPH et al. Lancet 2023
De Vos et al. PLoS One 2023

Syphilis rapid diagnostic tests

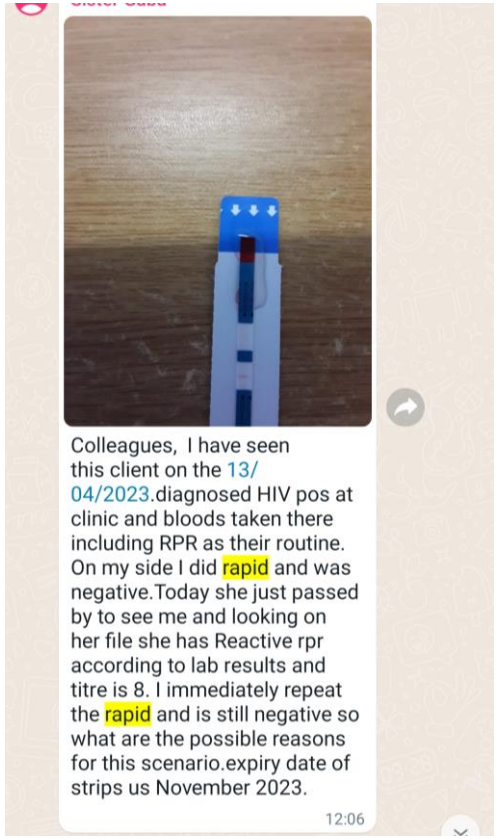


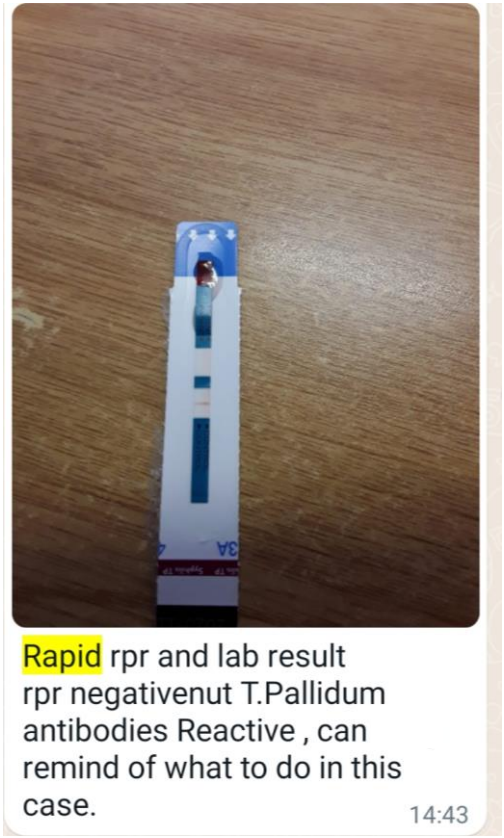
- **Good rapid point-of-care tests are available**

- Screening for syphilis antibodies – requires additional laboratory testing
- RDT may be negative in symptomatic infection --> negative test does not exclude syphilis
- May remain positive post-treatment so history and RPR required for further interpretation
- Further clinical guidance required about interpretation of syphilis serology (guidelines)

Photo credit: RPH Peters

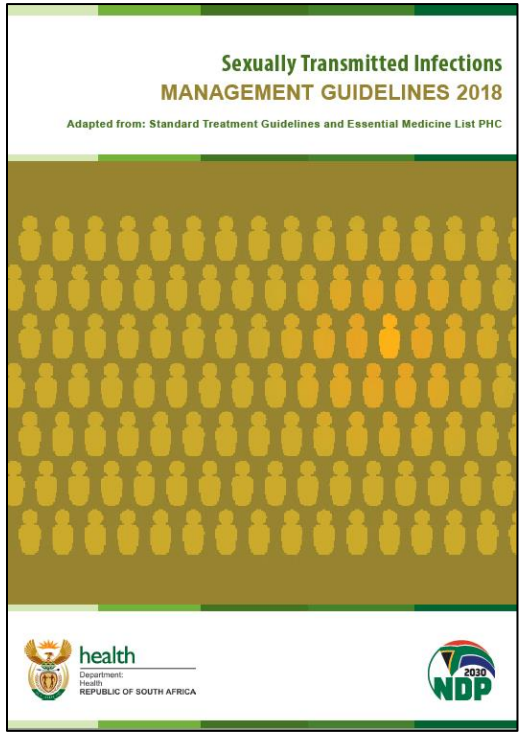
Syphilis RDT implementation in practice

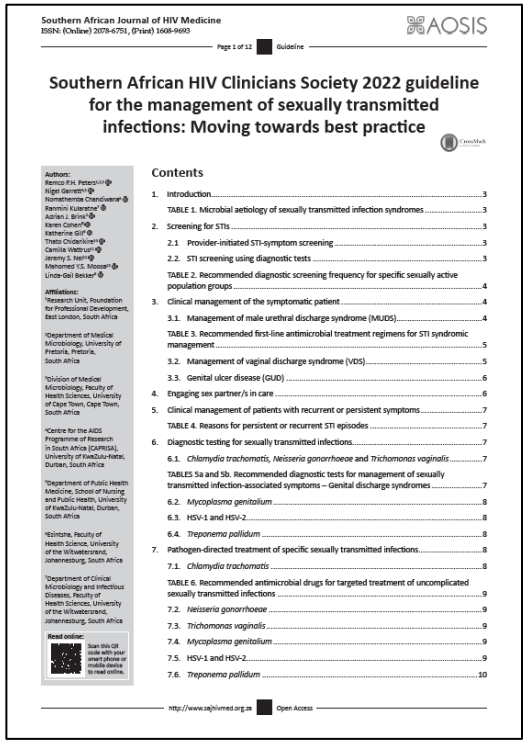




- Test band is not as strongly visible as for HIV rapid tests
- Any (faint) band indicates a positive test result
- Tests should be used and only observed after 15 minutes as per manufacturer's instructions!
- Not a rapid RPR!

Strengthen case management





1. Repeat or recurrent infections
2. Doxycycline vs. azithromycin
3. Ceftriaxone dose for gonorrhoea
4. Efficacy of metronidazole for trichomoniasis

Peters RPH et al. S Afr J HIV Med 2022

Repeat and recurrent infections

- **Diverse reasons for treatment failure**
  - Importance of clinical and sexual history to guide management (algorithms needed!)
  - Importance of establishing access to diagnostic testing

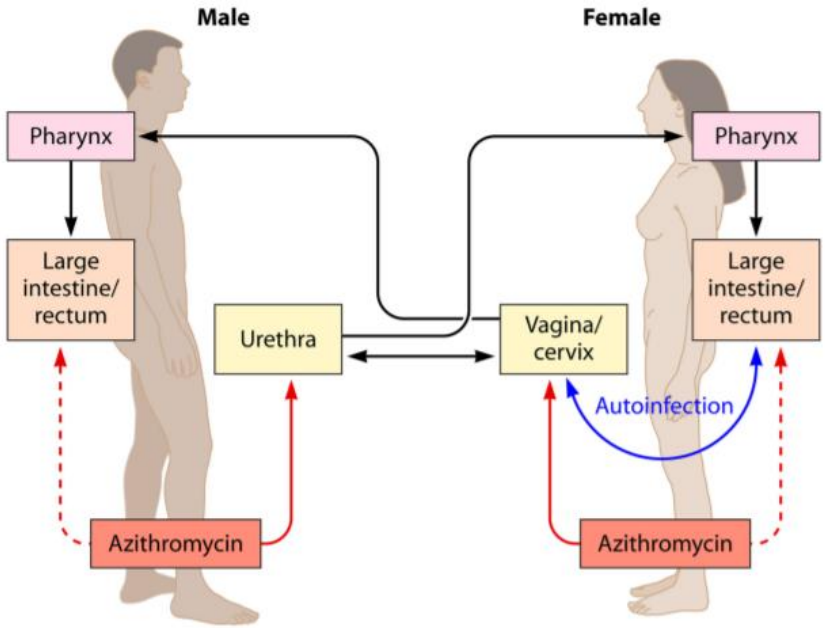
TABLE 4: Reasons for persistent or recurrent sexually transmitted infection episodes.

Cause	Mechanisms
Sexual partner was not treated	Reinfection by same sex partner
Sexual partner has other partners	New infection with similar or different pathogen
New sexual partner	New infection
Poor treatment compliance	Persistent infection (treatment failure)
Aetiology not covered by initial treatment†	Persistent infection
Treatment with suboptimal efficacy‡	Persistent infection (treatment failure)
Vomiting after treatment	Persistent infection (treatment failure)
Antimicrobial resistance	Treatment failure
Other non-infectious aetiology	No infection

Peters RPH et al. S Afr J HIV Med 2022

Chlamydia trachomatis treatment

- **Higher efficacy of doxycycline compared to azithromycin**
  - Urogenital infection in men (96.7% vs. 91.8%)
  - Anorectal infection in men (100% vs. 74%) and women (97% vs. 76%)
  - Lack of data for cervical infection in women



Paez-Canro C et al. Cochrane Library 2018
Lau A et al. New Engl J Med 2021
Dombrowski JC et al. Clin Infect Dis 2021
Rank R et al. Infect Immune 2014

Neisseria gonorrhoeae treatment

BASHH British Association for Sexual Health and HIV

Centers for Disease Control and Prevention
MMWR Morbidity and Mortality Weekly Report
Recommendations and Reports / Vol. 70 / No. 4 July 23, 2021

Sexually Transmitted Infections Treatment Guidelines, 2021

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

ashm

Treatment regimens for *Neisseria gonorrhoeae*: dual or monotherapy?

- Ceftriaxone 500mg (CDC)
- Ceftriaxone 1g (BASHH)
- Ceftriaxone 500mg plus azithromycin 1g (ASHM)
- Ceftriaxone 500mg (SAHIVCS)

Considerations

- Antimicrobial resistance profile (MICs) in general population and core risk groups
- Different pharmacokinetics in endocervix, rectum and pharynx

Trichomonas vaginalis treatment

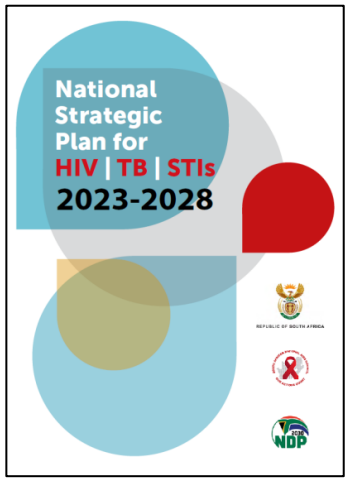
- **Metronidazole the mainstay**
  - Higher efficacy of 7-day course than single dose treatment
  - Treatment failure not uncommon
  - Counselling and access to diagnostic testing essential to improve treatment outcomes

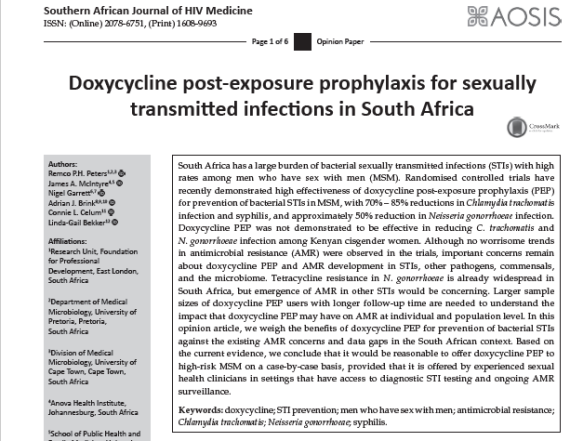
	7-day-dose metronidazole group	Single-dose metronidazole group	7-day-dose vs single-dose difference (95% CI)	Relative risk (95% CI)	p value*
Primary outcome analyses by intention to treat†					
Trichomonas vaginalis infection at test-of-cure	34/312 (11%)	58/311 (19%)	−7·8 (−2·2 to −13·3)	0·55 (0·34 to −0·70)	<0·0001
Among patients with bacterial vaginosis at baseline	16/125 (13%)	26/125 (21%)	−8·0 (−12·8 to −20·8)	0·59 (0·43 to 0·80)	0·0002
Among patients without bacterial vaginosis at baseline	13/139 (9%)	24/140 (17%)	−7·8 (−0·2 to −15·8)	0·57 (0·45 to 0·71)	<0·0001

Kissinger P et al. Lancet Infect Dis 2021

Summary and conclusion (1)

- **Global and national policies have the ambitious goals to achieve STI control by 2030 through:**
  1. Community mobilization and high-quality service delivery
  2. Introduction and implementation of diagnostic testing
  3. Strengthening case management including partners
  4. Novel biomedical prevention options




Southern African Journal of HIV Medicine
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AOSIS
Page 1 of 6 Opinion Paper

Doxycycline post-exposure prophylaxis for sexually transmitted infections in South Africa

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South Africa has a large burden of bacterial sexually transmitted infections (STIs) with high rates among men who have sex with men (MSM). Randomised controlled trials have recently demonstrated high effectiveness of doxycycline post-exposure prophylaxis (PEP) for prevention of bacterial STIs in MSM, with 70% – 85% reductions in *Chlamydia trachomatis* infection and syphilis, and approximately 50% reduction in *Neisseria gonorrhoeae* infection. Doxycycline PEP was not demonstrated to be effective in reducing *C. trachomatis* and *N. gonorrhoeae* infection among Kenyan cisgender women. Although no worrisome trends in antimicrobial resistance (AMR) were observed in the trials, important concerns remain about doxycycline PEP and AMR development in STIs, other pathogens, commensals, and the microbiome. Tetracycline resistance in *N. gonorrhoeae* is already widespread in South Africa, but emergence of AMR in other STIs would be concerning. Larger sample sizes of doxycycline PEP users with longer follow-up time are needed to understand the impact that doxycycline PEP may have on AMR at individual and population level. In this opinion article, we weigh the benefits of doxycycline PEP for prevention of bacterial STIs against the existing AMR concerns and data gaps in the South African context. Based on the current evidence, we conclude that it would be reasonable to offer doxycycline PEP to high-risk MSM on a case-by-case basis, provided that it is offered by experienced sexual health clinicians in settings that have access to diagnostic STI testing and ongoing AMR surveillance.

Keywords: doxycycline; STI prevention; men who have sex with men; antimicrobial resistance; *Chlamydia trachomatis*; *Neisseria gonorrhoeae*; syphilis.

Summary and conclusion (2)

- **Recent important progress has been made:**
  - Increasing levels of awareness and attention for STIs (e.g., HIV PrEP context)
  - Roll-out of rapid diagnostic tests for syphilis
  - Expanding portfolio of data and experience in use of NAAT tests for STI diagnosis
  - Learning in implementation of STI diagnostic tests ongoing
  - New STI guidelines and revisions to strengthen case management

Thank you

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