

Clinical Impact of Syphilis

Summary

Syphilis is a sexually transmissible infection that can present in a variety of ways and may be difficult to recognise clinically. While infection is easily treated when detected early, untreated syphilis can lead to serious complications including neurosyphilis, cardiovascular disease, ocular and otosyphilis, and congenital syphilis. Understanding the stages, symptoms and potential consequences of infection is critical to supporting early diagnosis and treatment.

What is syphilis?

Syphilis is a sexually transmissible infection caused by the bacterium *Treponema pallidum*. Although it can be cured with antibiotics, untreated infection may progress through multiple stages and lead to severe complications affecting the nervous system, cardiovascular system, eyes, ears and other organs. Syphilis is sometimes referred to as "the great imitator" because its symptoms can mimic a wide range of other conditions, making diagnosis challenging (1).

Syphilis is primarily transmitted through sexual contact involving direct contact with an infectious lesion. It can also be transmitted from a pregnant person to their baby during pregnancy or delivery, resulting in congenital syphilis (2). There is no immunity to syphilis. A person can acquire syphilis multiple times, even after successful treatment.

Stages of syphilis

Syphilis progresses through a number of stages. People are generally considered infectious during the primary, secondary and early latent stages, while late latent and tertiary syphilis are not usually associated with ongoing sexual transmission. The following summary of the stages of syphilis is adapted from the Australian STI Management Guidelines for Use in Primary Care (3).

Primary (10-90 days after exposure)

- Presence of single or multiple firm, round, usually painless sores (chancres).
- Chancres typically appear at the site of infection, including the genitals, anus or mouth.
- Lesions may occur in locations that are difficult to see and can therefore go unnoticed.
- Chancres usually heal without treatment after 3-6 weeks.

Secondary (2-24 weeks after exposure)

- A non-itchy rash develops in most cases, commonly affecting the palms of the hands and soles of the feet.
- Other symptoms may include fever, swollen lymph nodes, sore throat, patchy hair loss, headaches and muscle aches.
- Symptoms may resolve without treatment, but infection remains present.

Early latent (< 2 years)

- Infection is present but there are no symptoms.
- Individuals may be unaware they are infected unless diagnosed through testing.

Late latent (> 2 years)

- Infection persists without symptoms.
- Serious complications may still develop in some people over time.

Tertiary (typically 10-30 years after infection)

- Untreated infection can result in significant organ damage.
- Complications may affect the brain and nervous system, cardiovascular system, eyes, ears, skin, bones and internal organs.
- Severe manifestations can occur many years after the initial infection.

Why early diagnosis matters

Many manifestations of syphilis are non-specific and may be mistaken for other conditions. In addition, people may experience long periods without symptoms during the latent stages of infection. As a result, infection can remain undetected for extended periods, increasing the risk of progression to more severe disease. Early diagnosis and treatment are highly effective and can prevent many of the long-term complications associated with untreated infection. The potential for serious long-term health consequences, combined with often subtle or non-specific symptoms, highlights the importance of timely testing, diagnosis and treatment.

Groups at increased risk of complications from syphilis

Certain populations may be at greater risk of severe health consequences from syphilis, including:

- People who do not receive appropriate antibiotic treatment, particularly during the early stages of infection.
- People living with HIV may be at increased risk of certain complications of syphilis, including neurological involvement (4).
- Babies born to someone with untreated syphilis during pregnancy.

These groups may experience higher rates of complications and require particular attention in prevention, testing and treatment efforts.

Severe outcomes and complications of untreated syphilis

- **Neurosyphilis** occurs when syphilis affects the central nervous system. It can lead to meningitis, stroke, cognitive impairment, dementia and personality changes.
- **Congenital syphilis** occurs when syphilis is transmitted during pregnancy. It can result in miscarriage, stillbirth, neonatal death and severe multi-organ disease. Survivors may experience lifelong health complications.
- **Ocular syphilis** can affect multiple structures of the eye and may cause visual impairment or permanent blindness if not diagnosed and treated promptly.
- **Otosyphilis** most commonly presents with hearing loss, tinnitus or vertigo. In some cases, hearing loss may be irreversible (5).

- **Cardiovascular syphilis** is a rare but serious late complication that may cause aortitis, aortic aneurysms and other potentially life-threatening cardiovascular conditions (6).

Implications for patients and the health system

While syphilis is readily treatable, delayed diagnosis can result in significant individual and health system consequences. Severe complications may require specialist care, hospitalisation and long-term management, creating substantial clinical and economic burden.

Strengthening awareness, testing, diagnosis and early treatment is critical to reducing avoidable morbidity, preventing disease progression and reducing the broader health system burden associated with untreated syphilis.

References

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