The resurgence of syphilis in Australia

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Background
Syphilis infections have been increasing in Australia over the past decade. This phenomenon has been associated with a re-emergence of congenital syphilis.

Objective
The aim of this article is to describe recent epidemiological trends of syphilis infection in Australia, including demographics in which infection rates are rising, such as women of reproductive age. This article also provides an overview of the clinical course and the principles of management for syphilis.

Discussion
Considered by some as a disease of bygone eras, the resurgence of syphilis in Australia requires clinicians to be alert to this infection once again. Increased testing, prompt management and thorough contact tracing are all required to reverse this trend. Congenital syphilis is a potentially devastating yet preventable consequence of rising infections among women of reproductive age. Universal syphilis screening is recommended for all pregnant women at the initial antenatal visit and is now also recommended in the third trimester in several Australian jurisdictions.

A RISE IN SYPHILIS INFECTIONS from the turn of this century has been seen in many developed countries of the world, including the United States, Canada and England.[1–3] In recent years, this concerning trend has also been affecting Australia: from a notification rate of six per 100,000 individuals in 2011, the rate quadrupled to 24 per 100,000 individuals in 2019.[4,5]

Caused by the spirochaete bacteria, *Treponema pallidum*, syphilis is predominantly sexually transmitted. It can also be transmitted from a pregnant woman to her foetus, with congenital syphilis being associated with high mortality and morbidity rates. While congenital syphilis was previously rare in 21st century Australia, 77 cases of congenital syphilis have been reported since 2016 (up to June 2023), with 24 associated deaths.[6]

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In January 2011, the first syphilis outbreak was declared in Australia among Aboriginal and Torres Strait Islander people in northwest Queensland. This was followed by declarations of outbreaks in the Northern Territory in 2013, regional Western Australia in 2014 and South Australia in 2016.[6]

Other Australian states and territories are also experiencing rising syphilis infection rates. New South Wales reported a doubling of the infection rate from 2016 to 2021,[5] and data from Victoria shows that its rate increased one and a half times from 2016 to 2022.[7] Most Australian states and territories now have significantly higher syphilis notification rates compared to 10 years ago.[5]

Although notification rates have been highest in Aboriginal and Torres Strait Islanders living in remote and very remote areas of Australia, rates are also increasing in major cities.[6] In 2019, South Australia declared the outbreak had spread to Adelaide,[8] and in 2020, an outbreak was declared in Perth.[9]

In urban areas, syphilis is known to disproportionately affect men who have sex with men. In recent years, syphilis notification rates have also been increasing in heterosexual men and women in major cities.[10] From 2016 to 2021, notification rates for men increased by close to 50% but in women by more than 200%.[11] Infections in women mostly affect those of reproductive age, and there has been an associated increase in cases of congenital syphilis.[11]

Several reasons have been postulated as contributing towards these trends, including increases in high-risk sexual activity, increased travel and migration, inadequate access to healthcare for some groups at higher risk of infection, insufficient public health funding and proliferation of macrolide-resistant strains of *T. pallidum*.[12,13]

Furthermore, like many sexually transmissible infections (STIs), syphilis is often asymptomatic and can evade attention. With this resurgence in Australia, primary care clinicians need to consider syphilis infection as a current and increasing threat.

Syphilis infection in adults

Presentation

As a clinical syndrome, syphilis can be divided into various phases, detailed in Table 1.

As demonstrated in Table 1, the clinical features of syphilis can be wide and varied. Its tendency to be overlooked in favour of other diagnoses has earned it the well-known moniker of 'The Great Masquerader'. Testing across a range of clinical presentations is crucial to detecting infections.

However, many patients with syphilis do not report having any symptoms at all, making screening also essential. Syphilis screening should be performed in the context of:

- increased risk of STI from new sexual partner(s), living in or travelling to areas of higher STI prevalence (within Australia or internationally), known exposure to an STI and history of STI diagnosis in the previous 12 months[14]
- being or having a partner(s) from priority subpopulations (eg men who have sex with men, sex workers, Aboriginal and Torres Strait Islander people, trans and gender diverse people)[14]
- any request for an STI screen
- pregnancy (refer to the section on congenital syphilis below).

Testing

The mainstay of testing is syphilis serology. Genito-anal ulcers, mucous patches and suspected condylomata lata should also be swabbed for syphilis PCR. In the setting of suspected neurosyphilis, further testing (eg lumbar puncture) might be required. Therefore, consultation with an appropriate specialist is recommended.

A negative *T. pallidum* antibody result is reassuring unless there is a strong clinical suspicion that the patient has recently been exposed to syphilis and is still in the window period (in which case, the patient should receive presumptive treatment and repeat serology after two weeks).[14]

T. pallidum antibody will be positive in both current as well as past infection, as syphilis antibodies persist even following successful treatment. The presence of syphilis antibodies will automatically prompt laboratories to perform another test that is not treponemal specific but is an indicator of disease activity, which can help monitor the response to treatment and identify reinfection. Most commonly, this test will be a rapid plasma reagin (RPR) test. Previous serology and treatment history might also be required to accurately interpret results and determine the appropriate management of patients. Table 2 outlines possible clinical scenarios relating to common serology results.

Treatment

Fortunately, syphilis is readily treated with long-acting benzathine benzylpenicillin, available to general practitioners through the Prescriber Bag. Infectious syphilis is treated with a stat dose of 2.4 million units given intramuscularly as two injections. Non-infectious syphilis requires three doses of 2.4 million units, each given seven days apart (six injections in total).

Retesting syphilis serology at the time of treatment is important, as it provides a baseline RPR from which to assess the response to treatment.

Thorough contact tracing is essential to reduce the risk of reinfection and limit onward transmission. General practitioners are well placed to have these sensitive and important conversations. Sexual contacts of infectious syphilis should be tested and empirically treated; do not wait for syphilis results before treating.[14]

Further tips for managing syphilis in primary care are outlined in Table 3.

All new diagnoses need to be notified to the local public health authority.

Table 1. Clinical stages of syphilis

Stage[A]	Onset following exposure	Clinical features[B]
Infectious syphilis: highly infectious via sexual contact and (in pregnant women) to the foetus		
Primary	3 weeks–3 months	• Mucosal ulcer (chancre) at the site of sexual contact – typically single and painless, but might be multiple and painful
Secondary	6 weeks–6 months	• Constitutional (eg fever, malaise, lymphadenopathy) • Muco-cutaneous (eg rash, mucous patches, alopecia, condylomata lata) • Neurological (eg cranial nerve palsies, hearing loss, ocular symptoms)
Early latent	Within 2 years	• Asymptomatic
Non-infectious syphilis: no longer infectious via sexual contact, reduced risk of vertical transmission persists		
Late latent	2 or more years	• Asymptomatic
Tertiary	Years following initial infection, in a proportion (not all) of untreated cases	• Neurological/psychiatric • Cardiovascular • Dermatological (eg granulomatous lesions)

[A]Stages might overlap or not be apparent.

[B]Although these are the described manifestations of syphilis infection, many patients report experiencing no symptoms.

Table 2. Interpreting syphilis serology

Treponema pallidum antibody	Rapid plasma reagin (RPR – non-treponemal-specific marker of disease activity)	Possible scenarios	Recommendation
Detected	High	Likely infectious syphilis	Treat for syphilis
Detected	Low or not detected	Very early infection, requiring treatment	Retake history for recent exposure risk, previous infection, previous treatment[A]
		Older untreated infection, requiring treatment	
		Past treated infection, not requiring treatment	Seek public health and specialist advice as required
		False positive, might require repeat testing	

[A]Previous syphilis serology results and evidence of treatment might be available from your local public health unit.

Further information about the clinical presentation of syphilis, who to test, interpretation of syphilis serology and features of management is available from the Australian STI Management Guidelines for Use in Primary Care (https://sti.guidelines.org.au/sexually-transmissible-infections/syphilis/) and Decision Making in Syphilis (www.ashm.org.au/resources/syphilis-decision-making-tool/). A training module on syphilis is also available through the Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine (ASHM) online (https://syphilisoutbreaktraining.com.au/).

Table 3. Syphilis management tips

- Accurate staging is required for correct dosing – where required, testing and treatment history might be sought from your public health unit. Clinical advice might also be sought from sexual health physicians, infectious diseases specialists and clinical microbiologists.
- Exclude pregnancy in women of reproductive age – management of pregnant women with syphilis might require specialist input.
- When treating infectious syphilis, caution patient regarding the possibility of the self-limiting Jarisch–Herxheimer reaction.
- Benzathine benzylpenicillin is given intramuscularly into the ventrogluteal space of each buttock – a 'GP how to' video guide by The Royal Australian College of General Practitioners (www.youtube.com/watch?v=uEoXv0V-Wyo) is available.
- Contact trace – consider all forms of sexual contact. Staging determines how far back to trace: 3 months for primary, 6 months for secondary, 12 months for early latent.
- Empirically treat and test sexual contacts of infectious syphilis.
- Advise the patient to avoid any sexual contact until 7 days after patient and partner treated.
- Organise follow-up and syphilis serology 3, 6 and (if necessary) 12 months following treatment. A four-fold drop in titre confirms treatment success.

Congenital syphilis

Rates of vertical transmission in the primary, secondary and early latent phases of syphilis are high. The rate of adverse neonatal outcomes in pregnant women with untreated infectious syphilis is reported to be 60–70%.[15] Congenital syphilis can lead to foetal and neonatal death and significant haematological, skeletal and neurological complications in the surviving infant.

Congenital syphilis is preventable. Maternal treatment with long-acting penicillin administered 28 days or more before birth significantly reduces the risk of congenital syphilis in the neonate.[16]

In Australia, 77% of cases of congenital syphilis occurring in the years 2016–22 were diagnosed late in pregnancy (defined as diagnosis less than 30 days prior to delivery, at birth or following birth).[6] Ensuring pregnant women can access culturally safe antenatal care and be adequately screened for syphilis over the course of the pregnancy is necessary to prevent congenital syphilis.

Routine screening for syphilis at the initial antenatal visit is recommended for all pregnant women in Australia, with additional screening recommended in outbreak areas.[17] Outside outbreak areas, additional syphilis testing in pregnancy is recommended for women who are at high risk of syphilis infection.[17] Risk factors include:

- diagnosis of an STI in the current pregnancy or within the previous 12 months
- intravenous drug use during pregnancy
- sexual contact with a male partner who is at high risk of having syphilis (eg he has sex with men or he is from a high prevalence area)
- new sexual partner.[14,17]

The national Pregnancy Care Guidelines do, however, acknowledge that some of these are factors that women themselves might not be aware of.[17] In the setting of increasing infections among women of reproductive age, and acknowledging that pregnant women continue to be sexually active but might not be readily identified as being at 'high risk' of contracting syphilis, there has been advocacy for increased syphilis testing in all pregnant women.[18]

Additional universal screening for syphilis in the third trimester is now recommended in Western Australia, Queensland and New South Wales.[19–21] At the time of writing, it is still being explored in other jurisdictions.[22]

Furthermore, syphilis screening at birth and six weeks postpartum is recommended in certain outbreak areas of the Northern Territory, Western Australia and South Australia. Clinicians are encouraged to check region-specific recommendations for their practice.

Conclusion

The epidemiology of syphilis has been changing for the worse in many countries and around Australia. Congenital syphilis is being diagnosed in Australia at a higher frequency than has been seen in two decades.[6]

Clinicians need to be alert to this alarming trend. Accordingly, they need to reacquaint themselves with the features of syphilis, to screen widely and test more across a broad range of presentations. Antenatal, primary care and emergency clinicians in particular should also be aware of syphilis screening recommendations for pregnant women in their area of practice and have a low threshold generally to test for syphilis in pregnancy. Furthermore, a move away from risk-based syphilis screening and towards universal screening multiple times over the course of a pregnancy might be a key feature towards the elimination of congenital syphilis.

By ordering benzathine benzylpenicillin through the Prescriber Bag, general practices can have it stocked at all times, enabling prompt treatment when a diagnosis is made. Proceeding to thorough contact tracing is essential to prevent reinfection and further chains of transmission. Identified sexual contacts of infectious syphilis should then be given empirical treatment at the time of testing.

Key points

- Rates of infectious syphilis in Australia are continuing to rise.
- The number of congenital syphilis infections in Australia has also risen.
- In many jurisdictions, there have been changes to syphilis screening recommendations in pregnancy.
- Clinicians needs to screen widely and test for syphilis across a broad range of presentations.
- General practices should keep benzathine benzylpenicillin stocked to ensure prompt treatment, including empirical treatment of sexual contacts.

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