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Division of the National Health Laboratory Service

STI/ CONDOM AWARENESS WEEK: INFORMATION FOR HEALTHCARE WORKERS

Sexually Transmitted Infections (STIs) are among the most common communicable diseases and constitute a major global public health burden. The World Health Organization (WHO) estimated that, in 2016, there were approximately 377 million people aged 15-49 years newly infected with gonorrhoea, chlamydia, syphilis or trichomoniasis (four common, treatable STIs). This corresponds to just over **1 million new STI cases worldwide every day**. In South Africa, estimates of people newly infected with STIs in 2017 were approximately 4.5 million for gonorrhoea, 6 million for chlamydia and 71,000 for syphilis[1].

In South Africa, STIs are managed principally at primary healthcare facilities (PHCs) using standard syndromic management guidelines. The syndromic approach to the management of STIs in PHCs is based on the identification of a group of symptoms and easily recognized signs that associated with several well defined conditions and specific causative organisms. Examples of STI syndromes include Male Urethritis Syndrome (MUS), Vaginal Discharge Syndrome (VDS) and Genital Ulcer Syndrome (GUS). Clinical sentinel surveillance data showing the distribution of STI Syndromes among males and females attending PHCs in South Africa reveal that MUS and VDS, respectively, are the two commonest STI presentations[2].

The Centre for HIV and STI at the National Institute for Communicable Diseases (NCD) in Johannesburg has been conducting STI microbiological surveillance in patients presenting to sentinel PHCs in various provinces of the country since 2005. Following informed consent from participants, NICD-affiliated professional nurses based at sentinel clinics conduct interviews and administer anonymised questionnaires to capture demographic and clinical data. Genital swab specimens and blood specimens are then collected from participants for STI aetiological testing and serology.

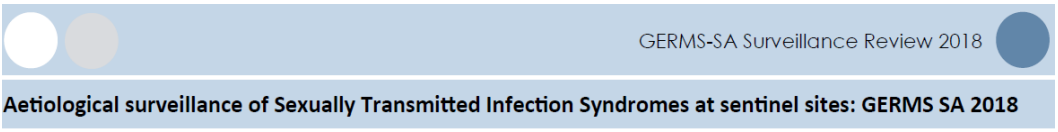
The data are collated and analysed for the following purposes:

1. To revise and update the national STI syndromic management guidelines in use at all PHCs across the country. This is based on the prevalence of the microbial causes of STI syndromes and antimicrobial resistance profiles of organisms.

In 2018 STI aetiological surveillance was conducted in the following provinces: Gauteng (Alexandra Healthcare Centre); Northern Cape (Kimberley City Clinic) and Limpopo (Rethabile Healthcare Centre). *Neisseria gonorrhoeae* was the predominant cause of MUS; and syndromic management with dual ceftriaxone and azithromycin therapy, which also covers *Chlamydia trachomatis*, the second most common pathogen, is rational. Extensively-drug resistant (XDR) *Neisseria gonorrhoeae* was not detected – all isolates were susceptible to extended-spectrum cephalosporins. The syndromic management of VDS remains complex due to the presence of mixed infections: the commonest causes, bacterial vaginosis and candidiasis, are not considered as STIs; however, a significant proportion of patients with either condition were co-infected with STI pathogens. Herpes simplex virus was the commonest detectable cause of

genital ulceration, supporting the continued use of acyclovir in syndromic management. The HIV seroprevalence among STI patients was high, underlining the importance of linkage to universal HIV counselling and testing in primary healthcare settings.

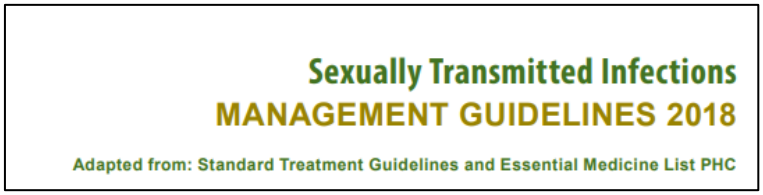
Report on microbial aetiology of STI syndromes:



https://www.nicd.ac.za/wp-content/uploads/2019/11/GERMS-SA-AR-2018-Final.pdf

The PHC STI syndromic management guidelines were recently updated (in 2018). Major changes included the removal of the age cut-off of 35 years in the VDS algorithm that stratified symptomatic females into STI and non-STI groups for treatment. Instead, treatment for sexually transmitted causes of VDS is now based on an assessment of sexual risk behaviour in the preceding 3 month period. Additionally, owing to the periodic stock-outs of benzathine penicillin in the country, alternative treatment recommendations for syphilis were included in the GUS treatment algorithm for adult males and non-pregnant females, and even for pregnant women in the event that benzathine penicillin reserves are not available for this patient category.

Link to the current Sexually Transmitted Infections Management Guidelines (adapted from Standard Treatment Guidelines and Essential Medicine List PHC):



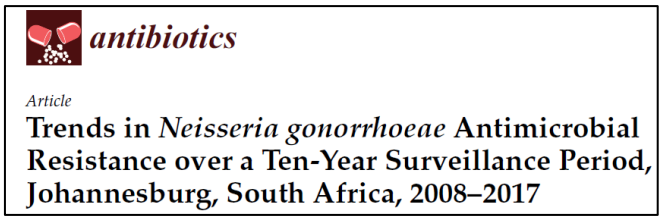
https://www.nicd.ac.za/wp-content/uploads/2019/10/STI-Guidelines-27-08-19-1Final.pdf

Currently NICD STI aetiological surveillance is conducted at three fixed sentinel sites in three key provinces: Gauteng Province (Alexandra Healthcare Centre); Western Cape (Spencer Road Clinic) and Kwa Zulu Natal (Prince Cyril Zulu Communicable Disease Centre). Going forward, sentinel STI surveillance at these sites will enable us to monitor longterm trends in STI epidemiology and antimicrobial resistance patterns.

2. To monitor the antimicrobial resistance patterns of key STI pathogens and contribute data to national management guidelines as well as the World Health Organization Global Antimicrobial Resistance Surveillance System (WHO GLASS)

Neisseria gonorrhoeae, the causative agent of gonorrhoea*,* is a rapidly evolving organism. In 2017 it was categorised as a high-priority human pathogen by the WHO, owing to its propensity to develop resistance to all first-line antimicrobials used in treatment, and thus potentially become untreatable. In recent sentinel surveys, we have not detected resistance to currently recommended treatment for gonorrhoea (ceftriaxone and azithromycin). However, there is high prevalence resistance to penicillin, tetracycline and ciprofloxacin; hence, these antibiotics are no longer included in South African treatment guidelines for gonorrhoea. It is essential to continue to monitor for emerging *Neisseria gonorrhoeae* antimicrobial resistance through sentinel surveillance programs at PHCs and in key population groups.

Data on *Neisseria gonorrhoeae* antimicrobial resistance surveillance:



Link to WHO GLASS 2020 report, which includes *N. gonorrhoeae* antimicrobial resistance data from South Africa (page 94):

https://www.who.int/glass/resources/publications/early-implementation-report-2020/en/

Mycoplasma genitalium, an STI pathogen implicated in genital discharge and pelvic inflammatory disease, is also associated with emerging antimicrobial resistance. The efficacy of single dose of azithromycin included in national syndromic management guidelines for genital discharge may be suboptimal for *M. genitalium* eradication and may be associated with the development of macrolide resistance. It is essential to monitor for the emergence of macrolide resistance in *M. genitalium* and tailor treatment guidelines accordingly:

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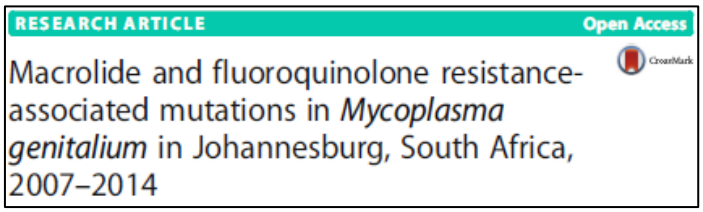
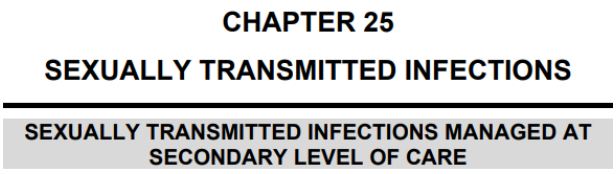

RESEARCH ARTICLE Open Access

Macrolide and fluoroquinolone resistance-associated mutations in *Mycoplasma genitalium* in Johannesburg, South Africa, 2007–2014

Muller et al. BMC Infectious Diseases (2019) 19:148
https://doi.org/10.1186/s12879-019-3797-6

The STI Reference Laboratory in the Centre for HIV & STI at NICD also offers reference/ specialised STI testing for complicated STI disease, or for patients with persistent STI symptoms/ syndromes that are unresponsive to recommended first-line treatment. Aetiological testing of swab specimens of genital discharge/ ulcers using validated in-house real-time multiplex PCR assays for causative agents; as well as antimicrobial resistance testing using phenotypic and molecular techniques, will enable pathogen-directed and appropriately tailored antimicrobial therapy.

Guidelines for the management of patients with persistent STI syndromes are outlined in the adult hospital-level guidelines (Chapter 25):


CHAPTER 25

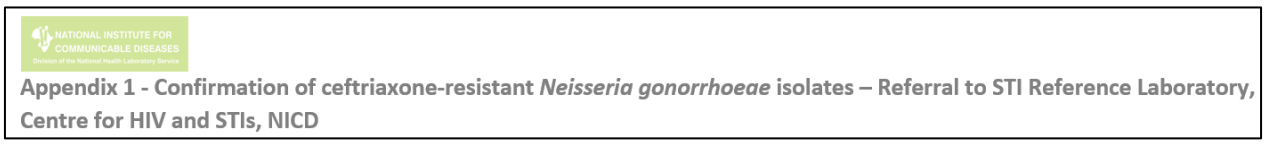
SEXUALLY TRANSMITTED INFECTIONS

SEXUALLY TRANSMITTED INFECTIONS MANAGED AT SECONDARY LEVEL OF CARE

https://www.nicd.ac.za/wp-content/uploads/2020/05/STI-Adult-Hospital-Level-Guidelines-2019.pdf

Ceftriaxone-resistant gonorrhoea is a notifiable medical condition (Category 3) in South Africa, which means that it must be notified to the National Department of Health and NICD within 7 days of diagnosis by private or public health laboratories. The ceftriaxone-resistant *Neisseria gonorrhoeae* isolate should be transported appropriately to the STI reference laboratory at NICD for confirmation of resistance, accompanied by a laboratory referral form. A case investigation form should be completed by the referring clinician and submitted at the same time for epidemiological assessment of demographic and behavioural risks and notification of recent sexual contacts.

Link to the relevant notification forms for ceftriaxone-resistant gonorrrhoea: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Appendix 1 - Confirmation of ceftriaxone-resistant *Neisseria gonorrhoeae* isolates – Referral to STI Reference Laboratory, Centre for HIV and STIs, NICD

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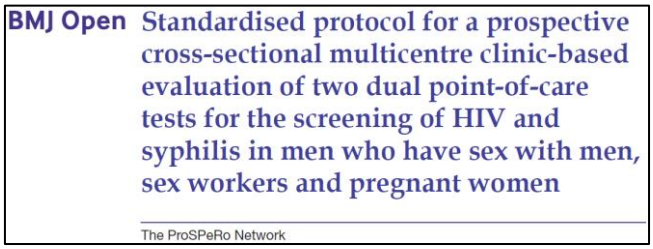
Appendix 2 - Ceftriaxone-resistant *Neisseria gonorrhoeae* Clinical Case Investigation Form

https://www.nicd.ac.za/diseases-a-z-index/gonorrhoea/

In addition to operational work, the Centre for HIV & STI collaborates with local and international research and public health organizations including the WHO. Together with WHO and the National Department of Health, we have completed clinic-based evaluation of rapid point-of-care tests (POCTs) or near-POCTs for STIs. POCTs evaluated include dual syphilis/ HIV tests for the screening of pregnant women, and Cepheid geneXpert NG/CT and TV using self-collected vaginal swabs for the screening of STI pathogens in young women at risk attending youth/ family planning clinics. The data are being analysed and will be used to guide the phased implementation of these assays in the public health sector, in order to achieve the goal of elimination of mother-to-child transmission of HIV and syphilis, and to reduce the prevalence of common STIs in South Africa.



BMJ Open 2020;**10**:e044479. doi:10.1136/bmjopen-2020-044479

References

1. Kularatne R, Niit R, Rowley J, et al. **Adult gonorrhoea, chlamydia and syphilis prevalence, incidence, treatment and syndromic case reporting in South Africa: estimates using the Spectrum-STI model, 1990-2017**. PLOS One 2018 https://doi.org/10.1371/journal.pone.0205863
2. Epidemiological comments. National Department of Health, 2008 Contract No.: 3.