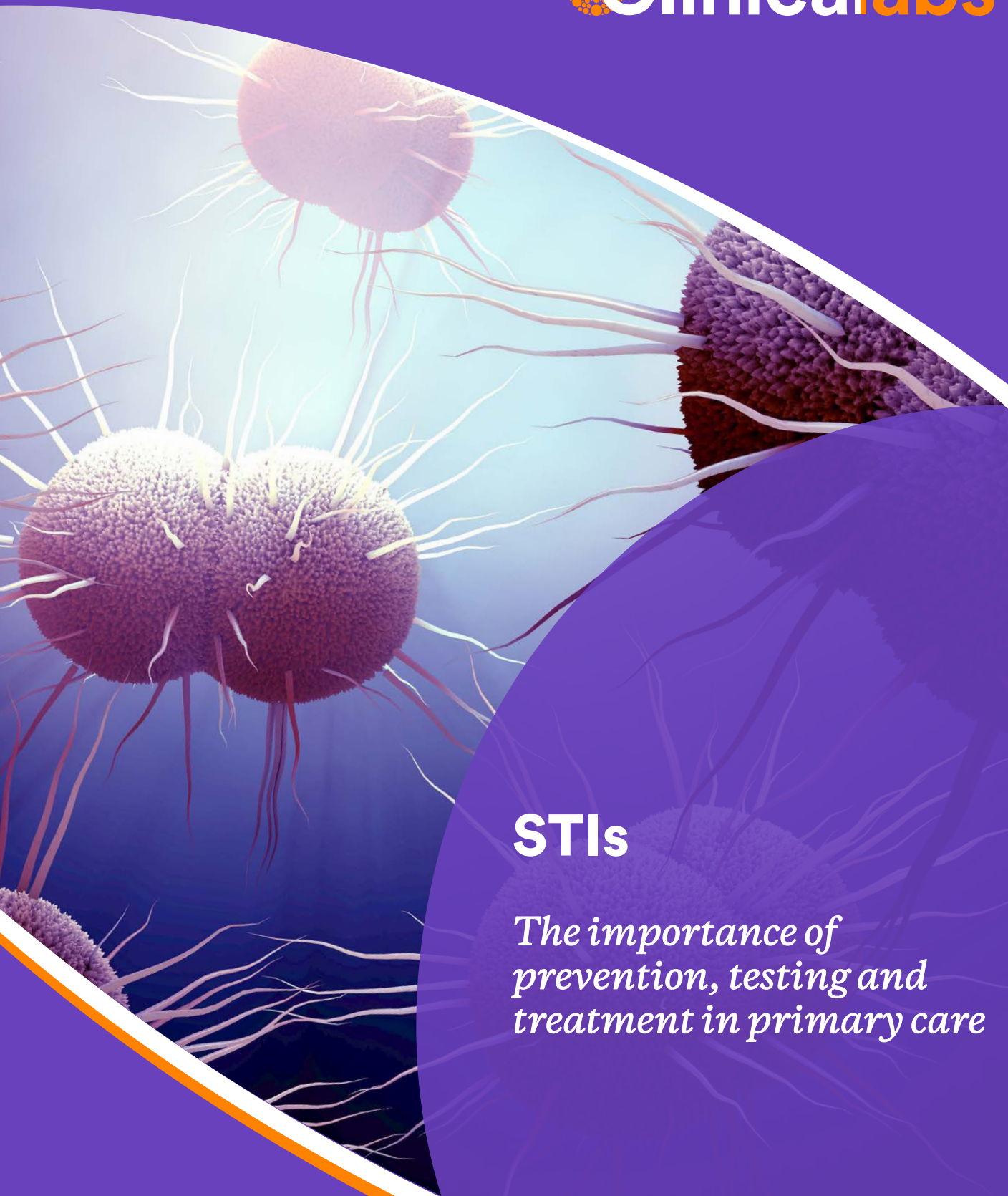
AUSTRALIAN Clinicallabs



STIs

The importance of prevention, testing and treatment in primary care

Low coverage of prevention, testing, and treatment services for STIs during the pandemic has fueled a resurgence of these infections globally. Over 1 million new sexually transmitted infections are acquired worldwide every day, with the majority being asymptomatic. The surge in STI cases post-COVID highlights the ongoing importance of stringent measures in the prevention, testing, and treatment of STIs.

The three years from 2020 to 2022 saw a drop in STI notifications in Australia compared to 2019, reflecting the impact of the pandemic (see Table 1). However, in 2023, there was a resurgence of STIs, with notifications significantly higher than in 2019, especially for syphilis < 2 years duration (an 9% increase), gonococcal infection (a 16% increase), and congenital syphilis (a 400% increase; 4 each in VIC, WA, and NSW, and 5 in QLD) (Table 1)[1].

Table 1. Trends in Key Notifiable STIs in Australia – 2019 to 2023

STI	2019	2020	2021	2022	2023
Chlamydial infection	107,396	91,449	87,367	94,365	109,894
Gonococcal infection	34,745	29,801	26,599	33,148	40,404
Syphilis < 2 years of duration	5915	5361	5775	6180	6451
Syphilis > 2 years or unspecified duration	2609	2192	2186	2623	2795
Congenital Syphilis	4	17	15	15	20

In the following brochure, we provide information on asymptomatic patient testing and highlight three common STIs - chlamydia, gonorrhoea, and syphilis, including symptoms to look for, and testing and treatment recommendations. We also share clinical content regarding an emerging STI, Neisseria meningitidis, and concern over Mycoplasma genitalium's increasing resistance to antibiotics.

Testing guidelines for asymptomatic patients

Who to test

To determine risk, take a sexual history and offer STI screening to all patients who:[2]

- Request STI testing
- Are at increased risk of an STI: new sexual partner(s), or those living or travelling to areas of higher prevalence in Australia or other countries
- Have had a known exposure to any STI or a history of an STI within the past 12 months
- Are the partner of any of the above

"The importance of actively testing, detecting, and treating cannot be overemphasised."

Dr Stella Pendle, *Pathologist (Microbiology) Clinical Labs Bella Vista,*

Opportunistic testing

Due to the combination of the asymptomatic nature of many common STIs and young adults not presenting to their primary healthcare provider frequently, offering STI screening to patients at risk may need to be opportunistic.

In addition to the previous listing of patients to test, additional opportunities to offer STI screening to patients could include:

- Offering screening to female patients when they attend for their HPV screening from age 25. This is an ideal opportunity as testing for chlamydia and gonorrhoea can be performed on the same ThinPrep vial used to collect the Cervical Screening sample.
- Considering a repeat STI screen for women re-presenting for routine Cervical Screening at 30 years of age.
- Offering screening during contraceptive discussion appointments.

What to test:

- **HIV** (if recent exposure, repeat at 6 weeks), **syphilis**, and Hepatitis B virus (**HBV**), if immunisation status is not previously documented (blood tests).
- **Gonorrhoea** and **chlamydia** (urethral swabs, first-pass urine (FPU), and vaginal/endocervical swabs. Note: Vaginal/endocervical swabs are more sensitive than FPU samples in female patients).[2]

Chlamydia

Chlamydial infection, caused by the bacterial pathogen *Chlamydia trachomatis*, is the most commonly reported communicable disease in Australia (see prevalence figures in Table 1), and those under age 30 are most at risk. Frequently asymptomatic, particularly in women, chlamydia is simple to test and treat.

Symptoms

85-90% of individuals with chlamydia have no symptoms. However, if present, symptoms may include dysuria, penile urethral and vaginal discharge, testicular and pelvic pain, intermenstrual and postcoital bleeding, pain during sex, and anorectal symptoms. Chlamydia can also cause a wide range of complications, such as cervicitis, pelvic inflammatory disease, infertility, pregnancy-related complications such as ectopic pregnancy, epididymo-orchitis, reactive arthritis, and conjunctivitis.

Testing recommendations

Urethral swabs, first-pass urine (FPU), and vaginal/endocervical swabs. Note: Vaginal/endocervical swabs are more sensitive than FPU samples in female patients. Additionally, an anorectal swab for patients with anorectal symptoms and all MSM, along with pharyngeal swab for MSM. Due to the risk of co-infections, STI guidelines recommend that gonorrhoea testing should accompany chlamydia testing.

Re-testing

Testing for re-infection is recommended at 3 months. Consider testing for other STIs if not undertaken at first presentation.

Treatment

Recommended first-line treatment for uncomplicated genital or pharyngeal infection for chlamydia is doxycycline 100 mg taken orally twice daily for 7 days. An alternative is a single dose of 1 gram oral azithromycin. To improve antibiotic stewardship, immediate treatment is not recommended for all sexual contacts of chlamydia – instead, offer testing of exposed anatomical sites and await results.

Gonorrhoea

The bacterium *Neisseria gonorrhoeae* causes a disease spectrum very similar to that of chlamydia. In up to 3% of patients, bacteraemic (bloodstream) spread can result in disseminated gonorrhoea with presentations of septic arthritis, polyarthralgias, or dermatitis. There was a concerning 16% increase in gonococcal infection notifications in Australia in 2023 (40,404) compared to 34,745 in 2019 (see Table 1).

Symptoms

Up to 70% of women with genital gonococcal infection are asymptomatic, while approximately 80% of men present with mostly mild symptoms. Symptoms may include dysuria, penile urethral and vaginal discharge, conjunctivitis (purulent, sight-threatening), and dyspareunia with cervicitis. Anorectal symptoms may include discharge, irritation, painful defecation, and disturbed bowel function. Gonorrhoea can also cause a wide range of complications such as pelvic inflammatory disease (dyspareunia, intermenstrual bleeding, post-coital bleeding, discharge), Bartholin gland abscess, and epididymo-orchitis, although this is rare.

Testing recommendations

Urethral swabs, first-pass urine (FPU), and vaginal/endocervical swabs. Note: Vaginal/endocervical swabs are more sensitive than FPU samples in female patients. Additionally, for MSM, collect anorectal and pharyngeal swabs, even if patient is asymptomatic at these sites. Collect an additional penile urethral swab for culture if discharge is present or before antibiotics. If patient has symptoms, collect a clinician-collected endocervical swab. **Swabs should be collected for culture to enable resistance testing prior to treatment**. Due to the risk of co-infections, STI guidelines recommend that chlamydia testing should accompany gonorrhoea testing.

Re-testing

Test of cure should be performed 2 weeks after completion of treatment. As re-infection is common, it is recommended that patients are tested again at 3 months.

If test of cure or re-infection testing is positive, please seek specialist advice.

Treatment

Treatment depends on the site of infection. Please refer to the guidelines at sti.guidelines.org.au for treatments regarding uncomplicated genital and anorectal infections, uncomplicated pharyngeal infections, and adult gonococcal conjunctivitis.

"GPs continue to play a vital role in the prevention, diagnosis, and treatment of STIs. Getting to know our patients is very important, especially when it comes to screening for STIs. With a new patient, we can ask about their background in terms of sexual behaviour, relationship status, and risk factors such as travel history. STI testing will depend on the clinical situation as well as the patient's background."

Dr David Baker
GP and Director of East Sydney Doctors, NSW

"It is vital for doctors to counsel patients on safe sex practices and the importance of regular screening."

Dr Linda Dreyer,
Pathologist (Microbiology)
Clinical Labs – Clayton, VIC

Syphilis

Unfortunately, rates of syphilis are increasing in high income countries across the globe. In 2023, there were 6,451 cases of Syphilis < 2 years of duration in Australia, compared to 5,915 cases in 2019 (see Table 1). This 9% increase is of concern, as a baby can contract congenital syphilis through transplacental transmission from its mother. The transmission rate is highest (60% to 90%) during untreated primary and secondary syphilis. There were 20 cases of congenital syphilis in Australia in 2023, compared to 4 in 2019, representing a concerning 400% increase.

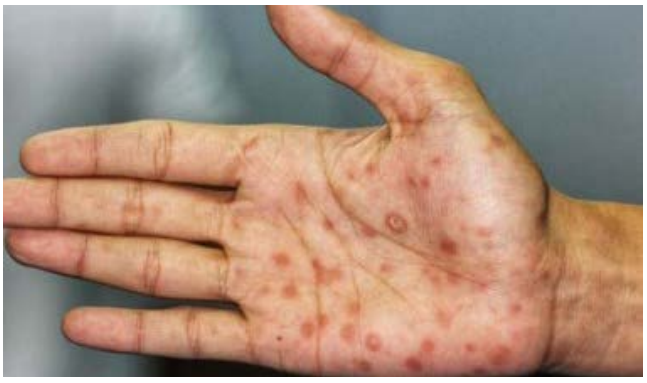


Image shows secondary stage syphilis lesions on the palms of the hand.

Symptoms

Approximately 50% of individuals with syphilis have no symptoms. Often called the "Great Imitator," syphilis can mimic many other conditions. Consider syphilis testing in all patients with unexplained symptoms.

Primary syphilis – on average 3 weeks post infection

- The presence of one or multiple genital, anal, or oral ulcers that occur at the site of entry.

Secondary syphilis – more than 6 weeks post infection

- May include fever, malaise, headache, and lymphadenopathy.
- Look for a generalised rash involving the trunk however, it may just affect the palms and soles. A skin rash occurs in over 90% of cases.

Testing recommendations

Syphilis should be excluded in all sexually active patients presenting with a rash. If the patient presents with a genital lesion, a swab for syphilis PCR as well as serology is recommended. If there is a clinical suspicion of primary syphilis but serology is negative, ensure a PCR swab has been completed and repeat serology after 2 weeks following presumptive treatment.

Re-testing

Repeat testing at 3 months, 6 months, and 12 months (if necessary) post-treatment.

Testing during pregnancy

Offer routine syphilis testing at the first antenatal visit. Recommend follow-up testing at 28–32 weeks, dependent on local guidelines.

Treatment

For **early syphilis**, the recommended treatment is Benzathine penicillin 2.4 MU (1.8 g) administered as 2 intramuscular injections, each containing 1.2 MU (0.9 g). For **late syphilis or syphilis of unknown duration**, the treatment remains the same but is administered weekly for 3 weeks.

STI co-infections

Accurate rates of STI co-infections are often difficult to discern as the infections are notified separately. However, it is well recognised that persons at risk of STI acquisition are also at risk of co-infection with more than one STI. Co-infection of *Chlamydia trachomatis* in individuals diagnosed with *Neisseria gonorrhoeae* is well recognised.

In patients presenting with urethritis or other symptoms suspicious of a sexually transmitted infection, it is important to consider co-infections with other STIs. Multisite STI screening for multiple pathogens is recommended for sexually active adults at risk, to identify both symptomatic and asymptomatic infections.

Additional STIs of concern

Neisseria meningitidis

Neisseria meningitidis (NM) is typically found as a commensal in the upper respiratory tract of humans and is a leading cause of sepsis. NM may also occasionally be found in the genital tract as a commensal. It has long been recognised that urethral NM infections could be spread by oral sex and were more common in men who have sex with men[3].

In recent years, there have been increasing reports worldwide of urogenital and anogenital infections attributed to NM. Like *N. gonorrhoeae, N. meningitidis* can also cause cervicitis, vulvovaginitis, pelvic inflammatory disease, salpingitis, endometritis, and proctitis. Neonatal conjunctivitis and pre-term birth have also been reported.

Bacterial culture is the mainstay of diagnosis for *N. meningitidis*. Depending on the site of infection, collection of a urethral, genital, or anorectal swab for bacterial culture is required. The importance of actively testing, detecting, and treating cannot be overemphasised.

"Clinicians should remain alert to the systemic (non-genital) manifestations of STIs and perform appropriate testing."

Dr Sudha Pottumarthy-Boddu,
Pathologist (Microbiology)
Clinical Labs – Osborne Park, WA

Mycoplasma genitalium

Mycoplasma genitalium is a bacterium that causes non-gonococcal urethritis (NGU) in men and disease in the lower and upper reproductive tract of women. *Mycoplasma genitalium* presents with clinical symptoms and signs very similar to other STIs like chlamydia and gonorrhoea, which may complicate its diagnosis. Currently, local guidelines advise against testing asymptomatic patients unless they have been exposed to a known contact.

The best sample to obtain is a first-pass urine sample in male patients or a high vaginal swab in female patients. In high-risk populations, a rectal swab should also be collected.

The primary concern in treating *Mycoplasma genitalium* is its increasing resistance to antibiotics. Azithromycin (macrolide) resistance is widespread, prompting a shift towards alternative regimens like moxifloxacin. However, resistance to moxifloxacin is also emerging, creating a significant challenge in management. In Australia, the current resistance rate of azithromycin exceeds 60% in the majority of cases and is even as high as 80% in the MSM population.

Treatment is based on the test results and clinical presentation. See STI guidelines.

The testing and treatment guidelines provided in this brochure were accurate at the time of printing in March 2024.

How to order STI testing for asymptomatic patients

What to write on the request form:
Complete the Clinical Labs general pathology request form, listing the recommended STIs for asymptomatic screening: *Gonorrhoea, chlamydia, syphilis, HIV, Hepatitis B, and Hepatitis C*. In the Clinical Notes, add *"STI Screen".*

Specimens required:

- Urethral swabs, first-pass urine (FPU), and vaginal/endocervical swabs. Note: Vaginal/endocervical swabs are more sensitive than FPU samples in female patients.
- Serology for HIV, syphilis, Hepatitis B, and Hepatitis C.

Test cost: Bulk-billed, subject to Medicare eligibility criteria.

References

1. Dashboard · NINDSS Portal. Available at: https://nindss.health.gov.au/pbi-dashboard/ (Accessed: 02 February 2024).
2. Australian STI Management Guidelines for use in Primary Care. https://sti.guidelines.org.au/ (Accessed 07 March 2024).
3. Burns BL, Rhoads DD. Meningococcal urethritis: Old and new. 2022. *J Clin Microbiol.* 60:6-8.

Our expert pathologists

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Dr Linda Dreyer completed her undergraduate studies in 1996, receiving a Bachelor's degree in Medicine and Surgery (MBChB) from the Faculty of Health Sciences, University of Pretoria, South Africa. Following four years of clinical practice as a Medical Officer in the Department of Family Medicine, she commenced specialisation in 2000. She was appointed as Registrar in Clinical Virology at the University of Pretoria/ Gauteng Province, where she worked for two years. In 2003, she was appointed as Senior Registrar in Microbiology. Dr Dreyer received her Master's degree in Clinical Microbiology (MMed (Path)) from the University of Pretoria in 2006. She worked as a consultant for the National Health Laboratory Services (NHLS) in Pretoria until January 2008. During her time at NHLS, she was involved in teaching medical students and microbiology registrars, and gave lectures to nursing staff, medical students, and specialists. She also sat on the Infection Control Committee and the Antimicrobial Stewardship Committee of the Pretoria Academic Hospital. In 2008, she came to Melbourne and joined Australian Clinical Labs (formerly Healthscope Pathology) as a Senior Registrar, and obtained Fellowship of The Royal College of Pathologists of Australasia (FRCPA) in 2010. Dr Dreyer has special interests in the appropriate use of antimicrobials, infection control, and molecular diagnostic assays in contemporary clinical microbiology.

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Dr Sudha Pottumarthy-Boddu comes to us from Houston, Texas, where she was Assistant Professor in the Department of Pathology and Laboratory Medicine at the University of Texas, School of Medicine. She was also the Technical Director of the Clinical Laboratory Services at the Houston Department of Health and Human Services. After graduating from medical school in India, Dr Pottumarthy-Boddu migrated to New Zealand and completed her Pathology/Microbiology Fellowship training with the Royal College of Pathologists of Australasia. She is a recipient of various awards and scholarships, including the Neil Prentice Memorial Prize of RCPA. She is also a Diplomate of the American Board of Medical Microbiology. Over the last 10 years she gained experience in various hospital, research, and public health laboratories in the US, publishing over 30 articles in peer-reviewed journals and presenting at various national and international conferences. Detection of the first USA isolate of Enterobacter spp. with NmcAcarbapenem hydrolyzing enzyme and establishing clinical significance of Nocardia verterana are noteworthy. Dr Pottumarthy-Boddu's main research interests are antimicrobial susceptibility trends and molecular methods in the diagnosis of infectious diseases.

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Dr Pendle has been working as a Clinical Microbiologist in Australia since 2005 when she obtained her fellowship of the Royal College of Pathologists of Australasia (FRCPA). She joined Australian Clinical Labs (formerly Healthscope Pathology) in 2012 as Supervising Pathologist in charge of the microbiology, infectious serology and molecular diagnostics departments. Dr Pendle has special interests in general bacteriology, infectious serology, syphilis and hepatitis. Dr Pendle has published several papers in her fields of interest, including VRE, chlamydial infections and HIV. She actively participates in hospital infection control and promotes rational antibiotic prescribing. She is a member of the Australasian Society for Infectious Diseases and the Antimicrobial Society of Australia.