

7. Improving the testing and management of syphilis

Key points

- ▶ Syphilis has the potential to cause serious, but preventable, poor outcomes in pregnancy such as congenital syphilis, as well as increasing the transmission of HIV and other STIs.
- ▶ Notifications of infectious syphilis cases have risen significantly since 2012 in Australia, and notifications remain high in WA in 2025, peaking in 2021.
- ▶ The re-emergence of congenital syphilis cases and deaths highlights the need to ensure prevention through increased antenatal screening, urgent management of affected pregnant people and their partners and improved engagement of pregnant people and young people with uterus with health services.
- ▶ Practitioners should be familiar with the signs and symptoms of syphilis as well as the recent changes to the national syphilis testing and management guidelines and maintain a low threshold for initiating treatment of cases and contacts.

Epidemiology

There has been a multi-jurisdictional outbreak predominantly affecting Aboriginal people commencing in north-west Queensland in 2011 and subsequently affecting communities in the NT, WA and SA.

During this time there has also been an increase in notifications among MSM (men who have sex with men), which began in 2006.

In 2020, the Chief Health Officer declared a statewide outbreak of infectious syphilis. More information on the outbreak is provided later in this chapter.

Prior to this outbreak, significant reductions in infectious syphilis had occurred among Aboriginal people living in remote areas with previously endemic levels of syphilis. Factors likely to have contributed to these reductions include the widespread use of antibiotics, effective syphilis screening programs and regionally based syphilis registers that have assisted with improved case detection and appropriate management.

The current outbreaks are characterised by the following:

- ▶ 63 per cent of all notifications are among 25 to 40 year olds, with the highest notification rate in people aged 30 to 34 years old.
- ▶ Aboriginal people are being notified at over tens time the rate of non-Aboriginal people.
- ▶ Kimberley and Pilbara regions have the highest notification rates respectively.
- ▶ From 2015 to July 2025, there has been a total of 21 congenital syphilis notifications in WA.

For updated epidemiological information, please see the [WA Notifiable Infectious Disease Dashboard](#) or the [National Notifiable Disease Surveillance System](#).

Western Australian Response

WA Syphilis Outbreak Response Group

The Western Australian Syphilis Outbreak Response Group (WA SORG) was initially formed in response to the syphilis outbreak among Aboriginal people in outbreak affected regions of WA. The first meeting was held in August 2018.

The long-term aim of the WA SORG is to control the outbreak of syphilis among communities in WA using partnership strategies that, wherever possible, are applicable to the sustainable control measures for sexually transmitted infections (STIs) and promotion of sexual health in WA communities.

All regions in WA, including the metropolitan area, have established Syphilis Outbreak Response Teams that drive the local response to the outbreak and include representation from relevant stakeholders.

WA Syphilis Outbreak Response Action Plan

The statewide response is guided by a WA Syphilis Outbreak Response Action Plan (the Action Plan) which aim to eliminate congenital syphilis and control the outbreaks of syphilis amongst the identified at-risk populations using partnership strategies that, wherever possible, are applicable to the sustainable control measures for sexually transmissible infections (STIs) and promotion of sexual health.

The response is categorised into five priority areas:

- ▶ Community engagement, education and prevention.
- ▶ Workforce development.
- ▶ Testing, treatment and contact tracing.
- ▶ Surveillance and reporting.
- ▶ Antenatal and postnatal care.

All health services and staff have an important role to play with regard to implementing the priority areas of the Action Plan. For an effective response, multifaceted approaches across services and regions that focus on the priority areas are needed.

Health services and staff should consider how they can contribute to ensuring those priority areas are implemented or enhanced. Responses could include the following:

- ▶ Increase awareness of the outbreak in the community, particularly with regard to who is affected, the importance of early detection and treatment, and the prevention of congenital syphilis.
- ▶ Increase awareness among pregnant people and antenatal services of the risk and prevention of congenital syphilis and the importance of staying connected with health services early and throughout the pregnancy.
- ▶ Use the skills of Aboriginal health and community workers and appropriate people in the

community, such as Elders and grandmothers, to assist and support young pregnant people with early and regular antenatal care.

- ▶ Facilitate community engagement and awareness through meetings with community Elders and leaders, boards of services and community organisations, organise community meetings, and use local radio, social and print media to provide information.
- ▶ Provide or facilitate access to training to ensure the workforce at primary care, antenatal services and hospitals are familiar with the updated CDNA guidelines, in particular with regard to the increased frequency of testing and urgency of treatment.
- ▶ Provide orientation to new and locum staff regarding the syphilis outbreak, testing and management guidelines, notifications and the role of regional PHUs.
- ▶ Use the regional PHUs to provide or facilitate training and assist with community engagement and awareness.

All current information related to the WA syphilis outbreak response, including the Action Plan, can be found on the [WA Syphilis Outbreak Response page](#).

Case study

Clinical nurse specialist position, Kimberley Population Health Unit (KPHU)

This public health nurse position based at the KPHU provides:

- ▶ real-time educational support on clinical situations, allowing staff on the ground to workshop issues
- ▶ assistance and support to clinic staff with the follow-up of notifications, alerts and patient recalls (a two-way process that enables learning and allows for clarification of information on both sides as well as real-time feedback)
- ▶ workforce support through leadership and liaison for staff on the ground between the CDCD, other PHUs and expert advice.

The assistance and support provided by this position has facilitated outcomes such as:

- ▶ prompt treatment and follow-up of index cases: more than 80 per cent of patients diagnosed with syphilis have received treatment within two weeks of diagnosis
- ▶ more than 80 per cent have had a six-month follow-up blood test after treatment
- ▶ an increase in syphilis testing in the Kimberley and prompt treatment of index cases
- ▶ improved follow-up and treatment of contacts
- ▶ provision of more support to medical staff in managing syphilis cases.

Face-to-face meetings with staff have helped to nurture a trusting relationship between staff on the ground and the clinical nurse specialist position. The position has also benefited by having a full complement of staff at the KPHU, and long-standing relationships with the community and services in the region.

Lessons learnt have included the importance of having secure messaging systems in place to transfer patient information and the value of being able to provide a consistent and quick orientation for all staff to inform them of what resources and services are available to provide assistance and support.

Notification of syphilis and the role of PHUs in WA

In WA syphilis is notifiable under the *Public Health Act 2016* and the *Public Health Regulations 2017*. A notification form needs to be completed by a medical officer or nurse practitioner and faxed to the nearest regional or metropolitan PHU as soon as possible and within 72 hours of the diagnosis. The receipt of a notification form will trigger the unit to contact the service provider to complete an enhanced surveillance form and discuss treatment and contact tracing.

Laboratories are also required to report test results that indicate a likely new infectious syphilis case. Notifications are stored on the WA Notifiable Infectious Diseases Database (WANIDD), access to which is restricted to disease control medical officers and nurses at the CDCD and regional PHUs. PHU staff check new notifications on WANIDD daily, and prioritise and discuss any new syphilis notifications with the Medical Officer to verify the case and treatment required. Identifying a new case on WANIDD will also trigger a phone call from the PHU to the relevant service provider. As laboratories report on test results only, they may miss early cases of infectious syphilis. PHUs therefore also rely on clinicians to notify them on the basis of clinical findings to trigger a response and particularly to ensure early cases are not missed.

Syphilis: testing and treatment

Detailed protocols regarding syphilis testing and clinical management are available in the [Silver Book](#) and the [Australian STI Management Guidelines](#). While not replicating those protocols or providing details about treatment regimens, the following information aims to highlight some of the key information regarding the natural history, testing and management of syphilis.

Clinical stages of syphilis

Syphilis (*Treponema pallidum*) is associated with different clinical stages although about 50 per cent of people infected have no symptoms.

Primary syphilis: A sore (or chancre) may occur at the site of infection, nine to 90 days after transmission. Chancres are typically painless, 1 to 2 cm in diameter, single or a few sores (on opposed skin) with associated lymphadenopathy. Chancres heal rapidly with treatment; without treatment they will heal spontaneously in three to eight weeks and may still be present in up to one-third of people at the onset of secondary syphilis symptoms.

Secondary syphilis: Untreated, syphilis enters a secondary stage marked by a range of signs and symptoms that can come and go over 12 months. Symptoms resolve rapidly with treatment; and spontaneously without treatment within two years and can include any of the following:

- ▶ sores or lumps on mucosal membranes (condylomata lata)
- ▶ systemic symptoms such as low-grade fever, malaise, headache, muscle aches and pains, lymphadenopathy
- ▶ rashes on palms and soles, maculopapular rash on the body
- ▶ patchy hair loss of the scalp and eyebrows.

Latent syphilis occurs after the resolution of secondary symptoms, when signs and symptoms are no longer present but the infection remains latent and detectable in the blood. While most sexual transmission occurs during primary and secondary syphilis in the presence of infectious sores, transmission from mother to baby can occur during pregnancy via blood up to nine years after the initial infection. Treatment of latent syphilis differs, depending on whether it was acquired within the past two years (early latent) or more than two years ago (late latent syphilis).

Tertiary syphilis can cause bony, cardiovascular and neurological changes in up to one-third of untreated people at least seven years after the initial infection but is now rare due to effective treatment and the widespread use of antibiotics.

Congenital syphilis: Syphilis can be transmitted from mother to baby during pregnancy and at delivery. Transmission is extremely high in early syphilis (90 to 100 per cent transmission in primary or secondary) and decreases over time but can still occur up to nine years after the initial infection. The outcome of syphilis in pregnancy depends on what stage the mother was infected and therefore at what stage in pregnancy it is transmitted. Poor outcomes include mid-term miscarriage, death in utero, stillbirth and congenital syphilis. Congenital syphilis refers to a range of abnormalities and manifestations that may or may not be evident at birth. Babies infected in late pregnancy or delivery may have no clinical abnormalities evident at birth but will likely present with congenital syphilis within the first few years of life if not managed appropriately at birth.

The diagnoses of tertiary and congenital syphilis are difficult and should always be done in consultation with an appropriate specialist.

Who and when to test for syphilis

Prompt and appropriate testing and management of syphilis is essential to:

- ▶ prevent the ongoing transmission to sexual partners
- ▶ prevent transmission from mother to baby and subsequent poor outcomes such as miscarriage, stillbirth and congenital syphilis
- ▶ reduce transmission of HIV and other STIs and BBVs, which increase in the presence of genital sores.

In the context of the current syphilis outbreak, practitioners should maintain a low threshold for testing and treating people presenting with any signs or symptoms that could be due to syphilis or other STIs and BBVs. In addition, the frequency of screening should increase among those at highest risk, in particular pregnant people, 15 to 30 year olds and MSM. Testing for syphilis should always be included when conducting a thorough check-up for STIs and BBVs and when any other STI or BBV has been detected, as co-infections are common.

Recommendations for clinical management of syphilis

To improve the clinical management of infectious syphilis, the *CDNA National Syphilis Guidelines*⁵ emphasise the importance of prompt and appropriate management of cases and contacts that support the existing state and national STI management guidelines. They include the following recommendations:

- ▶ Pregnant people at high risk or living in outbreak areas should be tested for syphilis up to five times during their pregnancy (first visit, 28 weeks, 36 weeks, delivery and six weeks post-partum).
- ▶ Infectious syphilis in a pregnant person requires an urgent response, with treatment and follow-up commenced as soon as possible and within 24 hours.
- ▶ Treatment should be given at the time of presentation to people presenting with signs or symptoms of primary or secondary syphilis.
- ▶ Treatment of infectious syphilis identified on serology should be given as soon as possible and ideally within two days.
- ▶ A rapid plasma reagin (RPR) test (a simple blood test that screens for syphilis) should be taken at baseline on the day of treatment and repeated between three and six months later and 12 months following treatment, ideally using the same laboratory.

Test for syphilis when someone of any age presents with **any** signs and symptoms possibly due to syphilis, other STIs and BBVs such as:

- ▶ genital ulcers, sores or lumps
- ▶ rashes in genital skin
- ▶ unexplained rashes anywhere on the body
- ▶ patchy hair loss in the scalp or eyebrows
- ▶ unexplained headache, fevers, muscle aches pains or lymphadenopathy

Or when any STI or BBV is detected.

Asymptomatic screening for syphilis should be done routinely in the following circumstances:

- ▶ Pregnancy:
 - all pregnant people at first visit
 - repeat at 28, and 36 weeks for all pregnant people
 - delivery and 6 weeks post-partum if syphilis is detected or treated during pregnancy and for all high-risk pregnant people, including all living in the outbreak areas of the Goldfields, Kimberley, and Pilbara

- ▶ Thorough check-up for STIs and BBVs including:
 - at least annually for all 15 to 30 year olds and three to six monthly if casual partners
 - new or change of partner
 - at follow-up when any STI or BBV is detected, if not tested at the initial presentation
 - if a contact of a person with any STI or BBV
 - if requests a sexual health check-up
 - at adult health checks for 15 to 30 year olds (up to 40 years, depending on local epidemiology)
- ▶ MSM at least annually, and three to six monthly with casual partners
- ▶ HIV positive up to four times a year with a routine CD4 cell count and viral load testing.

People with penises and non-pregnant people with uteruses treated for infectious syphilis should have a follow-up clinical assessment and repeat RPR taken at three, six and 12 months. Note that the RPR is used to monitor response to treatment. Once reactive, the syphilis screening test will remain positive for life and does not need to be repeated.

Contact tracing

In the context of the syphilis outbreak, contact tracing of infectious syphilis cases, and particularly those involving pregnant people, should be managed urgently and as a priority. When conducting contact tracing of infectious syphilis cases among people with penises, always ask up front if their contact(s) are or could be pregnant and explain the importance of treating pregnant people urgently. While some cases may involve significant time and human resources to ensure all contacts are treated appropriately and in a timely manner, the importance of doing so should be stressed in order to prevent ongoing transmission, congenital syphilis and neonatal deaths.

Pregnant people with syphilis need to be informed about the risk of transmission to their baby, treatment, the need for ongoing monitoring and the high risk of reinfection later in pregnancy if their sexual partner(s) are not treated promptly and appropriately. People with uteruses should be advised to abstain from sex until five days after their regular partner(s) are treated, or until any symptoms have resolved (whichever is the longer).

People with uteruses treated for syphilis during pregnancy should at a minimum be retested in the third trimester, at delivery and six weeks post-partum; however, management may vary depending on when syphilis was acquired, and should always be done in consultation with the regional PHU and appropriate specialists.

While it is important to increase the frequency of testing for syphilis among people at highest risk, asymptomatic screening at a population level among people **over the age of 40 years** should be avoided. Be mindful that in many remote areas where syphilis has been endemic in the past, a significant proportion of people over the age of 40 years will have evidence of exposure to syphilis in the past on their screening test, as the test will remain positive for life, regardless of treatment.^{6*}

Most people aged over 40 with reactive syphilis serology will have a history of being treated in the past and are therefore not at risk of transmitting syphilis or developing tertiary syphilis. While there may be individuals in that age group who remain at risk of STIs and should be tested appropriately, population screening of that age group has little benefit with regard to case detection but could consume a significant amount of time and resources at the expense of directing appropriate case detection and management to those at highest risk. Remember, the majority of cases of infectious syphilis among Aboriginal people are among 15 to 29 year olds with 15 to 19 year old people with uteruses being the highest risk age group. Resources to increase case detection should remain focused on those groups at higher risk and not be diverted to asymptomatic screening among low prevalence age or population groups.

** Clinical audits conducted in WA between 2008 and 2013 identified syphilis sero-prevalence, indicating past exposure, of greater than 30 per cent among people aged older than 40 years living in the Pilbara, Goldfields and Kimberley areas of WA.*

How to interpret syphilis test results

Interpreting syphilis test results can be difficult, particularly without the availability of previous test results and treatment histories. A key role of PHUs is to assist with the accurate interpretation of syphilis serology by having access to and managing a central register of information regarding previous test results and treatments that may have been generated from different health services.

In order to interpret syphilis test results you need to know the:

- ▶ treponemal test result, **and**
- ▶ RPR test result, **and**
- ▶ previous syphilis serology results, **and**
- ▶ history of treatment.

Treponemal tests detect specific treponemal antibodies and are used as a screening test to identify whether someone has been exposed to syphilis or not. Most laboratories currently use a treponemal test that is reported as reactive or non-reactive. Other specific tests include enzyme immunoassay (EIA) IgM and IgG, TPHA, TPPA, FTA Abs as well as the newer POCT.

A **non-reactive** test indicates that the person has never been exposed to syphilis; however, it should be repeated in two weeks, if exposure to infection was very recent.

A **reactive** test:

- ▶ indicates the person has been infected with syphilis
- ▶ does not tell you:
 - how long ago the person was infected, **or**
 - whether they have been treated in the past, **or**
 - whether they currently require treatment.

Non-treponemal tests detect non-specific antibodies. The **RPR (rapid plasma reagin)** is the most common non-treponemal test in use and is done by the laboratory if the treponemal (screening) test is reactive. The RPR is performed manually. Reactivity is measured by serial dilutions and is reported as a 'titre'. The RPR titre changes over the course of an infection and in response to treatment as shown in Graph 3. While an RPR does not tell you whether someone has been treated, it can give some indication of infectivity and is used to monitor treatment and identify reinfections.

- ▶ A two titre or fourfold fall in the RPR (e.g. 1:32 to 1:8) within six months following treatment of infectious syphilis usually indicates an adequate response to treatment.
- ▶ The RPR is unlikely to fall if the baseline titre is very low (as in latent syphilis) and therefore cannot be used in this context to monitor treatment response, but it can be used to identify new infections.
- ▶ A two titre or fourfold rise from a previous RPR result (e.g. 1:2 to 1:8) can indicate a new infection.

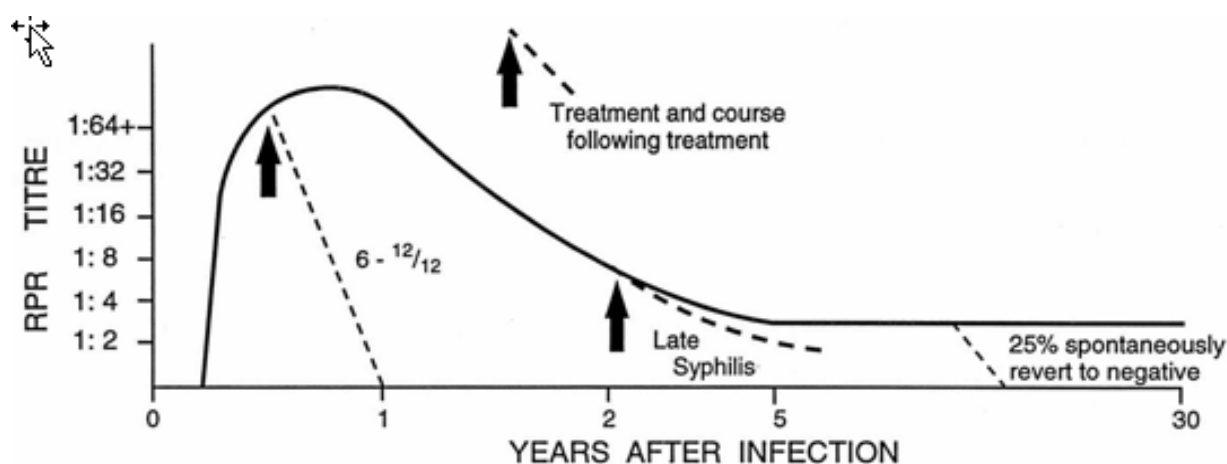
VDRL (venereal disease research laboratory) test is a non-treponemal test which is currently only used in Australia for testing cerebrospinal fluid (CSF).

Syphilis nucleic acid amplification test (NAAT/PCR)

A swab should be taken for the syphilis NAAT/PCR test directly from any sore or lesion possibly due to primary or secondary syphilis. A reactive NAAT/PCR test from a lesion confirms infectious syphilis. Indicate on the pathology form where the swab has been taken from (e.g. genital ulcer) and request 'syphilis and herpes PCR'. A blood test should always be taken at the same time for screening and RPR testing if infectious syphilis is suspected.

NOTE: Blood tests for syphilis provide valuable information and a baseline against which to measure future testing, response to treatment and reinfections. Blood tests should always be taken if syphilis is suspected and an RPR taken again at the time of commencement of treatment to provide a baseline against which to measure response to treatment. If a point-of-care test has been conducted and is reactive, venous blood must also be sent to the laboratory for RPR as outlined. **The lack of regular transportation to the laboratory is not a reason not to take blood tests.** Check specific storage and transportation requirements with the local laboratory but, in general, specimens can be kept in the fridge and should be transported at 2 to 8°C.

Graph 3. Variation in RPR results over time and with treatment ⁷



False positive test results are uncommon but can occur with both treponemal and RPR tests. False positive treponemal tests may be identified in the laboratory as an equivocal or indeterminate test result but confirmatory tests are usually conducted with another treponemal test before the result is reported as reactive or non-reactive.

The RPR test is read manually and therefore results may vary slightly among specimens taken at different times or processed at different laboratories. Biological false positive results can also occur with the RPR for a number of reasons, including acute infections, injecting drug use and pregnancy. False positive RPR results should only cause a low titre reading (1:1, 1:2) while laboratory errors or variations are generally only within one titre of each other. Reactive RPR results should always be considered as true positives among people at risk and an increase in RPR of two titres from the previous RPR considered a likely new infection.

False negative test results can occur among people who have:

- ▶ very early syphilis and are tested before the test is measurable in the blood
- ▶ a 'prozone reaction' whereby a large antibody response can make the test inaccurate
- ▶ immune suppression due to HIV or other causes.

If there are any concerns about possible false positive results among people at low risk of infection, or false negative results among people likely to have syphilis, always contact the regional PHU or appropriate specialists for advice and repeat testing.

Syphilis POC tests

The Determine Syphilis TP is currently the only POC test registered for use in Australia and is being rolled out in response to the syphilis outbreak. The Determine Syphilis TP is a treponemal test that can be used with whole-blood samples from either finger-prick or venepuncture. As with other treponemal tests, a reactive test indicates exposure only, and in isolation of other tests and treatment histories, does not provide any information about when the infection was likely acquired or whether the person has been treated in the past or not. If a POC test is done at the bedside and is reactive, blood must be sent to the laboratory for RPR testing and all test results whether reactive or non-reactive need to be appropriately documented within the client's medical records and forwarded to the regional PHU. In settings where POC tests will be used, staff need to be appropriately trained in order to conduct the test, interpret results and relay test results accurately to the client. Staff should be provided with POC test user manuals, ensure quality assurance is conducted and comply with certification, surveillance, monitoring and notification requirements.

If your service is part of the WA syphilis POC testing program or is interested in becoming part of the program, see the [guidelines and enrolment form](#) for further information.

Syphilis POC tests can be a useful addition to laboratory testing and can lead to a reduction in the time interval between testing and treatment. However, they also have limitations that must be taken into account when being used:

- ▶ The Determine Syphilis POC test currently in use provides an adjunct to, but does not replace, syphilis tests conducted in the laboratory:
 - If a POC test is non-reactive, venous blood does not need to be sent to the laboratory for syphilis screening unless there is concern about very recently acquired syphilis or symptoms suggestive of syphilis.
 - If a POC test is reactive, venous blood **does** need to be sent to the laboratory for RPR.
- ▶ The syphilis POC test is a treponemal test and a reactive test result indicates exposure only.
- ▶ A reactive POC test does not indicate when the person was infected, if they have been treated or if they require treatment.
- ▶ As with other treponemal tests, once reactive it will remain reactive for life and should not be repeated.
- ▶ Indications for use:
 - A POC test should only be used on people who have never been tested or who have never had a reactive treponemal or screening test.
 - To be cost-effective, its use should be limited and directed to those at highest risk of syphilis – pregnant people, 15 to 30 year olds, MSM and individuals at high risk.
- ▶ Limitations to use:
 - It should not be used on people who have **ever** had a reactive treponemal test as it will return a reactive result; therefore, it has no value in this context.
 - If reactive, venous blood is still required to be sent to the laboratory for RPR testing.

- In remote areas with previous endemic syphilis, a significant number of people aged over 40 years will return a reactive result.
- Inappropriate use can lead to over-treatment of people, which is not only a waste of time and resources but has the potential to cause unnecessary damage to relationships and domestic violence.
- Both reactive and non-reactive test results need to be recorded in the client's medical record and relayed to the regional PHU syphilis register.

Before using a syphilis POC test, check the client's previous syphilis testing history in their medical records:

- ▶ If a syphilis screening test has **ever** been reactive, the POC test will also be reactive and therefore should not be used – send venous blood to the laboratory for RPR.
- ▶ If a client's last documented syphilis screening test was non-reactive, a reactive POC test indicates a new infection acquired since the last non-reactive screening test – commence treatment as a new infection and send venous blood to the laboratory for RPR.
- ▶ If there is no previous testing history and the POC test is reactive, this indicates they have been infected with syphilis but does not tell you when:
 - contact the PHU to check if the patient has ever had a previous screening test and treatment
 - commence treatment on the spot if they have any symptoms, are a contact or are at high risk of syphilis.

New infection

Remember that if a POC test or clinical signs and symptoms identify a likely new infection:

- ▶ Take venous blood and send it to the laboratory for RPR.
- ▶ Commence treatment.
- ▶ Take a full sexual history.
- ▶ Conduct an examination as appropriate.
- ▶ Test for other STIs and BBVs.
- ▶ Initiate contact tracing.
- ▶ Advise the client to abstain from sex until five days after contact(s) have been treated
- ▶ Complete a notification form and fax it to the regional PHU.
- ▶ Contact the PHU for advice.