Silver book – A guide for managing sexually transmitted infections and blood-borne viruses.
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Guidelines for managing sexually transmitted infections and blood-borne viruses

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Guidelines for managing sexually transmitted infections and blood-borne viruses

Sexually transmitted infections (STIs) and blood-borne viruses (BBVs) are significant public health concerns in Western Australia, particularly in some areas and among some populations. As part of its continued response to this issue, the Western Australian Department of Health (WA Health) is continuously updating these clinical guidelines, aiming to promote the principles of best practice to the wide range of providers who are responsible for STI and BBV management in this State.

These guidelines are designed for all clinicians and health care providers involved in the diagnosis and/or management of STIs and BBVs in Western Australia.

They contain the most up-to-date evidence-based practice recommendations and are complemented with a range of patient and health professional resources.

The Silver Book Guidelines are informed by current international, national and local published and peer-reviewed literature and expert opinion from a technical advisory group. The expert opinion informing the Silver Book recommendations includes public health physicians, sexual health physicians, general practitioners (GPs) and members from Sexual Health Quarters (SHQ), Royal Perth Hospital, Fiona Stanley Hospital, PathWest, WA Country Health Service (WACHS), Communicable Disease Control Directorate (CDCD) and the WA Department of Health’s Sexual Health and Blood-borne Virus Program (SHBBVP).

The Silver Book Guidelines are regularly reviewed and updated as often as necessary by the technical advisory group.

- A list of abbreviations and terms that are used throughout the Silver book.
- Find specialist advice on STIs and HIV
- Find STI testing and treatment services
- STI Atlas (external site)
General Principles

Effective clinical management of patients who may have an STI/BBV

Elements of effective clinical management
The elements of effective clinical management are:

- appropriate physical environment
- confidential and culturally secure environment
- good communication skills
- good clinical history taking
- screening
- examination and collection of specimens
- laboratory investigations
- communication of results to patients
- interpretation of results and formulation of diagnosis
- treatment and education
- directly observed single dose therapy as appropriate
- contact tracing
- long-term follow-up and education for prevention.

Essentials of patient care specific to STIs/BBVs
The essentials of patient care specific to STIs/HIV are:

- education about safer sexual practices
- individual rights and responsibilities
- offering tests for HIV and other blood-borne viruses (BBVs)
- investigating for other possible STIs
- informing the person of and gaining consent for the:
  - investigations that may be required
  - need for contact tracing
  - confidentiality of the consultation
  - notification requirements for STIs/HIV.
- negotiating the involvement of sexual partners in testing for STIs/BBVs
- considering the need to advise parents, legal guardians or the appropriate authority if the patient is a minor or otherwise legally incompetent.
- Consider need to discuss other relevant issues, e.g. contraception, fertility, mental health, alcohol and other drugs, social and occupational situation.

The clinic environment
The clinic or location where patients are interviewed and examined should, as far as possible:

- be as accessible as possible (consider disability issues)
- be private and secure from interruptions
- provide all the equipment necessary for an examination and for specimen taking (see Nucleic Acid Amplification Tests)
- comply with accepted infection control guidelines
- meet the special gender and cultural needs of the local population through careful consideration of entrances and clinic identification.
Rationale: The clinic layout and appointment arrangement should not deter patients from presenting for initial or follow-up assessment. The clinic entrance and reception area should be private, so that patients do not feel that others can identify them as having presented for an STI consultation.


Respect for patients special needs
In organising STI/HIV consultations, give priority to the patient's gender and cultural needs.

Respect the cultural needs of communities when scheduling clinics and examining patients.

Rationale: Denial of cultural needs may result in denial of patient access to STI/BBV services. Many people prefer to consult with a provider of the same gender, and this should be arranged whenever possible. Each health service will have different capabilities and resource limitations, which cannot be overcome by dictating standards. However, assistance should be sought from representatives of cultural groups to develop strategies to meet their special needs.

Special considerations
When providing STI/BBV health services to specific cultural groups, the assistance of accredited interpreters may be helpful during history taking, examination, specimen taking, counselling, prevention, education and contact tracing where appropriate.

History
Taking a sexual, psychosocial and drug history will indicate whether the patient is at risk of STIs/BBVs;

See History and examination for more information.

Suggested range of tests
In general, test patients presenting for STI/BBV assessment for:

- gonorrhoea
- chlamydia
- syphilis
- HIV
- hepatitis B
- hepatitis A, if symptomatic or if there is a history of male-to-male and/or oro-anal sex and vaccination is contemplated if negative
- hepatitis C, if there is history of injecting drug use.

Consider testing for other non-notifiable diseases, e.g. genital herpes, trichomoniasis.

Steps towards STI/BBV testing with informed consent
It is important for patients to be able to give informed consent prior to testing. A detailed sexual and drug history should be obtained. This will help to determine the level of information required by the patient. See History and examination.
**Principles for community screening**

Community screening is defined as mass STI/BBV screening of populations and is only considered in areas of high prevalence.

Any community screening program must meet the following requirements:

- appropriate community representatives should be consulted and asked to endorse the program. They should be invited to help develop protocols for screening and be involved in implementing the screening program
- resources must be adequate to manage detected cases and their contacts
- an education strategy must form part of the screening program, addressing:
  - confidentiality of results (to state clearly how the privacy of the individual will be protected)
  - prevention, including safe sex behaviours.
- screening protocols must contain accepted confidentiality guidelines to protect the privacy of the individuals and communities to be screened
- all individuals must give full and informed consent before being screened
- health service providers who deliver services to the community to be screened should be informed of the start of the program and the protocols to be used. The community will determine which providers should be informed and how this should occur
- all information obtained via the screening program (particularly test results) is the property of that community. None of it should be used for research purposes, or publicised in any way, without the understanding and permission of the community.

* Originally developed by the Kimberley Public Health Reference Group and modified by consultation workshops held at Broome Aboriginal Medical Service and the Centre for Aboriginal Studies, Curtin University of Technology, 1996.

**Prevention and education for STIs and HIV**

Every STI/BBV consultation is an opportunity for preventive education.

It is important that this education is not judgemental, but some assessment of patient beliefs, sexual practices and culture is required for service providers to understand potential risks and how they might reduce those risks.

Discuss the following points with patients:

- **Abstinence while infected.** It is particularly important that patients understand that they must not have sex while being treated, to reduce the risk of transmission of their STI. In the case of HIV infection, patients need to understand the need for lifelong safe sexual practices. They also need to be aware of the legal issues associated with knowingly putting another person at risk of HIV infection.

- **The advantages of a long-term, monogamous relationship in the prevention of an STI.** Encourage patients to discuss their sexual behaviour with their partners and to communicate their sexual needs. It is important to emphasise the need for honesty in the relationship rather than to assume long-term fidelity.

- **Use of condoms and water-soluble lubricant.** Check that patients know how to use condoms and where to get them. Discuss the issue of negotiating condom use, especially to encourage women to feel that they can raise the subject with their partners. For some women mentioning that female condoms are available might be appropriate.

- **Reducing the number of sexual partners.** Obviously, the fewer the partners, the lower the risk. It is also important to explain that a series of monogamous relationships without condoms can be just as risky as numerous casual partners.
• **STI check-ups.** Encourage patients to have STI check-ups, particularly before undertaking any new sexual relationship.

• **Other risk behaviours.** Review these with the patient and discuss ways to reduce risks. For example, people who inject drugs need sterile injecting equipment and information about needle exchange programs.

• **Notification requirements.** Explain that some STIs must be reported to health authorities, pointing out the advantages to public health and emphasising that patient confidentiality will be respected.

• **Other relevant issues,** e.g. contraception, fertility, mental health, alcohol and other drugs, social and occupational situation.

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**Child sexual abuse and STIs**

Child sexual abuse is 'any act which exposes a child to, or involves a child in, sexual processes beyond his or her understanding or contrary to accepted community standards. The child is unable to provide informed consent to and is not developmentally prepared for sexual activity.'

For information on child abuse and neglect visit the [Department for Child Protection website](https://www.cz.gov.au/content/exTERNALSITE). The importance of the definition lies in the acknowledgment of the limitations of children to give truly informed consent and their risk of exploitation.

Child sexual abuse is not acceptable in any group of people. It is not 'just a family matter', but many children are afraid to report an incident to the police because the abuser is often a family friend or relative. Other people who may have concerns about sexual abuse may hesitate to report it because they are not totally certain abuse is occurring. Tragic outcomes of child abuse may occur when reporting is delayed.

Most cases of child sexual abuse do not result in an STI. However, if an STI (such as gonorrhoea, chlamydia, trichomoniasis, genital herpes or genital warts) is diagnosed from the genitalia, throat or other suspicious site of a child or an adolescent under the age of 18 years, then sexual abuse should be considered and a mandatory report of child sexual abuse should be submitted if a view is formed that sexual abuse may have occurred. In addition to the mandatory report, a report on an STI in a child under 14 years of age must also be made by the diagnosing clinician.

• [OD 0296/10 Interagency Management of Children Under 14 Who are Diagnosed With a Sexually Transmitted Infection (STI)](https://www.cz.gov.au/content/exTERNALSITE)

STIs occurring in babies, especially those under 12 months of age could be the result of vertical transmission, so the mother should be tested (and, if she tests positive, her sexual contacts should also be tested). Genital warts in children can also occur as a result of autoinoculation.

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**Management of a child with an STI**

• Treat the child for their infection and investigate for other STIs.

• Always ensure a subsequent test of cure.

• Remember there will be at least one other person, probably an adult, who is also infected and who requires contact tracing.

• As a health care provider, you have a responsibility to assist in protecting children who may be victims of child sexual abuse. The occurrence of an STI in a child is strong, circumstantial evidence that abuse is occurring.

• If you require advice about forensic examination please contact the Child Protection Unit at Princess Margaret Hospital on 9340 8646.
Mandatory reporting of child sexual abuse has been introduced by amendments to the *Children and Community Services Act 2004* (the Act) (external site). From Thursday 1 January 2009, doctors, midwives, nurses, teachers and police officers ('reporters') are legally required to make a report in accordance with the Act when they have formed a reasonable belief that child sexual abuse has occurred or is occurring. The Act places the responsibility for making a report on the reporter. **There is a clear duty for all health professionals** to appropriately manage child abuse or neglect.

**When to make a report**
Reporters must make a report if they have formed a belief on reasonable grounds and in the course of their work, that a child:

- has been the subject of sexual abuse that occurred on or after Thursday 1 January 2009
- is the subject of ongoing sexual abuse.

Reports must be made to the Department for Child Protection, which is required under the Act to provide the Western Australia Police with a copy of the report.

Evidence of abuse is not required to make a report. Reporters should not conduct an investigation to establish if there is evidence, as this may jeopardise subsequent investigations by the Department for Child Protection or the Western Australia Police.

Reporters who fail to report a belief that a child is being sexually abused commit an offence and can be fined up to $6000 [s124B(1)].

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It is very important to note that mandatory reporting of sexual abuse does not substitute for an STI report in a child under 14 years of age, or in a child aged 14 and up to 16 years of age if sexual abuse is reported and vice versa. If sexual abuse is suspected both reports must be submitted. If there is no abuse only the STI report in a child under 14 years of age is required.

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**For further information and contact**
Please refer to the following documents:

- **OD 0296/10 Interagency management of children under 14 who are diagnosed with a sexually transmitted infection (STI)** (external site)
- **Guidelines for protecting children 2015** for information on child abuse and neglect.

Please contact the Department of Child Protection on 1800 708 704 regarding making a mandatory report.

**STI or HIV counselling**
Counselling is important in managing STIs/BBVs and should be considered at every contact with the patient.

As a minimum, consider counselling at the first presentation and subsequently during treatment and follow-up.

**Rationale:** Counselling is an opportunity to educate and support the patient in prevention strategies. The key points are:
• building mutual trust and respect
• communicating the confidentiality of the diagnosis, and the reasons for testing and contact tracing
• formulating expectations from treatment
• promoting awareness of risk behaviours.

Counselling should also include discussion of the implications of STI/HIV testing (e.g. testing does not prevent transmission). Emotional reactions can accompany a positive STI/HIV diagnosis, with delayed reactions sometimes occurring several days after the consultation.

General considerations
A pre-test discussion requires patient consent and should address:

• confidentiality
• the reason for the tests
• risk activities
• understanding of statutory notifications
• awareness of the disease process
• awareness of modes of transmission and prevention
• awareness of window periods for the tests undertaken.

Counselling when delivering a negative diagnosis provides an opportunity to reinforce pre-test discussions and prevention education.

Counselling when delivering a positive diagnosis should address:

• patient lifestyle and support systems, including those in whom the patient might confide
• potential for a crisis (e.g. suicide).

If the diagnosis is positive, avoid overloading the patient with excessive information and arrange for further counselling at a later time. During the first and subsequent consultations:

• stress the confidentiality of results and treatment
• confirm the patient’s understanding of the infection
• if the patient is ready to deal with more information, provide further details of the infection and how to prevent transmission
• continue to educate concerning risk behaviour
• stress importance of contact tracing
• undertake partner management with careful consideration of the risk of violence (for the client and/or partners) or seek assistance from public health practitioners
• provide information about patient support organisations see contacts for specialist advice on STIs and HIV.

Follow up testing
Patients with gonorrhoea or chlamydia should be re-tested (including from oral and rectal sites where this is indicated) for these infections at the three month follow-up.

Rationale: Patients who have had gonorrhoea and/or chlamydia are at risk of reinfection.

Patients who have had negative test hepatitis B or C, HIV or syphilis results after presenting for STI/BBV assessment should return three months later to be tested again for:

• hepatitis B and if there is history of injecting drug use, hepatitis C
• HIV
• syphilis.

**Rationale:** These infections have a 'window period' when the test may not be positive even though the patient is infected. Repeat testing provides an opportunity for further patient education, particularly for high-risk patient groups.

Remember to ask patients about any new symptoms or new risks when they present for follow-up testing.
History and examination

Relevant history

The majority of patients may be asymptomatic. However, a patient may present with symptoms or for a check-up if they feel they have been at risk.

Symptoms may be:

- dysuria
- rash
- discharge
- menstrual problems
- itch
- abdominal pain
- lumps
- hair loss
- ulcers
- enlarged groin lymph nodes
- pain and swelling in the scrotum.

Sexual history

- Does the patient have a regular sex partner and when did they last have sex?
- Does the patient have casual sex partners and when did they last have sex?
- Does the patient have sex with men, women or both?
- What are the possible risk behaviours of sexual partners?
- What type of contraception is used? Are condoms used?
- Does the patient, or do the partners, have a history of previous STIs/BBVs?
- Does the patient have any symptoms?
- Are sexual activities vaginal; oral; anal?
- Are their sexual contacts from overseas or interstate?

Rationale: A full and relevant clinical history enables the service provider to anticipate what might be found on physical examination. In addition, it is important to determine what risk factors may be present. Information about sexual practices also determines which sites should be examined and the range of specimens to be collected.

An understanding of past medical events will provide important clues for the diagnosis and management of STIs/BBVs, e.g. injecting drug use; overseas travel?

Special considerations

- The STI/BBV consultation involves personal and sensitive issues that can cause the patient considerable fear and apprehension. Stress the point that all information will be confidential.
- Give adequate time to the interview. It is helpful to let the patient talk freely and to tell their story in their own time – a friendly non-judgemental listening ear is often the best approach. Provide opportunities for the patient to ask questions.
- Ask direct questions (e.g. "Who did you have sex with?"). Do not use ambiguous terms, (e.g. "sleep with"). Note, however, that open questioning can be offensive to some cultural groups.
• It may be necessary to jog the patient's memory by linking sexual encounters with events significant to the patient (e.g. public holidays, special events (e.g. rodeo, mardi gras), travel, visits to relatives).
• It is useful to start questioning about sexual partners with the most recent sexual encounter, slowly working backwards.
• If the patient forgets the names of contacts, a description of the contact may be useful.
• Be adaptable when obtaining a sexual history. Experienced judgement by the service provider will determine which approach is most appropriate in the light of any language or cultural factors that may apply.
• If English is not the patient's first language, use an appropriately trained interpreter or staff member, not a family member, see contacts for patients – where to go.
• Consider whether the patient needs additional support from a carer or person of the same gender or cultural group during the consultation.
• Do not presume the gender of sexual partners as this may lead to inaccurate information.

Drug history and other factors

Ask about legal drugs that may affect the disease or its diagnosis, as well as other drugs:

• current medications
• antibiotics, whether prescribed or not, taken now or in the past three months
• over-the-counter medications
• topical medications containing antibiotics, antiseptics or steroid preparations
• injecting drug use now or in the past, including anabolic steroids and recreational drugs
• alcohol and other recreational drugs
• known drug allergies.

Rationale: A patient's drug history is important information because of the potential interactions between drugs and the possibility that the patient has a drug allergy. Alcohol and recreational drug use are important risk factors to consider.

Other factors to consider:

• risks for blood-borne viruses, which include:
  o injecting drug use
  o blood transfusion before 1985
  o body piercing
  o tattoos
  o country of birth/ethnicity
• gynaecological history – cervical cancer screening, last normal menstrual period.

Consent to physical examination

Obtain informed consent to the examination and the tests to be conducted before proceeding.

Rationale: No medical procedures can be done without the patient's informed consent. Obtaining informed consent requires sensitive and explicit communication, so that the patient can understand what is going to happen, as well as the nature of the infection being considered and the investigations proposed. Explaining the proposed examination and getting the patient's consent are the first steps towards actively involving the patient in managing the infection.
An interpreter may be needed if English is not the patient's first language. (See contacts for patients – where to go, for further information about interpreter services). (Consider the use of visual materials (e.g. posters) when explaining the examination to all patients.

The physical examination
Examination should include the genital area, and the oral and perianal areas, as indicated by the patient's history.

For women with a suspected STI, a vaginal examination using a speculum should be undertaken.

Where a woman declines to have a vaginal examination or it is culturally inappropriate, a self-obtained low vaginal swab (SOLVS) can be used to test for chlamydia or gonorrhoea in an asymptomatic woman. (See Specimen collection in women who are examined and STI self testing card).

It should be recognised that examination is best practice and not just for obtaining swabs.

Rationale: A thorough physical examination is necessary to accurately diagnose and treat a patient with a suspected STI/HIV. This applies to all STIs.

Special considerations
- Special care should be exercised to avoid contact with infectious materials. Wearing gloves is essential and eye protection should be worn when there is risk of material splashing.
- In all patients with anorectal pain or discharge, proctoscopy should be performed to exclude anal canal or lower rectal disease.
- For vaginal examination, always use a vaginal speculum, warmed to body temperature, to visualise the cervix. Bimanual pelvic examination should be performed in patients with lower abdominal symptoms. If there is extensive disease with donovanosis or herpes, a vaginal examination may be painful and may have to be temporarily deferred.

STI clinical management and sexual contact interview and tracing forms
Forms used by the Kimberley Population Health Unit to aid in the assessment of possible STIs are provided as examples that can be adapted for various WA health regions.

Sample and/or updated forms will be loaded on to the website from time-to-time as they become available.

- STI clinical management form (Department of Health website)
- Sexual contact interview and tracing form (Department of Health website)
Patient presentation and specimen collection

Asymptomatic females
The following investigations should be undertaken:

- Physical examination is important as often patients may not be aware of lesions or other clinical signs.
- Endocervical swabs for NAAT (no transport medium) for those examined.
- Endocervical swabs for MC&S (glass slide and swab in charcoal [black] or non-charcoal [clear] agar gel transport medium), if pus is present or cervix is inflamed.
- HVS for MC&S (glass slide and swab in charcoal [black] or non-charcoal [clear] agar gel transport medium) if vaginal discharge appears normal or vaginal walls are inflamed.
- A self-obtained low vaginal swab (SOLVS) for NAAT (no transport medium) is the preferred specimen in an asymptomatic female who declines to have a physical examination. Add first void urine (FVU) for NAAT if possible.
- FVU for NAAT only, is acceptable if a woman declines to give either vaginal or endocervical swabs.
- If GeneXpert point-of-care test is available, test specimen/s with point-of-care test. If patient has no discharge from the cervix and the cervix is not inflamed, collect an additional swab and urine sample for sending to the laboratory for NAAT testing. If patient has discharge from the cervix and/or the cervix is inflamed, collect two endocervical swabs for sending to the laboratory for antibiotic susceptibility testing; one for microscopy, culture and sensitivity (MC&S) and another for NAAT testing.

Essential tests
As a general rule, patients who are suspected of having an STI should be offered testing for:

- Chlamydia
- Gonorrhoea
- Syphilis
- Hepatitis B
- HIV
- And again 3 months later

If an ulcer is present take a NAAT swab from the ulcer and request a genital ulcer multiplex test for herpes, syphilis and donovanosis.

Test for hepatitis A if symptomatic or if there is a history of male-to-male and/or oro-anal sex and vaccination is contemplated if negative.

Test for hepatitis C if there is a history of injecting drug use or other high risk factors based on an individual client's risk assessment.

HIV testing should also be considered in the presence of:

- Possible seroconversion illness (fever, myalgia, rash), or
- Atypical or severe prolonged infections without other apparent cause (e.g. oral candidiasis, oral hairy leukoplakia, severe persistent genital herpes, persistent lymphadenopathy, persistent gastro-intestinal symptoms with significant weight loss).

Consider testing for other non-notifiable diseases, e.g. genital herpes, trichomoniasis and Mycoplasma genitalium (M. genitalium) if clinically indicated based on history and/or examination findings.
Access the national HIV, HCV and HBV testing policies from the Australian Society for HIV Medicine (ASHM) testing portal (external site) or download the latest HIV testing policy (external site).

Specimen collection and handling checklist

All specimens
- Specimens must be clearly labelled with the patient's name, date of birth, or medical record number, site of collection, date and time of collection.
- Specimens should reach the laboratory within 24 hours, whenever possible. Gonorrhoea culture yield will diminish after this time.
- If necessary, tests may be coded so that the person being tested is not personally identified. This is rarely needed.

Urine samples
- Keep urine samples for NAAT refrigerated. Transport as soon as possible.
- For patient instructions for taking a self-obtained urine sample, please see the STI self-testing card (Department of Health website).

Self-obtained vaginal swabs
- Self-obtained vaginal swabs enable specimen collection from the genital tract of asymptomatic women for chlamydia and gonorrhoea tests when a vaginal examination is declined and if they cannot provide a urine specimen.
- A physical examination, including a vaginal speculum examination is recommended for all women with genital or STI symptoms.
- For patient instructions for taking a self-obtained low vaginal swab (SOLVS), please see the STI self testing card (Department of Health website).

Self-obtained anal swabs
For patient instructions for taking a self-obtained anal swab, please see STI self testing card (Department of Health website).

Gonorrhoea culture swabs
- Make a smear on a glass slide and place the swab in charcoal (black) or non-charcoal (clear) agar gel transport medium.
- Smears and swabs will have a diminished yield if processed more than 24 hours after collection. NAAT at the same time will improve detection of gonorrhoea.
- Keep specimens in an insulated container between 10 °C and 25 °C.
- Avoid extremes of temperature. Never place gonorrhoea swabs for culture in the refrigerator.
- All smears should be allowed to air dry before sealing and labelling.

Chlamydia and gonorrhoea NAAT specimens
- Keep as close as possible to 4 °C during storage and transport. Avoid extremes of temperature. Do not place samples in the freezer section of the refrigerator and avoid direct contact with freezer blocks during transport.

Specimen collection men
Discharge present:
• Milk discharge forward to collect specimens for antimicrobial sensitivity testing using swab with charcoal (black) or non-charcoal (clear) agar gel transport medium and glass slide.
• Collect 20 mL of first void urine (FVU) for chlamydia and gonorrhoea NAAT.
• If GeneXpert point-of-care test is available, test specimen/s with point-of-care test and collect additional swabs and urine samples for sending to the laboratory for antibiotic susceptibility testing; one for microscopy, culture and sensitivity (MC&S) and another for NAAT testing.

No discharge:
• Collect 20 mL of FVU for chlamydia and gonorrhoea NAAT.
• If no urine available, provide the patient with a specimen jar and ask him to wait until he can void or return an FVU at his earliest convenience.
• A urethral NAAT swab could be used if the patient prefers not to wait. If GeneXpert point-of-care test is available, test specimen/s with point-of-care test and collect an additional swab and urine sample for sending to the laboratory for NAAT testing.

Step 1 – Anal and throat swabs
History or receptive anal sex, oro-anal sex, rimming or fingering and no anal symptoms: Patients can be instructed how to take blind anal swabs themselves for NAAT (no transport medium). Please refer to the STI self testing card (Department of Health website).

History of receptive anal sex, anal-oral sex or fingering, and anal symptoms present: A proctoscope needs to be inserted if possible and the swabs obtained under direct vision. If the patient declines or proctoscope not available, patients can be instructed how to take blind anal swabs themselves.

Also collect two throat swabs (one for culture and sensitivity [charcoal or non-charcoal agar gel transport medium], and one for NAAT [no transport medium]) if there is a history of receptive oral sex. No slide is necessary for microscopy.

Step 2 – Collect blood for serological test
Syphilis, HIV and hepatitis B. Also test for hepatitis A if symptomatic or if there is a history of male to male and/or oro-anal sex and there is an intention to vaccinate if negative; and hepatitis C if there is a history of injecting drug use.

Step 3 – Order the tests for the laboratory
Label all specimens clearly and prepare for transport.

Step 4 – Consider treatment
If there is any doubt about follow-up, start treatment based upon clinical diagnosis.

Vaginal PH testing
Vaginal pH testing should be carried out as part of a full examination using narrow range pH paper (range pH 4 – 6).

Performing the test
The test should be performed on vaginal secretions, which are taken from near the opening of the vagina. Secretions taken higher up may be contaminated by cervical secretion, which has a
higher pH and will give a falsely elevated vaginal pH reading. The test should not be performed if the patient is menstruating or has had unprotected sex in the last 24 hours or is pre-pubertal or post-menopausal.

Either:

- Use a loop or swab, and press some vaginal secretion on to the paper allowing the moisture to adsorb onto the pH paper

  OR

- Press some pH paper on to the walls of the vagina

  OR

- Hold the pH paper at the opening of the vagina and press the moist lips of the vulva onto the paper (no speculum is needed for this latter method).

Wait 30 seconds and then compare the colour change on the paper with the colour range given on the pH paper container. Holding the paper with a bright light behind it assists with interpretation of the colour change.

Interpreting the test
A vaginal pH reading of >4.5 is abnormal unless the woman is post-menopausal and not on hormone replacement therapy.

Elevated readings are found in the following circumstances:

- Bacterial vaginosis
- Trichomoniasis
- Desquamative inflammatory vaginitis
- Post-menopausal not on hormone replacement therapy.

False high readings are found in the following situations:

- Cervical secretion is sampled instead of vaginal secretion
- Sexual intercourse in the last 24 hours
- Examining glove touches the paper
- Patient menstruating.

Elevated vaginal pH and HIV
- Low vaginal pH is hostile for HIV and infected lymphocytes.
- High pH (>5) may contribute to increased susceptibility to HIV.

GeneXpert point of care NAAT for chlamydia and gonorrhoea
The GeneXpert point-of-care test can be performed on urine, vaginal or cervical swabs (clinician or self-collected). Please see the GeneXpert point-of-care manuals/posters for specimen collection guidelines.

Essential communication
Mutual trust and respect, counselling and patient education are essential parts of STI management.
On presentation
Ask: am I the right person to examine this patient? If not, find an alternative service provider.
Otherwise:

- Take a medical/sexual/drug history.
- Explain confidentiality of patient records.
- Explain the examination and specimen collection you are about to do.
- Obtain consent for all investigations.

Counselling with examination

- Talk about prevention and safe sex practices.
- Talk about what a positive test result would mean.
- Explain the notification requirements for STIs, emphasising their importance to public health, and reassuring the patient that their privacy will be respected.

Interpreting the test result

- Test results are usually reported as either positive or negative.
- If you are unclear about the significance of a test result, discuss it and your patient's history and clinical findings with a clinical microbiologist at the laboratory.
- Remember the test results do not have perfect sensitivity or specificity.
- Use your clinical judgement to treat the patient – not just laboratory results.

On confirming an STI diagnosis

- Explain the diagnosis.
- Explain the treatment.
- Emphasise the need for sexual abstinence during treatment.
- Emphasise the importance of returning for follow-up.

Contact tracing

- Inform the patient of the importance of contact tracing.
- Explain that their identity will not be disclosed.
- Discuss possible contacts over the past three months.
- Consider who the appropriate person to follow up contacts is.
- Obtain permission to follow up contacts.
- For more information about contact tracing, see Contract tracing (managing sex partners).

Follow-up
Repeat messages about prevention and safe sex.

Nucleic acid amplification tests
Tests that detect specific sequences of deoxyribonucleic acid (DNA) are now available to detect gonorrhoea, chlamydia and to a limited extent, other STIs.

These tests are nucleic acid amplification tests (NAAT), a generic term which includes polymerase chain reaction (PCR). The choice of test depends on the laboratory.

The NAAT process identifies DNA sequences found only in the organism being tested, making it a highly specific test. NAAT also amplifies very low amounts of DNA so that they are easily detected, making the technique highly sensitive. These two properties of the test make it much
more accurate than the older technique of microscopy and culture. NAAT can identify chlamydia and gonorrhoea in a urine sample. As NAAT does not rely on live organisms it will also detect the DNA from dead organisms. Recently, studies have suggested that, in a woman, the sensitivity of NAAT testing in self-obtained vaginal swabs is better than that of urine, particularly for the detection of gonorrhoea. As a general rule in these guidelines we recommend the use of a **self-obtained low vaginal swab (SOLVS)** as the primary single specimen collection method of choice for women.

NAAT point-of-care testing using the GeneXpert test is available at health services in WA that have been selected to participate in a research project funded by the National Health and Medical Council Research Council.

Gonorrhoea culture is still required where there is urethral or cervical discharge. Current methods with NAAT do not allow antibiotic susceptibility testing and therefore, it is still important that, when patients present with a discharge, swabs are sent for culture.

NAAT may also be used to detect other STI pathogens, including herpes simplex virus (HSV), *M. genitalium*, donovoniasis, trichomoniasis and chancroid. Providers should discuss the appropriate testing options with their local laboratory service.

*M. genitalium* testing is not recommended in asymptomatic people. This test is only indicated in contacts of *M. genitalium* and people with persistent symptoms after treatment.

**Sample test pack for diagnostic testing**

A ready-to-use test pack will simplify STI consultations and save time. Note: additional swabs may be required should you need to do throat or rectal tests.

Such kits can be provided by the laboratory that supplies testing services. The composition of the pack will depend on the range of tests that the referral laboratory can conduct.

**Male kit**

A. Swab with charcoal (black) or non charcoal (clear) agar gel transport medium for collecting urethral discharge (if present) and making a smear and sending for culture (charcoal transport media is preferred if longer delays are anticipated).

B. Glass slide in slide holder for making a smear of urethral discharge.

C. Urine container for first void urine for chlamydia, gonorrhoea and *M. genitalium* NAAT (shaded area equals 20 mL).

D. Clotted blood tube for serological tests.

E. Wire/plastic shaft fine swab for urethral swab (if required) for chlamydia and gonorrhoea NAAT (no transport medium)

F. Wire/plastic shaft fine swab for urethral swab (if required) for *M. genitalium* NAAT (no transport medium).

G. Wire/plastic shaft fine swab for genital ulcer multiplex NAAT (no transport medium).
Note: colours of tubes and lids may vary

**Female kit**

A. Swab with charcoal (black) or non-charcoal (clear) agar gel transport medium for collecting a high vaginal specimen for a smear and culture.

B. Glass slide in a slide holder for making a smear of the high vaginal specimen.

C. Swab with charcoal or non-charcoal agar gel transport medium for collecting cervical discharge (if present) and making a smear to send for culture.

D. Glass slide in slide holder for making an endocervical swab (ECS) smear.

E. Urine container for first void urine for chlamydia and gonorrhoea NAAT (shaded area equals 20 mL).

F. Clotted blood tube for serological tests.

G. Wire/plastic shaft fine swab for collection of an ECS sample for chlamydia and gonorrhoea NAAT (no transport medium)

H. Wire/plastic shaft fine swab for collection for genital ulcer multiplex NAAT (no transport medium).

I. Wire/plastic shaft fine swab for urethral swab (if required) for *M. genitalium* NAAT (no transport medium).
Sample protocol for chlamydia and gonorrhoea diagnosis

For men

When a urethral discharge is present

- To make a smear, pick up discharge on a standard plastic-shafted dacron or nylon swab and roll it onto a glass slide. Allow to air dry and label. This should be placed in a slide holder and the slide holder labelled with the patient's name and date of birth or medical record number, and the site, date and time of collection.
- The swab is then placed in charcoal (black) or non-charcoal (clear) agar gel transport medium. The swab should be labelled with the patient's name and date of birth or medical record number, and the site, date and time of collection. This can remain at room temperature.
- Ask the patient to pass 20 mL of first void urine (FVU) into a yellow-topped urine container labelled with the patient's name and date of birth or medical record number, and the site, date and time of collection. Store and keep cool during transport, preferably at about 4 °C.
- If GeneXpert point-of-care test is available, test specimen/s with point-of-care test and collect additional swabs and urine samples for sending to the laboratory for antibiotic susceptibility testing; one for microscopy, culture and sensitivity (MC&S) and another for NAAT testing.
No discharge present

- Ask the patient to pass 20 mL of FVU into a yellow-topped urine container labelled with the patient's name and date of birth or medical record number, and the site, date and time of collection. Store and keep cool during transport, preferably at about 4 °C.
- If the patient is unable to pass urine, get him to wait until he can void. A urethral swab could be used if the patient prefers not to wait. If GeneXpert point-of-care test is available, test specimen/s with point-of-care test and collect an additional swab and urine sample for sending to the laboratory for NAAT testing.

Where available, undertake concurrent macrolide sensitivity testing for known or suspected gonorrhoea cases.

For women

- Pass a speculum.
- Take a high vaginal swab and smear to exclude other pathogens.
- Take vaginal pH.
- Take a HPV test first if indicated.
- Collect an endocervical swab for NAAT and place it back into the container provided. No transport medium is required. The swab should be labelled with the patient’s name and date of birth or medical record number, and the site, date and time of collection.
  - The NAAT swab can be stored at either room temperature or in the fridge but the culture should not be refrigerated.
- If pus is present or the cervix is inflamed, also collect an endocervical swab for microscopy, culture and sensitivity testing (MC&S) using glass slide and swab in charcoal (black) or non-charcoal (clear) agar gel transport medium.
- If GeneXpert point-of-care test is available, test specimen/s with point-of-care test. If patient has no discharge from the cervix and the cervix is not inflamed, collect an additional swab and urine sample for sending to the laboratory for NAAT testing. If patient has discharge from the cervix and/or the cervix is inflamed, collect two endocervical swabs for sending to the laboratory for antibiotic susceptibility testing; one for microscopy, culture and sensitivity (MC&S) and another for NAAT testing.

Specimen collection in women who are examined

Symptomatic

Step 1 – Measure vaginal pH
Pass speculum and visualise cervix. Collect high vaginal swab for MC&S using swab, glass slide and charcoal (black) or non-charcoal (clear) agar gel transport medium.

Step 2 – Testing
**HPV test required:**
- Collect specimen from cervix for HPV test.

**Pap smear not required:**
- Collect endocervical smear for NAAT, using swab (no transport medium).

Step 3– If pus present or cervix is inflamed:
- Collect endocervical smear for MC&S using swab, glass slide and charcoal (black) or non-charcoal (clear) agar gel transport medium.
• Collect 2 endocervical swabs; one for chlamydia and gonorrhoea NAAT and a separate one for *M. genitalium* test NAAT.

• If GeneXpert point-of-care test is available, test specimen/s with point-of-care test and collect two endocervical swabs for sending to the laboratory for antibiotic susceptibility testing; one for microscopy, culture and sensitivity (MC&S) and another for NAAT testing.

**Step 4 – Collect blood for serological tests**

Syphilis, HIV and hepatitis B. Also test for hepatitis A if symptomatic or if there is a history of oro-anal sex and there is an intention to vaccinate if negative; and hepatitis C if there is a history of injecting drug use.

**Step 5 – History of receptive anal intercourse and no anal symptoms**

Take blind anal swab for NAAT (no transport medium).

**History of receptive anal intercourse and anal symptoms present:**

A proctoscope needs to be inserted if possible and swabs obtained under direct vision. If the patient declines or proctoscope not available, patients can be instructed on how to take blind anal swabs themselves.

Also collect two throat swabs (one for culture and sensitivity [charcoal or non-charcoal agar gel transport medium], and one for NAAT [no transport medium]) if there is a history of receptive oral sex. No slide is necessary for microscopy.

**Step 6– Order the tests for the laboratory**

Label all specimens clearly and prepare for transport.

**Step 7 – Consider treatment**

If there is any doubt about follow-up, start treatment based upon clinical diagnosis.

**Asymptomatic**

**Step 1 – Urine available**

Collect 20 mL first void urine for chlamydia and gonorrhoea NAAT (collect after swabs).

**Step 2 – Measure vaginal pH**

Pass speculum and visualise cervix. Collect high vaginal swab for MC&S using swab, glass slide and charcoal (black) or non-charcoal (clear) transport medium. This should only be done if symptomatic and/or abnormal vaginal discharge is present - not usually done as part of opportunistic testing of asymptomatic patients.

**Step 3 – Testing**

**HPV test required:**

Collect specimen from cervix for HPV test.

**Pap smear not required:**

Collect endocervical smear for NAAT, using swab.

**Step 4 – If pus present or cervix is inflamed**

• Collect endocervical smear for MC&S using swab, glass slide and charcoal medium.
• If GeneXpert point-of-care test is available, test specimen/s with point-of-care test and collect two endocervical swabs for sending to the laboratory for antibiotic susceptibility testing; one for microscopy, culture and sensitivity (MC&S) and another for NAAT testing.

Step 5 – Collect blood for serological tests
Syphilis, HIV and hepatitis B. Also test for hepatitis A if symptomatic or if there is a history of oro-anal sex and there is an intention to vaccinate if negative; and hepatitis C if there is a history of injecting drug use.

Step 6 – History of receptive anal intercourse and no anal symptoms
Take blind anal swab for NAAT (no transport medium).

Step 7 – Order the tests for the laboratory
Label all specimens clearly and prepare for transport.

Step 8 – Consider treatment
If there is any doubt about follow-up, start treatment based upon clinical diagnosis.

Opportunistic testing of asymptomatic men and women
The majority of patients seen are asymptomatic. However, this does not mean they are not infected. Often patients request testing or it can be offered at times when they present, e.g. for cervical screening, contraception or a well person’s check.

People at highest risk include:

- Sexually active young males and females who are 25 years or younger, and not in a stable, long-term relationship.
- Those travelling away from home.
- Those living in areas with a high incidence of STIs.
- People who have recently changed sexual partner.
- People who frequently change their sexual partners.
- Men who have sex with men (MSM).
- People who use illicit substances

Asymptomatic males
The following investigations should be undertaken:

- First void urine (FVU) specimen for gonorrhoea and chlamydia NAAT.
- If no urine is available, provide the patient with a specimen jar and ask him to wait until he can void or return an FVU at his earliest convenience. A urethral swab could be used if the patient prefers not to wait. Please see the STI self testing card (PDF 346KB).
- If GeneXpert point-of-care test is available, test specimen/s with point-of-care test and collect an additional swab and urine sample for sending to the laboratory for NAAT testing.
- Where available, undertake concurrent macrolide sensitivity testing for suspected gonorrhoea.

Asymptomatic females
The following investigations should be undertaken:
• Self-obtained low vaginal swab (SOLVS) for gonorrhoea and chlamydia NAAT (no transport medium).
• If GeneXpert point-of-care test is available, test specimen/s with point-of-care test and collect an additional swab and urine sample for sending to the laboratory for NAAT testing.
• Where available, undertake concurrent macrolide sensitivity testing for suspected gonorrhoea.

All cases

• If the patient has had receptive anal sex, oro-anal sex, rimming or fingering and no anal symptoms: Patients can be instructed how to take two blind anal swabs himself or herself. Refer to the STI self testing card (PDF 346 KB) for instructions.
• If the patient has had receptive oral sex, and no oral symptoms, take a throat swab for NAAT (no transport medium).
• Where appropriate, consider collecting blood for serological tests – syphilis, HIV and hepatitis B. Also test for hepatitis C if there is a history of injecting drug use. It is only necessary to test for hepatitis A if symptomatic or if there is a history of male-to-male and/or oro-anal sex, and if there is an intention to vaccinate, if not immune. Refer to hepatitis A and hepatitis B regarding who should receive vaccine.
• Where available, undertake concurrent macrolide sensitivity testing for known or suspected gonorrhoea cases.
• Provide safe sex advice and promote condom use.
• Review at one week and check results for diagnosis.
• Review at three months after exposure – this provides an opportunity to repeat blood tests for syphilis/hepatitis B/HIV. All people who are positive for gonorrhoea or chlamydia should be advised to return for retesting in three months because the risk of re-infection is high.
Sexually transmitted infection syndromes

Syndromic testing and treatment is a public health approach in areas with high rates of STIs.

According to the World Health Organization:* 

- A syndrome is a group of symptoms that patients describe combined with the signs that providers observe during examination. Although sexually transmitted diseases (STDs) are caused by many different organisms, these organisms only cause a limited number of syndromes.

The four main STI syndromes are:

- vaginal discharge
- urethral discharge/dysuria in men
- genital ulceration
- lower abdominal pain in women.

Acute proctitis is also discussed.


Acute proctitis

Organism

There are many causes of anal and rectal inflammation. The Silver Book is limited to sexually transmitted causes, but surgical (e.g. fistulae or haemorrhoids) and inflammatory conditions (e.g. Crohn's disease) should always be considered.

Proctitis caused by sexually transmitted organisms is associated with anal sex and is usually caused by Neisseria gonorrhoeae or Herpes simplex virus (HSV).

In men who have sex with men (MSM), Shigella and Campylobacter jejuni infections and sometimes parasitic gastro-intestinal infections may be acquired from sexual activities, and proctitis may occur as part of an infective enteritis caused by these organisms.

While Chlamydia trachomatis does not usually cause an acute proctitis, rates of rectal chlamydia are increasing and Lymphogranuloma Venereum (LGV) proctitis (usually symptomatic) has been documented as an ongoing epidemic amongst MSM. Mycoplasma Genitalium (M. genitalium) is an emerging cause of ano-rectal infections in MSM.

Clinical presentation

Proctitis is suggested by anal discharge, blood and/or mucus in stools, and pain during defecation. Herpes often causes ulceration and accompanying anal pain, itch and discomfort, while gonorrhoea causes a more generalised inflammation and exudate. A primary herpes proctitis tends to be extremely painful and uncomfortable. LGV is usually symptomatic while a gonococcal proctitis is only rarely the cause of much discomfort.

Investigations

In suspected proctitis, proctoscopy should be performed unless patient discomfort makes this impossible, and the following investigations are suggested:
- Rectal swab of purulent exudate for Gram-stained smear, culture and sensitivities using swab, glass slide and charcoal (black) or non-charcoal (clear) agar gel transport medium.
- Rectal swab for *C. trachomatis* and *N. gonorrhoeae* and *M. genitalium* NAAT
- Rectal swab for HSV NAAT.
- Faeces culture for enteric pathogens if history suggests infective cause.
- Test for other STIs including HIV, syphilis, and hepatitis serology, and chlamydia and gonorrhoea screening from FVU and throat (if appropriate).
- If rectal NAAT for chlamydia is positive, discuss with the laboratory to ensure further testing of the specimen for LGV serovars to enable diagnosis of LGV.
- Consider investigating for non-infection causes such as inflammatory bowel disease in those without risk of STI or whose STI tests are negative.
- Investigations for non-infectious proctitis may include sigmoidoscopy or colonoscopy

**Treatment**

In cases where a sexually transmitted cause is suspected, treatment should be given immediately before the results of tests are available. Treat for both gonorrhoea and chlamydia and consider the need for specific herpes therapy.

For syndromic treatment of nonspecific proctitis:

- Doxycycline 100mg orally, twice daily for 21 days

  PLUS

- Ceftriaxone 500 mg in 2 mL 1% lignocaine given by intramuscular injection, as a single dose

  PLUS

- Valaciclovir 500mg orally, twice daily for 5-10 days

  Rectal LGV should be treated with doxycycline 100 mg, twice daily for three weeks.

In addition, the following procedures are recommended:

- If specific STI tests are negative, the empirical treatment for that pathogen should be ceased.
- In all cases, educate the patient about safer sex practices and promote condom use.
- Partner(s) should be investigated and treated as appropriate.
- Advise return visit in one week.
- Patients should be advised no sexual contact for 7 days after completion of treatment and to avoid sexual contact with partners from the last 6 months until 7 days after they have been tested and treated.

**Vaginal discharge**

Vaginal discharge may originate from the vagina, cervix or upper genital tract. Vaginal discharges are commonly due to bacterial vaginosis, candidiasis and trichomoniasis (although the latter is rare in urban areas).
Vaginitis

Symptoms
There may be an odour (as in the case of bacterial vaginosis or trichomoniasis) or itch (candidiasis) or vulval swelling or soreness (trichomoniasis or candidiasis).

Vaginal infections (as opposed to cervical infections) may cause increased volume of vaginal discharge usually noticed by the patient, i.e. is symptomatic.

 Signs
On examination there is usually increased discharge noted at the introitus and, on inserting a speculum, a pooling of vaginal discharge in the posterior fornix or adherent to the vaginal walls. It is important to note the colour and consistency of the discharge, its odour, and whether the vaginal walls are inflamed.

STI Atlas (external site)

Cervicitis

Cervicitis is defined as >30 white blood cells per high-powered field (WBC/HPF) microbiologically and clinically as inflammation (redness, swelling, contact bleeding, discharge).

Symptoms
Cervical discharge is usually more scanty and may not be noticed by the patient, i.e. asymptomatic, although the patient may notice a change in colour to yellow as the discharge becomes purulent or mucopurulent.

Cervical discharge may be due to STIs such as gonorrhoea, chlamydia or genital herpes. Alternatively, they may be due to physiological causes such as hormones or exposed columnar epithelium (ectopy) causing increased mucoid or mucopurulent discharge at the cervix.

Coexisting urethral infection can occur in women with sexually acquired cervicitis. A history of dysuria without urinary frequency is an important clue to the possible presence of an STI.

Signs
On speculum examination a purulent or mucopurulent discharge from the endocervical canal is an important sign as most cases are likely to be due to gonorrhoea or chlamydia.

Often this is associated with an inflamed, oedematous cervix with contact bleeding when taking swabs or smears.

Often a previously unnoted cervical discharge is seen on the tip of the swab.

Note: most cases of cervicitis are asymptomatic and may also not have any signs, i.e. the cervix can look entirely normal in cases of gonorrhoea and chlamydia.

Other organisms associated with cervicitis include Herpes simplex virus (HSV), Trichomonas vaginalis, and anaerobes. In some cases of clinically evident mucopurulent cervicitis, no pathogens are able to be isolated.

STI Atlas (external site)

Investigations and specimen collection
Laboratory tests allow precise diagnosis, and should be performed. If the patient complains of or shows signs of a vaginal discharge:
• Take a medical history and undertake a physical examination.
• Examine the urethra and vulva for redness and discharge. If urethral discharge (pus) is present, swab for culture.
• Pass a speculum, and visualise the vagina and cervix.
• Collect a high vaginal swab.
• Test vaginal pH on indicator paper (normal is pH <4.5). Note if there is a fishy odour.
• If pus is present or the cervix is inflamed, collect endocervical smear for MC&S using swab, glass slide and charcoal (black) or non-charcoal (clear) agar gel transport medium.
• Collect endocervical specimens for gonorrhoea and chlamydia using a swab or NAAT (no transport medium).
• Collect first void urine for gonorrhoea and chlamydia NAAT.
• If the patient has urinary frequency, take a mid-stream specimen for culture and sensitivity.
• If ulcers are also present, take a swab from the ulcers for NAAT (no transport medium).
• Perform a pelvic examination on every new patient where there is abdominal pain, or clinical cervicitis.

Special considerations

• **History of receptive anal intercourse and no anal symptoms**: Take blind anal swab for NAAT (no transport medium)
• **History of receptive anal intercourse and anal symptoms present**: A proctoscope needs to be inserted if possible and the swabs obtained under direct vision. If the patient declines or proctoscope not available, patients can be instructed how to take blind anal swabs themselves. Also collect two throat swabs (one for culture and sensitivity [charcoal or non-charcoal agar gel transport medium] and one for NAAT [no transport medium]) if there is a history of receptive oral sex. No slide is necessary for microscopy.
• Collect blood for serological tests – syphilis, HIV and hepatitis B. Also test for hepatitis C if there is a history of injecting drug use.
• If GeneXpert point-of-care test available, see specimen collection for more information.

**Immediate treatment**

Without waiting for laboratory results, proceed as follows:

**Vaginitis**

• If itchy, reddened vaginal walls, soreness or reddened or swollen vulva and a normal or low pH (<4.5), treat for candidiasis.
• If vulval soreness, redness, copious greenish discharge, and reddened vaginal walls and cervix, a fishy odour and a raised pH >4.5, treat for trichomoniasis.
• If vulva and vaginal walls are not inflamed or sore or itchy, a slight homogenous grey-white discharge with a fishy odour, and a raised pH >4.5, treat for bacterial vaginosis.
• If the vaginal pH is >4.5, treat as for bacterial vaginosis or trichomoniasis.

**Cervicitis**

• If a purulent cervicitis is seen, treat for both gonorrhoea and chlamydia.
• If shallow painful ulcerative lesions are seen on the vulva and there is cervicitis, treat for genital herpes.
• If abdominal pains accompany the cervicitis, treat for pelvic inflammatory disease (PID).
• In all cases, educate the patient about safer sex practices and promote condom use.
• Partner(s) should be investigated and treated as soon as possible, preferably within 24 hours.
Advise return visit for review and discussion of results.
Patients should be advised not to have sex for a week and until their partner has also completed treatment.
If GeneXpert point-of-care test available, treat the infection detected. If neither chlamydia nor gonorrhoea detected, treat as for chlamydia to cover Mycoplasma and other infections.

**Urethral discharge/dysuria in men**

- Symptoms and signs described in urethral discharge syndrome vary and may include urethral discharge, dysuria, and meatal inflammation without urinary frequency. See [STI atlas](external site).
- Urethritis is defined as >5 WBC/HPF on a smear.
- There may be white cells or bacteria in the urethral exudate seen on a smear on a glass slide, or *Chlamydia trachomatis* and *Neisseria gonorrhoeae* may be isolated from urethral swabs or from FVU.
- Laboratory testing is always required to confirm the diagnosis and to identify the infecting pathogen.
- If there are symptoms of urinary frequency, then a urinary tract infection may also be possible (although it is uncommon in men under 40 years of age).
- Other organisms associated with urethritis include *Mycoplasma genitalium* (*M. genitalium*), *Herpes simplex* virus (HSV), *Trichomonas vaginalis*, adenoviruses, *Ureaplasma urealyticum* and anaerobes. However, *U. urealyticum* and anaerobes may also exist as normal urethral flora in many men. Testing for *U. urealyticum* is not generally recommended, testing for the other organisms is considered second-line (see NSU section).
- In many cases of clinically evident and laboratory-proven urethritis, no pathogens are able to be isolated.

**Investigations and specimen collection**

- If discharge is present collect discharge specimen for antimicrobial sensitivity testing using swab, and glass slide and charcoal or agar gel transport medium. Smear first onto a glass slide for microscopy then place swab in transport medium.
- Collect FVU for chlamydia, gonorrhoea and *M. genitalium* NAAT. If chlamydia, gonorrhoea and *M. genitalium* were not detected and symptoms persist after empirical treatment, consider testing of FVU for herpes simplex virus (HSV) and adenovirus, and microscopy for non-gonococcal urethritis. Consider seeking specialist advice if these investigations are not available.
- If there is urinary frequency, collect a midstream urine specimen for culture and sensitivity.

**Special considerations**

- **History of receptive anal sex, oro-anal sex, rimming or fingering and no anal symptoms:** Patients can be instructed how to take blind anal swabs themselves for NAAT (no transport medium). Refer to the [STI self testing card](Department of Health website) for instructions.
- **History of receptive anal sex, oro-anal sex or fingering and anal symptoms present:** A proctoscope needs to be inserted if possible and the swabs obtained under direct vision. If the patient declines or proctoscope not available, patients can be instructed how to take blind anal swabs themselves. Also collect two throat swabs (one
for culture and sensitivity [charcoal or non-charcoal agar gel transport medium] and one for NAAT [no transport medium]) if there is a history of receptive oral sex. No slide is necessary for microscopy.

- Collect blood for serological tests – syphilis, HIV and hepatitis B. Also test for hepatitis A if symptomatic or if there is a history of male-to-male and/or oro-anal sex and if there is an intention to vaccinate if not immune. Test for hepatitis C if there is a history of injecting drug use. Refer to hepatitis A and hepatitis B regarding who should receive vaccine.
- If GeneXpert point-of-care test available, see information on specimen collection.

Immediate treatment

Where NGU likely:

- Doxycycline 100mg orally, twice daily for 7 days (preferred treatment)

    OR

- Azithromycin 1g orally, stat

Where gonorrhoea likely:

- Ceftriaxone 500mg in 2mL of 1% lignocaine, given by intramuscular injection

    PLUS

- Azithromycin 1g orally, as a single dose

    OR

- Doxycycline 100mg orally, twice daily for 7 days

For treatment of adults and mature minors (aged 14 years or older) with urethral discharge/dysuria where gonorrhoea is suspected under a Structured Administration and Supply Arrangement, see Structured Administration and Supply Arrangement - CEO of Health SASA. This is suitable for use by Registered Nurses and Aboriginal Health Practitioners employed by a health service operated or managed by a Health Service Provider of the WA Department of Health, or contracted entity.

Where M. genitalium likely:

- After completing doxycycline, use either azithromycin or moxifloxacin or seek specialist advice. See Mycoplasma Genitalium.

- If discharge is present or if there is a good symptomatic history, treat for both gonorrhoea and chlamydia.
• In all cases, educate the patient about behaviour change, i.e. safer sex practices, and promote condom use.
• Partner(s) should be investigated and treated as soon as possible, preferably within 24 hours.
• Advise return visit, if necessary, to check that symptoms have settled.
• Patients should be advised not to have sex for a week and until one week after their partner has also completed treatment.
• If GeneXpert point-of-care test available, treat the infection detected. If neither chlamydia nor gonorrhoea detected, treat with Doxycycline 100mg orally, twice daily for 7 days to cover M. genitalium and other infections.

Genital ulceration

• **Genital herpes** (Herpes simplex virus (HSV) infection) is the most common STI causing genital ulceration in Australia. Symptomatic infection causes multiple painful, shallow irregular-edged ulcers or blisters anywhere in the anogenital region. They usually produce painful inguinal lymphadenopathy on the same side as the lesion. However, lesions may be more like linear splits or minor abrasions. Primary genital herpes (no prior exposure to the herpes virus) may present with systemic symptoms as well, e.g. fever, malaise, myalgia.
• Primary **syphilis** is increasing, in urban Australia. It must always be excluded if a solitary, long-lasting, painless thickened indurated ulcerative lesion is present, especially if there has been recent sexual contact with the MSM population or in remote Australian Aboriginal communities, or in South-East Asia or Africa. Occasionally there are two kissing lesions that touch each other in a flexure. There is usually rubbery inguinal adenopathy on the same side as the lesion.
• **Donovanosis** is found in northern and central Australia, and may produce beefy, smelly, painless red lesions, beginning as a nodule or nodules which then slowly erode and enlarge; it is very rare in Australia.
• **Chancroid** produces single or multiple painful lesions with secondary infection and purulent sloughing, and may produce very large painful inguinal adenopathy leading to ulceration (a bubo). It is not endemic to Australia and should be considered in patients with sexual contact in Africa, India or South-East Asia.
• **Lymphogranuloma venereum (LGV)** is rare, and seen in men who have sex with men in urban Australia or in those with sexual contacts in countries where these infections are endemic, such as South-East Asia, India and Africa. It classically produces a small, painless, transient genital ulcer, and then painful enlargement of the inguinal nodes (bubo) both above and below the inguinal ligament. However, in recent years cases in men who have sex with men have generally presented an acute proctitis. Subsequently, abscess formation and fistulae develop and finally blockage of the lymphatics and oedema occurs.
• Diagnostic procedures for, and management of, genital ulceration, when the diagnosis is uncertain or the patient has recently returned from overseas, should be done by or in consultation with a specialised STI or sexual health service or a sexual health physician.
• Pyogenic infections, trauma, drug eruptions, secondarily infected scabies, candidiasis, Behcet's disease, other dermatological conditions and neoplasms sometimes cause ulcerative lesions and may present diagnostic difficulties.
Investigations and specimen collection

If a patient complains of a genital sore or ulcer:

- Take a medical history especially about travel, sex in high-risk areas, male-to-male sex and length of time the ulcer has been present.
- Examine the ulcer, check for a rolled edge and induration or thickening of the ulcer base, or inguinal adenopathy.
- Collect an HSV PCR (NAAT) swab from the genital lesion to exclude herpes. Note: The HSV PCR (NAAT) swab detects viral shedding from a herpes lesion. Viral shedding occurs during the early stages of a lesion. Therefore, a negative HSV PCR (NAAT) test result on an older herpes lesion does not preclude a diagnosis of herpes.
- If the ulcer is clinically suggestive of donovanosis or syphilis:
  - Clean the ulcer with saline if required. From the inside edge of the ulcer/nodule take a dry swab. Send this swab to test for NAAT for donovanosis, syphilis and HSV by specifying the likely diagnosis or diagnoses.
  - Collect an impression smear (scrape and slide) or any other confirmatory tests for Donovan bodies (Giemsa staining must be requested).
  - HSV serology may be considered if the ulcer appears old or mostly healed, or if there are episodes of recurrent ulceration or known contact with infection. (Remember serology is not a substitute for the PCR swab and window periods may apply to the interpretation of results).
  - Take blood for syphilis serology, and offer HIV and hepatitis B serology.

Immediate treatment

- If syphilis or donovanosis is suspected, take NAAT swabs and syphilis serology before commencing any treatment.
- If multiple painful, shallow irregular-edged ulcers or multiple recurrent vesicular lesions are evident, treat for herpes.
- **Primary health care practitioners not experienced in the clinical management of genital ulcers should refer all suspected cases of syphilis, donovanosis or chancroid to a specialist centre, or discuss management with a sexual health or infectious diseases specialist.**
  - Where painless ulcers are evident, treatment for syphilis should be commenced in areas where laboratory diagnosis is likely to be delayed: benzathine penicillin 1.8 g (=2,400,000 units) intramuscularly, as a single dose
  - In all cases, educate the patient about safer sex practices and promote condom use. Give out condoms.
  - Partner(s) should be investigated and treated as appropriate.
  - Stress importance of a return visit in one week.
  - Patients should be advised to avoid sex until ulcers have healed and partners have also been investigated and treated if necessary.
  - If rectal LGV is suspected, three weeks of antibiotic therapy such as doxycycline 100mg 12-hourly is recommended.

**STI Atlas (external site)**

For treatment of adults and mature minors (aged 14 years or older) genital ulceration where syphilis is suspected under a Structured Administration and Supply Arrangement, see [Structured Administration and Supply Arrangement - CEO of Health SASA (conditions)](https://www.health.wa.gov.au/). This is suitable for use by Registered Nurses and Aboriginal Health Practitioners employed by a health service operated or managed by a Health Service Provider of the WA Department of Health, or
contracted entity, or a health service that is a member of the Aboriginal Health Council of Western Australia.

**Lower abdominal pain syndrome**

Women often present with lower abdominal pain. The causes range from minor but uncomfortable problems such as constipation or period pain, to life-threatening problems such as a ruptured ectopic pregnancy or appendicitis.

**Important principles when managing lower abdominal pain include:**

- Take a sexual history
- Always do a pregnancy test on women of child-bearing age to exclude ectopic pregnancy which needs urgent gynaecology referral.
- Think past an obvious cause of the pain, e.g. many women have an abnormal dipstick urine test, but urinary infection (even if present) may not be the cause of the pain.
- Consider PID as a differential diagnosis in cases of suspected appendicitis, gastroenteritis, colitis, endometriosis or ovarian cyst.
- PID due to chlamydia and/or gonorrhoea is a common cause of lower abdominal pain in WA. *Mycoplasma genitalium* (*M. genitalium*) is an emerging cause of lower abdominal pain and PID in women.
- Always think about PID as a possible diagnosis and treat early to avoid complications especially if the patient is at risk of infertility (e.g. young, recent change of partner or multiple partners, recurrent STIs, past infertility, following termination of pregnancy or other instrumentation).
- Negative test results for gonorrhoea, chlamydia or *M. genitalium* do not exclude a diagnosis of PID.

See [Pelvic Inflammatory Disease](#).

The term PID refers to infections of the female upper genital tract – uterus, fallopian tubes, ovaries or pelvic cavity. It can be caused by gonorrhoea, chlamydia or anaerobic bacteria, or a variety of bacteria commonly found in the vagina, such as the different bacteria that can cause bacterial vaginosis, especially post-instrumentation.

Symptoms include constant pain in the lower abdomen that worsens with movement such as running or going up and down stairs, or pain with intercourse (deep dyspareunia). There can be fever or raised temperature, malaise, irregular or heavy periods, or pain can start after a recent period.

Signs on pelvic examination include a cervical discharge and/or vaginal discharge, cervical excitation (pain on rocking the cervix), tenderness and swelling in the fornices. Abdominal examination can show tenderness in the iliac fossae, guarding or rebound tenderness.

**Clinical examination, investigations and specimen collection**

If the patient has a temperature (>38 °C), rebound tenderness, guarding, pain during examination and/or vaginal discharge, consider PID in the differential diagnosis of an acute abdomen. The following investigations should be performed where PID is considered:

- Examine the urethra and vulva for redness and discharge.
- Pass a speculum and visualise the vagina and cervix.
- On examination any vaginal discharge should be noted as that may indicate an ascending infection.
• Collect high vaginal swab for MC&S using swab, glass slide and charcoal (black) or non-charcoal (clear) transport medium.
• Test vaginal pH on indicator paper (normal is pH < 4.5). Note if there is a fishy odour.
• On examination, the cervix should be observed carefully as any purulent discharge is significant.
• Collect endocervical smear for MC&S using swab, glass slide and charcoal (black) or non-charcoal (clear) agar gel transport medium. This specimen is suitable for culture of gonococci, anaerobes, Mycoplasma spp. and other endogenous flora.
• Collect endocervical smear for gonorrhoea, chlamydia and *M. genitalium* NAAT, using swab (no transport medium). Note that point-of-care testing for chlamydia and gonorrhoea is not indicated in patients with PID as it will not alter the treatment required or the need for contact tracing of sexual partners.
• Perform a pelvic examination to check the pelvic area for masses, heat, tenderness, or fullness in the adnexa. An important sign is cervical excitation.
• Collect first void urine for gonorrhoea, chlamydia and *M. genitalium* NAAT.
• If the patient has urinary frequency, take a mid-stream specimen for culture and sensitivity.
• Do a pregnancy test.
• Pelvic ultrasound may be required.
• Take a full blood picture and measure erythrocyte sedimentation rate (ESR) as well as C reactive protein.

Immediate treatment

• Assess disease severity and consider hospitalisation.
• If PID is considered, **treat immediately**.
• Ensure the patient understands that their condition is likely to be the result of an STI and that recent partners may be asymptptomatically infected.
• Undertake contact tracing and treatment of partner(s).
• Advise return visit in three days to ensure improvement and test of cure.
• Patients should be advised no sexual contact for 7 days after completion of treatment and to avoid sexual contact with partners from the last 6 months until 7 days after they have been tested and treated.
• In all cases, educate the patient about safe sexual behaviour.
Contact tracing

Contact tracing or partner notification is the process of identifying relevant contacts of a person identified with an infectious disease so they can be informed about their exposure and be offered physical examination, investigations and treatment. Contact tracing is an essential part of the clinical management of patients diagnosed with STIs and blood-borne infections.

Health care providers have a professional responsibility to ensure contact tracing takes place. In most cases contact tracing can be undertaken by the index case with assistance from health care providers as required.

When performed well, contact tracing supports sexual health education, and is an opportunity to provide individual interventions that bring about sustained behaviour change e.g. safer sex/injecting, alcohol and other drugs

Contact tracing definitions

Contact
A person who has had sex with, shared injecting equipment with, or has had some other high-risk exposure to the index case.

Sexual contact
Contact may be oral, vaginal, anal or some other form of sexual contact e.g. sharing sex toys/implements with the index case during the period when there was risk of transmission of infection.

Index case
The original person identified with an infection. The index case may or may not have infected other persons but represents a starting point for the process of contact tracing.

Contact tracing or partner notification
Contact tracing or partner notification is the process of identifying relevant contacts of a person identified with an infectious disease so they can be informed about their exposure and be offered physical examination, investigations and treatment.

General principles

- Contact tracing is an essential part of STI/BBV management.
- Health care providers have a professional responsibility for ensuring that reasonable efforts are made to identify relevant contacts so they can be informed about their exposure and be offered physical examination, investigations and treatment.
- Health care providers should respect the human rights and dignity of the index case and the identified contacts.
- All aspects of contact tracing must be confidential, including written and database records. The anonymity of the index case must be protected unless written permission has been given to release this information to contacts.
- Contact tracing should be voluntary and without coercion.
- Specialist advice about, and assistance to undertake, contact tracing may be sought from the local Population Health Unit (Healthy WA website).

Identifying contacts
When taking history to identify contacts:
• explain the reasons for needing to identify contacts and reassure the patient about the confidentiality of the information
• ask open-ended questions and use appropriate level of language, i.e. use the words your patient uses
• do not presume the gender of contacts – ask about male and female contacts, use gender neutral pronouns and be non-judgemental
• ask explicit information about behaviours which are associated with STI or BBV transmission risk.
• ask where they may have acquired the infection e.g. overseas
• ask where/how they meet their contacts e.g internet, mobile phone apps, sex on premises venue
• ask about substance use that may have contributed to risk
• if necessary, reinterview at least once more
• attempt to get further information about contacts, e.g. email or mobile telephone numbers may help.

Offer assistance in contact tracing if appropriate.

To assist index cases to remember contacts, ask about events of significance (e.g. birthdays, anniversaries, travel, holidays, mardi gras, sporting carnivals), and then specifically about sexual encounters at the time of each event.

Refer to the infection’s incubation period and the index case’s clinical history to determine the appropriate time frame for identifying contacts. It may be useful to start with the most recent contact and work backwards in time to ensure that all relevant contacts, not just the most recent, are identified.

Choosing a method for contact tracing
There are different methods by which contacts can be informed by the index case themselves or a health care provider:

In person
• Mobile or home telephone
• SMS
• Social Media
• Email
• Letter
• Referral to a specialist agency

Online resources available to support both patients and health care providers to undertake partner notification include:
• www.letthemknow.org.au (external site)
• www.bettertoknow.org.au (external site) (for Aboriginal people)
• www.thedramadownunder.info (external site) (for MSM)

Patient (index case) referral
The index case personally notifies his or her contacts. This requires specific instructions including advice on which contacts to inform and what information to be communicated, including appropriate agencies for assessment and counselling. Patient referral is recommended for well-informed, motivated and confident index cases. Discussion of various scenarios and how they can inform contacts may be helpful. If the index case fears
embarrassment or reprisal from contacts e.g. domestic violence, seek assistance from the public health unit (Healthy WA website) to undertake contact tracing in a way that minimizes risk to the index case’s safety. It is important to use follow-up consultations to confirm that the contacts have been notified and assessed adequately.

A sample letter (Department of Health website) for your patient's contact to pass on to their own GP is provided. The letter explains:

- that they have been in contact with a person diagnosed with an STI/BBV and may have contracted an STI/BBV
- the importance and need for examination and testing, and empirical treatment of chlamydia, gonorrhoea and syphilis.

**Provider Referral**

Provider referral may be selected either at the index case's request, or at the recommendation of the index case's health care provider. In such cases the provider may undertake to notify contacts directly, or seek assistance from the local public health unit (HealthyWA website). Provider referral requires the explicit approval of, and offers greater anonymity to, the index case.

**Approaches to contact tracing by health professionals**

**Approaches by phone**

**Advantages:**

- Quick and low cost.
- Opportunity to provide immediate information to the contact and allay their anxiety.
- Opportunity for the health care provider to assess immediately the contact’s willingness to participate in contact tracing allows an appointment to be made immediately.
- Confidential (provided that the source of the call is only revealed to the contact).

**Disadvantages:**

- Provides only verbal/auditory information.
- Contact may be uncomfortable disclosing information over the phone to a health care provider they do not know/trust.
- Confidentiality may be compromised as phone conversions can be intercepted/overheard by other people.
- Not practical for the hearing impaired.

**Approaches by letter**

**Advantages:**

- Confidentiality can be assured if registered mail is used
- Cost effective.

**Disadvantages:**

- May create anxiety, especially if read when services are closed.
- Inappropriate for disclosing details.
- Difficult for people with literacy problems or for the visually impaired.

A sample letter (Department of Health website) for patients to pass on to contacts is included. The health care provider should consider the appropriateness of using such a letter.
Approaches in person/Home Visit

Advantages:

- Face to face contact gives the health care provider opportunity to manage the contact’s response.
- Opportunity for health care provider to assess the index case’s home/social situation.
- Depending on the circumstances and the health care provider’s training, immediate testing, empirical treatment, support and referral to appropriate services can be offered if appropriate.
- Informal approaches in small communities can minimise confidentiality risks.

Disadvantages:

- Risk to the health care provider, especially if undertaking this task by themselves.
- Presence of a health care provider with the index case outside a clinic setting can be sufficient to breach the index case’s confidentiality and negatively influence their willingness to participate in contact tracing.
- Human resource and time intensive.

Referral to another agency

For common bacterial STIs such as chlamydia and gonorrhoea, it is preferable that the index case’s contacts be identified, examined, tested, counselled and treated by the health care provider or clinic that treated the index case. However, structural, geographical or other factors may make it necessary for contacts to be referred to a public health unit (HealthyWA website) or specialist sexual health service.

Advantages:

- Opportunity for the index case’s health care provider to limit their involvement to that of their patient, i.e. the index case.
- Opportunity to access to specialist knowledge of contact tracing and public health management.
- Allows the index case’s confidentiality to be maintained if information that could identify them is not included in the referral.

Disadvantages:

- Break in continuity of care.
- Complication of involving another party.
- Delay in contact tracing.
- Perception of breach in confidentiality.

Empirical treatment

A strategy that is effective in reducing the prevalence of infections within a community is empirical treatment. This is where the contact of a proven case of gonorrhoea, chlamydia, trichomoniasis or non-specific urethritis (NSU) is treated on the day they are interviewed and investigated, rather than waiting until the results are back. Treatment should be offered regardless of whether the contact is symptomatic or not.

Rationale for empirical treatment:

- these infections are highly infectious so there is a high probability that the contacts are infected
• the contact interview may be the only opportunity there is for treatment if considered to be in a high risk group e.g. itinerant, homeless, has mental health issues, drug and alcohol use
• the earlier treatment is initiated reduces the risk of reinfection and may reduce complications and further transmission in the community.

If GeneXpert point-of-care test is available, contacts can be treated on the basis of their point-of-care test result.

Syphilis testing and treatment can be more complicated, ideally serology results should be reviewed before treatment is commenced for asymptomatic contacts of syphilis. However, persons who were sexually exposed to a index case with infectious syphilis (primary, secondary, or early latent) should be tested and treated presumptively. If in doubt, offer the contact empirical treatment, (e.g. Benzathine penicillin 1.8 g intramuscularly as a single dose) especially if there is potential for onward transmission if the contact is infected.

Follow-up
Follow-up with the index case for contact tracing is essential to ensure that all possible contacts have been identified and informed. If none of the named contacts were found to have the same infection as the index case, it is important to reinterview the index case and maybe extend the time frame of the sexual contact history further back in time.

If the primary health care provider is not in a position to ensure that identified contacts are traced and receive screening and treatment, contact tracing support may be obtained from the local public health unit (HealthyWA website).

Urgency of contact tracing
The concept and importance of contact tracing should be discussed with the index case at the initial interview/presentation, especially if they have symptoms and/or clinical signs of STIs/BBVs.

Urgent (or immediate) contact tracing is necessary when there is concern that a contact is placing others at immediate risk of infection and for antibiotic resistant organisms such as penicillin-resistant Neisseria gonorrhoeae.

Rationale: The longer that contact tracing is delayed, the greater the likelihood of an infected contact transmitting the infection to other individuals (or re-infecting the index case). While it is accepted practice to await confirmation of the infection before starting contact tracing, this should be reconsidered for rural and remote areas, where laboratory results may not be received for a week. There is a risk that, after a week, it will be more difficult to locate and treat the contact quickly. Delays in treating contacts are considerably reduced if contact tracing is begun when the index case first presents.

Special considerations
• If the index case is acutely physically ill or emotionally distressed, it may be better to defer the issue until a subsequent consultation, provided that the index case can be relied upon to return.
• For many index cases, the issue of notifying contacts will have a high priority and the provider should assist them to deal with the issue immediately.
• For common, readily treatable bacterial infections (e.g. chlamydia, gonorrhoea and syphilis), contact tracing is usually discussed during the initial visit. For chronic viral STIs/BBVs, particularly HIV, which are less infectious, contact tracing is less urgent may
be deferred to a later consultation after the patient has had time to consider the implications of their chronic infection.

- Contact tracing of index cases with penicillin-resistant gonorrhoea is a matter of public health urgency to prevent such strains from being transmitted locally and becoming established in WA.

**Uncooperative index cases/contacts**

Advise the local Public Health Unit’s (PHUs) [HealthyWA website] directly and confidentially of non-compliant individuals, particularly in the case of penicillin-resistant gonorrhoea, and serious infections such as syphilis and HIV.

A strategy for a short-term management plan should be agreed between the primary health care provider and the PHU.

**Rationale:** Infectious diseases legislation places control of communicable diseases under the management of PHUs. However, this is a last resort, when counselling by the primary health care provider has been unsuccessful in persuading the index case to comply with contact tracing and treatment protocols.

**Problems and possible solutions for uncooperative patients**

It is helpful to understand why the index case/contact is reluctant to cooperate. Possible reasons and options for addressing them include:

- **Fear of loss of confidentiality:** Offer provider referral for greater anonymity.
- **Index case unwilling to inform contacts:** Practise role playing (perhaps with counsellor assistance). Offer anonymous online sites e.g Let Them Know (external site)
- **Patient not reconciled to diagnosis:** Allow more time and support if contact tracing is not urgent. This option is not appropriate for cases of gonorrhoea and infectious syphilis due to their high infectivity and potential to cause serious complications including congenital infection.
- **Unaware of seriousness of consequences:** Provide appropriate education materials and discuss.
- **Little concern for consequences to contacts:** Emphasise serious consequences that the index case can relate to, e.g. infertility, congenital infection. Explain that contacts tend to find out eventually; emphasise the risk to the index case of re-infection from untreated contacts and any legal requirements.
- **Socio-cultural or language differences between the health care provider and the index case:** Seek the assistance of a culturally appropriate agency or professional interpreter.
- **Fear of reprisal from partner/s:** Explain disease process. Encourage and provide support. Discuss various scenarios and how they can be dealt with and also offer to inform the contact.
- **Shame of having an infection:** Explain disease process.

**Resources**

**Online resources**

- [www.letthemknow.org.au](http://www.letthemknow.org.au) (external site)
- [www.bettertoknow.org.au](http://www.bettertoknow.org.au) (external site) (for Aboriginal people)
- [www.thedramadownunder.info](http://www.thedramadownunder.info) (external site) (for MSM)
Providers can improve their skills using the WA or ASHM partner notification (contact tracing) modules online. The modules are designed for nurses and Aboriginal Health Workers in WA. View the WA partner notification (contact tracing) modules on the Australian Society for HIV Medicine website (external site).

Training in STIs and contact tracing is available via The Short Course in Sexual Health Nursing Online Modules hosted by the Australian Society for HIV Medicine website (external site). The online training provides knowledge and skills in managing sexually transmitted infections and is for medical practitioners, nurses and other professionals in Western Australia. It has been allocated CPD hours according to the Nursing and Midwifery Board of Australia - Continuing Professional Development Standard.
STI screening recommendations for priority populations

Asymptomatic young people under 25 years
- These recommendations should apply regardless of whether condoms are used or not.
- Patients with genital symptoms should have appropriate diagnostic tests and also be opportunistically screened for other STIs.

Annually (for those who have changed sexual partner/s)
- Chlamydia and gonorrhoea (urine/SOLVS/cervix/throat/anus)
- Hepatitis B serology – if hepatitis B status is unknown and patient has not completed a course of hepatitis B vaccination, offer testing and if no serological evidence of immunity, i.e. anti-HBs negative, offer immunization. Testing is unnecessary if hepatitis B status is known or if a patient has completed a course of hepatitis B vaccination.

More frequent screening
- More frequent testing may be required following a particular risk exposure.
- Repeat testing for chlamydia/gonorrhoea is recommended three months after treatment.

5-yearly
- HPV test: 5-yearly (unless abnormal, then according to HPV test results)


Men who have sex with men
- These recommendations should apply regardless of whether or not condoms are used. A regular partner, increasing age or bisexuality is not necessarily protective of an STI.
- Patients with genital symptoms should have appropriate diagnostic tests and should be opportunistically screened for other STIs.

With or without symptoms, all men who have had sex with another man in the previous year should be offered tests for STIs at least once a year in the following way:
- Chlamydia and gonorrhoea (throat/urine/anus)
- Hepatitis A, B and C serology. If hepatitis A and B status unknown and patient has not completed a course of hepatitis A and B vaccination, offer testing and if no serological evidence of immunity, i.e. anti-HA negative and/or anti-HBs negative, offer appropriate immunisation (see Guidelines for the Provision of Hepatitis A and B Vaccine to Adults in Western Australia at Risk of Acquiring these Infections by Sexual Transmission (PDF 248KB) hyperlink to). Testing is unnecessary if hepatitis A and B status are known or if a patient has completed a course of hepatitis A and B vaccination
- Syphilis
- HIV serology (if HIV-negative)

Clinical indicators of increased STI/BBV risk
These include:
- any anal sex
- any anal symptoms (bleeding, itching, discharge, pain)
- HIV-positive
- past history of gonorrhoea or chlamydia
- sexual contact with someone recently diagnosed with an STI
- mental illness
- recreational drug use
- request for a test.

More frequent screening
Testing three to six monthly is recommended for men who attend sex-on-premises venues (SOPVs), beats, use recreational drugs or seek partners via the internet or mobile apps.

Follow-up testing
- People diagnosed with chlamydia or gonorrhoea should be retested in three months.
- For people with HIV, HBV surface antibody levels should be checked annually.

Asymptomatic Aboriginal people aged 16 – 29 years
- These recommendations should apply regardless of whether condoms are used or not.
- Patients with genital symptoms should have diagnostic tests and also be opportunistically screened for other STIs and BBVs.

Bi-annually (for those who have changed sexual partner/s)
- Chlamydia and gonorrhoea (urine/SOLVS/cervix/throat/anus)
- Hepatitis B serology – if hepatitis B status unknown and patient has not completed a course of hepatitis B vaccination, offer testing and if no serological evidence of immunity, i.e. anti-HBs negative, offer immunization. Testing is unnecessary if hepatitis B status is known or if a patient has completed a course of hepatitis B vaccination.

More frequent testing
- More frequent testing may be required following a particular risk exposure
- Repeat testing for chlamydia and gonorrhoea is recommended three months after treatment

5-yearly (females only)
- HPV test: 5-yearly (unless abnormal, then according to HPV test results)

Watch the healthy conversations video (external site) and refer to Let's Yarn (external site) for tips on culturally appropriate ways to discuss sexual health with Aboriginal clients.


Asymptomatic sexually active people who injected drugs in the last 12 months
- The lifestyles of people who inject drugs may also involve sexual risk taking behaviours. Therefore, the sexual health needs of people who inject drugs, as well as health issues associated with their drug practice, need to be addressed.
- These recommendations should apply regardless of whether condoms are used or not, and whether or not safe injecting practices are reported.
• Patients with genital symptoms should have appropriate diagnostic tests and also be opportunistically screened for other STIs.

**Annually**

- Chlamydia and gonorrhoea (urine/SOLVS/cervix/throat/anus)
- Hepatitis A and B serology. If hepatitis A and B status unknown and patient has not completed a course of hepatitis A and B vaccination, offer testing and if no serological evidence of immunity, i.e. anti-HA negative and/or anti-HBs negative, offer appropriate immunisation (see Guidelines for the Provision of Hepatitis A and B Vaccine to Adults in Western Australia at Risk of Acquiring these Infections by Sexual Transmission (PDF 248KB)). Testing is unnecessary if hepatitis A and B status are known or if a patient has completed a course of hepatitis A and B vaccination.
- Hepatitis C serology (if hepatitis C virus [HCV] negative).
- Syphilis.
- HIV serology (if HIV negative).

**More frequent screening**

- More frequent testing may be required following a particular risk exposure.

**5-yearly (females only)**

- HPV test: 5-yearly (unless abnormal, then according to HPV test results)

**Current sex workers**

**First visit**

- Chlamydia and gonorrhoea (urine/SOLVS/cervix/throat/anus NAAT)
- Hepatitis A and B serology. If hepatitis A and B status unknown and patient has not completed a course of hepatitis A and B vaccination, offer testing and if no serological evidence of immunity, i.e. anti-HA negative and/or anti-HBs negative, offer appropriate immunisation (see Guidelines for the Provision of Hepatitis A and B Vaccine to Adults in Western Australia at Risk of Acquiring these Infections by Sexual Transmission (PDF 248KB)). Testing is unnecessary if hepatitis A and B status are known or if a patient has completed a course of hepatitis A and B vaccination.
- Hepatitis C serology.
- Syphilis.
- HIV serology (if HIV-negative).

**5-yearly (females only)**

- HPV test: 5-yearly (unless abnormal, then according to HPV test results)

**Follow-up patients**

- Chlamydia and gonorrhoea (urine/SOLVS/cervix/throat/anus NAAT): Three-monthly – if 100% condom use, more frequently if <100% condom use.
- Serology: 12-monthly (hepatitis C, HIV, syphilis; hepatitis A and B only if not immunised).
- **If condom breakage:**
  - follow-up within three days (set baseline)
  - repeat swabs in two weeks
  - baseline serology – repeat at three months.
- **Medical certificate:** Can be certificate of attendance only and not a 'clearance', i.e. should only state date screening was performed.
• **Exclusion periods:** Seek advice from an experienced sexual health physician.

**Pregnant and post-partum women**

**At booking visit**
- Chlamydia and gonorrhoea (urine/SOLVS/cervix/throat/anus)
- Hepatitis B and C serology
- Syphilis serology
- HIV serology

**At 28 weeks (all women in the Goldfields, Kimberley, Midwest and Pilbara and other at-risk women)**
- Syphilis
- HIV serology

**At 36 weeks (all women in the Goldfields, Kimberley, Midwest and Pilbara and other at-risk women)**
- Chlamydia and gonorrhoea (urine/SOLVS/cervix/throat/anus)
- Syphilis

**At delivery (all women in the Goldfields, Kimberley, Midwest and Pilbara and other at-risk women)**
- Syphilis

**At 6 weeks post-partum (all women in the Goldfields, Kimberley, Midwest and Pilbara and other at-risk women)**
- Syphilis

**STI/BBV or HIV notification**

Under the Public Health Act 2016, all medical and nurse practitioners practising in Western Australia (WA) are legally required to report the diagnosis of notifiable infectious diseases to the Department of Health. Notifiable infectious diseases include chlamydia, gonorrhoea, syphilis, donovanosis, chancroid, HIV and hepatitis A, B and C.

Medical and nurse practitioners must complete the appropriate Department of Health infectious disease notification forms for all patients diagnosed with a notifiable STI or HIV, as soon as possible after confirmed diagnosis.

All notifiable infectious diseases, except for HIV infection, should be notified on the standard notifiable infectious disease form. There are two versions of the form (metropolitan (Department of Health website) and rural (Department of Health website)), one for clinicians in the metropolitan area and the other for clinicians in the non-metropolitan areas. Metropolitan notification forms should be forwarded to the Communicable Disease Control Directorate.
(CDCD), and rural notification forms should be forwarded to the appropriate local population/public health unit (PHU).

Additional information (‘enhanced surveillance’) about behavioural, demographic and clinical characteristics is required for cases of some STIs/BBVs (i.e. gonorrhoea, infectious syphilis, hepatitis C, donovanosis). Completion of an enhanced surveillance form satisfies a clinician’s legal requirement to report that notifiable disease.

HIV infections should be notified using a separate HIV notification form (Department of Health website).

It is important to record Indigenous status on the notification form in order to monitor the burden of disease among Aboriginal and Torres Strait Islander people and assist in planning and delivery of services and resources to appropriate communities. The standard question to ask a person about their Indigenous status is: “Are you of Aboriginal or Torres Strait Islander origin?”

Australian national notifiable diseases case definitions for STIs and BBVs can be found on the Australian Department of Health website (external site).

Download infectious disease notification forms here:

- Metropolitan notification form (Department of Health website)
- Rural notification form (Department of Health website)
- HIV/AIDS notification form (Department of Health website).

Hard copy notification forms can be obtained from your local public health unit or the CDCD (Tel: 9222 2355)
Notifiable Infections

Chancroid

Organism

_Haemophilus ducreyi_ is the organism responsible for chancroid. It is an imported infection and is not endemic in Australia.

Clinical presentation

Chancroid ulcers are usually tender and multiple, and may be associated with fluctuant inguinal lymphadenitis. Unusual or large ulcers should be discussed urgently with a specialist because, occasionally, very rapid, extensive and destructive ulceration may occur.

[STI Atlas (external site)].

Investigations

- Ask the patient about overseas sexual exposure.
- Diagnosis is by culture of _H. ducreyi_ on specialised media. It is important to ring the laboratory to discuss specimen collection before taking the specimen.
- In some cases Gram-stained smear may show typical organisms, but this test has low sensitivity compared to culture.
- Serological tests are not routinely available.
- NAAT if available.

Treatment

Directly observed single dose therapy is preferred.

- azithromycin 1 g orally, as a single dose
  - or
- ceftriaxone 500 mg in 2 mL 1% lignocaine intramuscularly, as a single dose
  - or
- ciprofloxacin 500 mg orally, 12-hourly for three days.

Pregnancy

[Australian categorisation system for prescribing medicines in pregnancy]

Management of partners

- Partners need to be investigated and treated. Partners should be advised no sexual contact for 7 days after completion of treatment and to avoid sexual contact with any partners from the last 6 months until 7 days after they have been tested and treated.

Follow up

Review the patient until the ulcers have healed.

Public health issues

Check for other STIs, and perform contact tracing to prevent further transmission and reinfection.
Notification
This is a notifiable infection. Medical practitioners must complete the appropriate notification forms for all patients diagnosed with a notifiable STI/HIV, as soon as possible after confirmed diagnosis.

Epidemiological reports and real time notification data
Epidemiology of STIs and BBVs in Western Australia (Department of Health website)
Real time chancroid notification data (Department of Health website).

Chlamydia

Organism
Genital chlamydia infection is caused by some of the subtypes of *Chlamydia trachomatis*. Other subtypes cause trachoma and lymphogranuloma venereum (LGV). Like all chlamydial species, the organism has to grow within cells, and so it is found within the endothelium and epithelium of the endocervix, rectum, peritoneal cavity, fallopian tubes, oropharynx and conjunctiva. Genital chlamydia is a common STI in Australia, particularly in adolescents and young adults.

The incubation period is 2-60 days or longer. Contact infectivity is high with 68% of male partners of infected women found positive by NAAT (PCR).

Clinical presentation
Asymptomatic infection is common. Chlamydia is asymptomatic in at least 75% of women and 50% of men.

Genital chlamydia infection may be manifested by:
- Urethral discharge (typically clear, white or grey) in men.
- Testicular or scrotal pain and tenderness due to epididymo-orchitis.
- Abnormal bleeding (intermenstrual, post coital bleeding) due to cervicitis.
- Lower abdominal pain due to pelvic inflammatory disease (PID), or infection of the fallopian tubes or uterus.
- Dyspareunia (pain during vaginal intercourse).

Less commonly as:
- Peri-hepatitis (abdominal pain, fever, tender liver),
- Conjunctivitis in adults or newborns,
- Proctitis (anal irritation and discharge),
- Pneumonia of newborns,
- Reactive arthritis (Reiter’s syndrome).

The incubation period for symptomatic urethritis in men is about 7 to 14 days, but may be longer.

Testing should be carried out on sexual partners of infected individuals, and should be considered for sexually active adolescent girls and boys. Consider testing young women at the time of gynaecological examination, even in the absence of symptoms. The highest risk is in those who do not consistently use barrier contraceptives, or who have a new partner or multiple partners.
Investigations
Chlamydia infection is diagnosed by detecting *Chlamydia trachomatis* in appropriate specimens. Serology is not helpful in the diagnosis of sexually transmitted chlamydial infection.

- The preferred tests are nucleic acid amplification tests (NAAT).
- In women who decline to be examined or it is not indicated, self-obtained vaginal swabs are the preferred specimen.
- If the patient is examined take an endocervical swab for NAAT (no transport medium) in addition to FVU testing.
- A urine specimen only is acceptable if a woman declines to give either a vaginal or endocervical swab, but will miss some cervical infections.
- Diagnosis and treatment of infected patients prevents ongoing/further transmission to sex partners and, for infected pregnant women, may prevent transmission of chlamydia to infants during birth.
- *Gonorrhoea* can and should be tested for on the same NAAT specimens.

Specimen collection and handling
- **Men**: Collect FVU for NAAT. If the patient is unable to pass urine, ask him to wait or provide the patient with a specimen jar and ask him to return. A urethral swab can be used if the patient prefers not to wait.
- **Women**: Take a FVU and endocervical swab or SOLVS for NAAT (no transport medium).
- Specimens should reach the laboratory as quickly as possible.
- All specimens must be clearly labelled with the patient's identifier (name or code), date of birth or medical record number, the site, date and time of collection.
- Keep as close as possible to 4 °C during storage and transport. Avoid extremes of temperature. **Do not** place samples in the freezer section of the refrigerator and avoid direct contact with freezer blocks during transport.

NB -FVU is first void urine - meaning collecting the first part of the urine stream, it can be done at any time and does not have to be the first void of the day.

See further information on methods of testing, including use of GeneXpert point-of-care test in health services where this is available.

- If the patient has had receptive anal sex, oro-anal sex, rimming or fingering, and no anal symptoms: patients can be instructed how to take two blind anal swabs himself or herself. Refer to the [STI self-testing card](https://www.gov.uk/government/publications/sti-self-testing-card) for instructions.
- If the patient has had receptive oral sex and no oral symptoms, take a throat swab for NAAT (no transport medium).
Treatment

Treating uncomplicated chlamydia

Adults

- Doxycycline 100 mg orally, 12-hourly for 7 days. This is the preferred treatment as it reduces opportunities for *M. genitalium* to develop resistance to azithromycin and is effective against asymptomatic rectal carriage of *C. trachomatis*
  
  OR

- Azithromycin 1g orally, as a single dose

Where there is concern that the patient will not be compliant with doxycycline, azithromycin is more suitable.

Children 0–8 years

- Azithromycin 10 mg/kg (to a maximum of 1 g) orally, daily for 5 days (restricted PBS availability)
  
  OR

- Erythromycin 10 mg/kg per day orally, in four doses for 10–14 days.

Children > 8 years

- Azithromycin 20 mg/kg (to a maximum of 1 g) orally, as a single dose
  
  OR

- Doxycycline 100 mg orally, twice daily for 7 days.

Pregnant women

- Azithromycin 1 g orally, as a single dose (category B1) (preferred option)
  
  OR

- Erythromycin ethyl succinate 800 mg orally, twice daily for 10 days (category A)
  
  OR

- Erythromycin base 250 mg orally, 6-hourly for 14 days (category A)

See [Australian categorisation system for prescribing medicines in pregnancy](#)

Ano-rectal infection

- Doxycycline 100mg orally, twice daily for 7 days; if LGV detected treat for 21 days if symptomatic
OR

- Azithromycin 1g orally, as a single dose, and repeat in one week

For treatment of adults and mature minors (aged 14 years or older) with chlamydia under a Structured Administration and Supply Arrangement, see Structured Administration and Supply Arrangement - CEO of Health SASA. This is suitable for use by Registered Nurses and Aboriginal Health Practitioners employed by a health service operated or managed by a Health Service Provider of the WA Department of Health, or contracted entity.

Pharyngeal infection

- Azithromycin 1g orally as single dose (same as for lower genital infections)

Advise patients no sexual contact for 7 days after the treatment is administered.

**Special considerations**

Tetracycline antibiotics, including doxycycline, should never be used in:

- Women who are pregnant or possibly pregnant, or breastfeeding.
- Children under nine years old.

Erythromycin estolate is contraindicated in pregnancy due to increased risk of hepatotoxicity.

For further information see Australian categorisation system for prescribing medicines in pregnancy.

**Treating chlamydia in cases of gonorrhoea**

Many patients with gonorrhoea will also have chlamydia, although the converse is less likely.

Presumptive treatment of chlamydia in patients being treated for gonorrhoea may be appropriate, especially in highly endemic areas.

See gonorrhoea.

**Treating chlamydia in cases of Pelvic inflammatory disease (PID)**

See PID.

**Treating chlamydia in cases of epididymitis/epididymo-orchitis**

See epididymitis/epididymo-orchitis.

**Treating chlamydia in cases of Lymphogranuloma venereum (LGV)**

See LGV.

**Related links**

Chlamydia patient facts sheet (HealthyWA website)

**Education, counselling and prevention**

Counselling is important in managing STIs/HIV and should be considered at every contact with the patient. As a minimum, consider counselling at the first presentation, and subsequently during treatment and follow-up.
• Counselling is an opportunity to educate and support the patient in prevention strategies. This should be done in a confidential setting.

• The key points are:
  o Communicating the confidentiality of the diagnosis.
  o Communicating the reasons for testing and contact tracing.
  o Formulating expectations from treatment.
  o Promoting awareness of risk behaviours.

• Counselling should also include discussion of the implications of STI testing (i.e. that testing does not prevent transmission). Emotional reactions can accompany a positive STI/HIV diagnosis with delayed reactions sometimes occurring several days after the consultation.

Patients should be advised no sexual contact for 7 days after completion of treatment and to avoid sexual contact with any partners from the last 6 months until 7 days after they have been tested and treated.

Management of partners
It is the responsibility of all health care providers, including doctors, to begin tracing sex partners so that they can be assessed and treated. Partners should be advised no sexual contact for 7 days after completion of treatment and to avoid sexual contact with any partners from the last 6 months until 7 days after they have been tested and treated.

This involves counselling to ensure that the patient understands the implications of infection transmission.

Managing sex partners may require referral to another practitioner.

• Contact tracing in cases of chlamydia infection is important. Untreated chlamydia can lead to PID, infertility, ectopic pregnancy, chronic pelvic infection, early miscarriage, post-partum PID, neonatal pneumonia, pre-term delivery and neonatal conjunctivitis.
• The duration of potential infectivity may be months to years.
• All sex partners of the index case from the preceding six months should be tested, where practical. In circumstances where testing is not possible, consider treatment for both chlamydia and gonorrhoea. If the history of the index case suggests they are likely to have been infectious for longer than six months, then reasonable efforts should be made to screen earlier contacts.
• Transmission of chlamydia by oral sex is low.

For treatment of adults and mature minors (aged 14 years or older) who are a sexual contact of chlamydia under a Structured Administration and Supply Arrangement, see [Structured Administration and Supply Arrangement - CEO of Health SASA](#). This is suitable for use by Registered Nurses and Aboriginal Health Practitioners employed by a health service operated or managed by a Health Service Provider of the WA Department of Health

Follow up
To ensure continuity of care, record follow-up instructions in the patient's medical record.

Consider the need to review symptomatic patients in approximately one week. This is an opportunity for further education and counselling.
As NAAT can remain positive for three to four weeks after treatment, repeat sampling to exclude re-infection should be undertaken if possible at least one month after treatment in the following circumstances:

- Where regimens other than azithromycin or doxycycline are used
- In children
- In pregnant women
- Where there is doubt about compliance with treatment and advice
- Where symptoms persist
- Where there appear to be complicated infections such as PID or epididymitis
- Where there is a high risk of re-infection.

Reasonable steps should be made to review patients three months after exposure as this provides an opportunity to test for reinfection and repeat blood tests for syphilis, HIV and HBV.

Public health issues
Contact tracing is important to prevent further transmission and reinfection. Always test for other STIs.

If a child is diagnosed with genital chlamydia, issues of sexual abuse and/or sexual assault should be considered and mandatory notification of infection forwarded to the local PHU. For further information, see Child sexual abuse and STIs (Department of Health website).

Notification
This is a notifiable infection. Medical practitioners must complete the appropriate notification forms for all patients diagnosed with a notifiable STI/HIV, as soon as possible after confirmed diagnosis.

Epidemiological reports and real time notification data
Epidemiology of STIs and BBVs in Western Australia (Department of Health website)
Real time chancroid notification data (Department of Health website).
Donovanosis (granuloma inguinale)

Organism
Donovanosis (Granuloma inguinale) is a mildly contagious, chronic, progressively destructive infection caused by Klebsiella granulomatis (formerly Calymmatobacterium granulomatis), a Gram-negative, intracellular bacillus. The most recent case was notified in 2014. Donovanosis occurs in tropical countries including Papua New Guinea and the majority of Western Australian cases were in Aboriginal people in remote northern and central regions.

The incubation period is unknown, probably 1-16 weeks. The period of communicability is also unknown, probably for the duration of open lesions on the skin or mucous membranes. Contact infectivity is low.

Clinical presentation
The lesions develop over one to four weeks or longer. They begin as a single nodule or multiple subcutaneous nodules, usually on the genitalia. These nodules enlarge and erode through the skin to produce beefy red granulations or ulcers that are typically painless, and have thick, rolled edges. Occasionally the organism may spread to extra-genital sites through auto-inoculation or systemic spread.

STI Atlas (external site)

Investigations

Special considerations
- Make sure it is clear to laboratories that the specimens are for examination for donovanosis.
- The anorectal region should be checked for donovanosis lesions in all patients.
- Donovanosis can be mistaken for malignancy, warts or condylomata lata of secondary syphilis.
- Pelvic examination in women may not initially be possible because of extensive vulval disease, and may have to be postponed.
- Untreated donovanosis can lead to serious complications such as local tissue lymphatic destruction with subsequent pseudo-elephantiasis of genitalia, malignant transformation to squamous cell carcinoma, contagious spread (e.g. from cervix to pelvic organs), and haematogenous spread to distant sites (e.g. long bones, psoas muscle).

Specimen collection and handling
It is essential that a serological test for syphilis be done whenever the diagnosis of donovanosis is suspected.

A NAAT based method has been developed for the detection of the organisms in lesions. This is a simple and acceptable test which appears to have high sensitivity and specificity. It is recommended that another test be done to confirm the diagnosis of donovanosis. Other tests are an impression smear (press slide), crush smear or punch biopsy.

The diagnosis of donovanosis relies on detecting the organism through NAAT or finding characteristic intracytoplasmic Donovan bodies in the infected tissue. Notification of donovanosis can be either 'confirmed' with laboratory and clinical findings or 'probable' with clinical and epidemiological evidence. See case definitions (external site).
NAAT

- Using a dry swab firmly swab at or beneath the leading edge of the ulcer.
- Following collection, handle swabs according to the instructions from your testing laboratory.
- It is recommended that the pathology request is for 'Genital Ulcer Disease (GUD) NAAT', which will test for donovanosis, syphilis and herpes.

Alternative confirmatory tests include:

An impression smear (‘scrape and slide’):

- Gently clean the lesion of blood, slough or debris with a gauze swab and saline.
- Gently squeeze the lesion to bring the exudate to the surface.
- Press a clean slide firmly down onto the lesion
  or
- if the lesions are internal, swab the ulcer vigorously and make a smear.
- Allow to air-dry.
- Clearly label the specimen 'For donovan bodies' so it can be stained with the appropriate stain.

A crush smear can be done if granulation tissue can be easily removed. The removed tissue can be placed in saline and sent to the laboratory under cool conditions. This is preferred if the operator is not experienced in making impression smears.

A punch biopsy may be taken if the smear is negative. An experienced operator should perform this procedure. It is preferable that a separate sample in saline is sent for NAAT but if that is unavailable, a portion of the formalin fixed specimen can be used. Biopsies should be taken whenever there is a reasonable suspicion that the lesion may be malignant either at primary presentation or on review. Failure to respond to adequate treatment and/or a negative NAAT should prompt early review and biopsying of the lesion.

Treatment

Treatment is usually commenced on clinical diagnosis after specimens are collected. Treatment should be directly observed (DOT). Weekly treatment should be provided initially for four weeks. Review the ulcer each week if possible. If no response to treatment at four weeks, consider a biopsy to investigate other causes, i.e. malignancy.

Standard

- Azithromycin 1 g orally (DOT), weekly for 4 weeks or until healing occurs (whichever is longer) (preferred treatment because of much greater compliance)
  or
- azithromycin 500 mg orally (DOT), daily for 7 days only
  If allergic to macrolides give either:
- doxycycline 200 mg orally, daily (or 100mg 12-hourly) for 4 weeks or until healing occurs (whichever is longer)
  or
- ceftriaxone 1 g intramuscularly or intravenously, daily for 14 days. Check for recurrences which may occur with this treatment.
Pregnancy

- Azithromycin 1 g orally, each week for 4 weeks or until healing occurs (whichever is longer) (preferred treatment) (category B1)

- Australian categorisation system for prescribing medicines in pregnancy
  
or
  
- ceftriaxone 1 g intramuscularly or intravenously, daily for 14 days (category B1).

The appropriate response to treatment should be resolution of lesions with progressive healing after seven days.

Neonate

A baby born to a mother with active donovanosis lesions should receive prophylactic treatment. Expert advice is mandatory in this situation.

Special considerations

Tetracycline antibiotics, including doxycycline, should never be used in:

- women who are pregnant or possibly pregnant, or breastfeeding
- children under nine years of age.

Education, counselling and prevention

Counselling is important in managing STIs/HIV and should be considered at every contact with the patient. As a minimum, consider counselling at the first presentation and subsequently during treatment and follow-up.

- Counselling is an opportunity to educate and support the patient in prevention strategies. This should be done in a confidential setting.

- The key points are:
  - communicating the confidentiality of the diagnosis
  - communicating the reasons for testing and contact tracing
  - formulating expectations from treatment
  - promoting awareness of risk behaviours.

- Counselling should also include discussion of the implications of STI testing (ie that testing does not prevent transmission). Emotional reactions can accompany a positive STI/HIV diagnosis with delayed reactions sometimes occurring several days after the consultation.
- Patients should be advised no sexual contact for 7 days after completion of treatment and to avoid sexual contact with partners form the last 6 months until 7 days after they have been tested and treated.

Management of partners

It is the responsibility of all health care providers, including doctors, to begin tracing sex partners so that they can be assessed and treated.

This involves counselling to ensure that the patient understands the implications of transmission of the infection.

Managing sex partners may require referral to another practitioner.
Donovanosis is not highly contagious, but reasonable efforts should be made to examine sex partners.

Partners should be advised no sexual contact for 7 days after completion of treatment and to avoid sexual contact with any partners from the last 6 months until 7 days after they have been tested and treated.

**Follow up**

Review the ulcer each week if possible. It is essential that the lesion be re-examined at four weeks after commencement of treatment.

- **If there is no response to treatment at four weeks, consider a biopsy to investigate other causes, i.e. malignancy.**
- **If the lesion has healed, no further treatment is required.**
- **If the lesion has improved but not yet healed a further two weeks of treatment should be given (weeks five and six). However, if the lesion has not healed by week six, a biopsy should be considered.**

Follow-up at three and six months after the lesion has healed is recommended to ensure that relapse does not occur.

If the patient has had a poor response, consider another diagnosis (e.g. carcinoma or immunosuppression).

To ensure continuity of care, record follow-up instructions in the patient’s medical record.

As part of follow-up of patients with donovanosis, it is essential to:

- assess healing of ulcers and compliance with therapy
- consider hospital admission if response to therapy as an outpatient is inadequate.

**Special considerations**

This also provides an opportunity to repeat blood tests for syphilis, HIV and HBV.

**Public health issues**

Contact tracing is important to prevent further transmission and reinfection. Screen and treat for coexisting STIs (particularly ulcerative diseases such as herpes and syphilis) and especially HIV. A person with an ulcerative condition has a tenfold risk of acquiring HIV.

For further information, see genital ulceration. If a child is diagnosed with donovanosis, issues of sexual abuse and/or sexual assault (Department of Health website) should be considered.

**Notification**

This is a notifiable infection. Medical practitioners must complete the appropriate notification forms for all patients diagnosed with a notifiable STI/HIV, as soon as possible after confirmed diagnosis.
Gonorrhoea

Clinicians in metropolitan Perth need to be aware that gonorrhoea cases have more than doubled since 2010 and the rate of increase has jumped steeply since the beginning of 2016.

The Clap poster (Department of Health website) has been developed for display in patient areas to help raise awareness of this public health issue amongst consumers.

Organism

Gonorrhoea is caused by *Neisseria gonorrhoeae* (*N. gonorrhoeae*), a Gram-negative intracellular diplococcus.

Clinical presentation

Gonorrhoea is asymptomatic in 80% of women and 10% to 15% of men so testing is important irrespective of symptoms.

Gonorrhoea is an STI characterised by one or more of the following:

- Urethral discharge (urethritis) and/or burning sensation (dysuria),
- Cervical discharge (cervicitis) and/or intermenstrual or post-coital bleeding,
- Anorectal infection (proctitis) with discharge, painful defecation, disturbed bowel function or irritation,
- Pharyngeal infection,
- Pelvic inflammatory disease (PID) and associated dyspareunia (pain during vaginal intercourse),
- Prostatitis (very rarely),
- Epididymitis,
- Conjunctivitis, and
- Skin lesions.

Rarely:

- Disseminated disease is uncommon but serious; it can present as septic arthritis, meningitis, endocarditis, sepsis, and macular rash that may include necrotic pustules.

**STI Atlas (external site)**

Investigations

A definitive diagnosis of gonorrhoea is established by detecting *N. gonorrhoeae* in a clinical specimen by culture or by NAAT. **Culture swabs are recommended whenever possible so that antimicrobial susceptibilities can be obtained. Serious resistance to gonorrhoea is emerging with few treatment options in the future being available, and antimicrobial surveillance is a vital public health measure.**

A presumptive diagnosis of gonorrhoea is achieved by:

- Demonstrating at least two Gram-negative intracellular diplococci in a smear made from a male urethral swab. Absence of neutrophils or gonococci on Gram stain does not exclude gonorrhoea.
- Demonstrating Gram-negative intracellular diplococci in a smear from a patient with clinical features compatible with gonococcal infection.
**Men**

**If there is a discharge**, take a urethral swab of the discharge for smear and transport in charcoal (black) or non-charcoal (clear) agar gel transport medium for culture and sensitivity. Collect first void urine (FVU) for NAAT. If the patient is unable to pass urine, collect a dry urethral swab of the discharge for NAAT (no transport medium).

- Detecting Gram-negative intracellular diplococci in a urethral smear is a reliable indicator of gonorrhoea, but the absence of diplococci does not exclude the diagnosis. For these reasons, always collect samples for culture and NAAT.
- If there is no discharge (an unusual situation in male urethral gonorrhoea), collect FVU for NAAT.
- If the patient has had receptive anal sex, oro-anal sex, rimming or fingering, and no anal symptoms: Patients can be instructed how to take two blind anal swabs himself or herself. Refer to the [STI self-testing card (Department of Health website)](https://www.gov.uk/government/publications/self-testing-cards) for instructions. However, if the patient presents with anal symptoms, collect a dry swab of the discharge for NAAT (no transport medium) and a second swab under direct vision of the rectal mucosa via a proctoscope and transport in charcoal (black) or non-charcoal (clear) agar gel transport medium for culture and sensitivity.
- If the patient has had receptive oral sex, and no oral symptoms, take a throat swab for NAAT (no transport medium).

**Women**

- **If cervical pus is present or the cervix is inflamed**, swab under direct vision of the cervix via a vaginal speculum and transport in charcoal (black) or non-charcoal (clear) agar gel transport medium for culture and sensitivity, then collect 2 dry swabs of the discharge for NAAT (no transport medium) – one for chlamydia/gonorrhoea and another one for *M. Genitalium*. **Endocervical swabs are essential for culture and high vaginal swabs are not adequate for culture.** If the patient has had a hysterectomy, urine for NAAT must be collected.
- **If there is no discharge**, self-obtained vaginal swabs are the preferred specimen. Add a first void urine (FVU) specimen where possible. If the patient is examined take an endocervical swab for NAAT (no transport medium) in addition to FVU testing. A urine specimen only, is acceptable if a woman declines to give either a vaginal or endocervical swab but will miss some cervical infections.
- Diagnosis and treatment of infected patients prevents ongoing/further transmission to sex partners and, for infected pregnant women, may prevent transmission of gonorrhoea to infants during birth.
- If the patient has had receptive anal sex, oro-anal sex, rimming or fingering, and no anal symptoms: Patients can be instructed how to take two blind anal swabs themselves. Refer to the [STI self-testing card (Department of Health website)](https://www.gov.uk/government/publications/self-testing-cards) for instructions.
- If the patient has had receptive oral sex, and no oral symptoms, take a throat swab for NAAT (no transport medium).

**Specimen collection and handling**

- It is important to collect suitable specimens before treatment because the diagnosis of gonorrhoea relies heavily on detecting the organism by culture or NAAT. Serology is not useful for gonorrhoea testing.
- When delays of greater than 24 hours occur in getting the specimen to a laboratory (e.g. in rural and remote areas) NAAT is the preferred test. However, where there is pus, a culture should still be sent.
Special considerations

- Allow slides to air-dry before sealing and labelling.
- Clearly label all specimens with the patient's name, date of birth or medical record number, and the site, date and time of collection.
- Specimens for culture should reach the laboratory as quickly as possible and preferably within 24 hours of collection.
- If swabs for culture are unlikely to be processed in the laboratory within 24 hours of collection, they should still be sent, although the yield will be diminished.

See further information on methods of testing, including use of GeneXpert point-of-care test in health services where this is available.

Treatment

The treatment of gonorrhoea in WA must be guided by the current antimicrobial susceptibility profile.

Treating uncomplicated gonorrhoea

Adults

Dual antibiotic treatment is recommended to create a pharmacological barrier to the development of more widespread resistance to this treatment.

- Ceftriaxone 500 mg in 2 mL 1% lignocaine, given by intramuscular injection
  AND
- Azithromycin 1 g (orally), given together as a single treatment

Pregnancy

Treatment in pregnancy is the same as non-pregnant individuals

- See Australian categorisation system for prescribing medicines in pregnancy.

Children

- Ceftriaxone 50 mg/kg (maximum 500 mg), given by intramuscular injection (using the adult dilution)
  AND
- Azithromycin 20 mg/kg (to a maximum of 1 g) (oral tablet or syrup), given together as a single treatment

Uncomplicated gonorrhoea excludes:

- PID
- Epididymitis
- Ophthalmic lesions
- Prostatitis
- Arthritis
- Disseminated infections.

For treatment of adults and mature minors (aged 14 years or older) with uncomplicated gonorrhoea under a Structured Administration and Supply Arrangement, see Structured Administration and Supply Arrangement - CEO of Health SASA. This is suitable for use by
Registered Nurses and Aboriginal Health Practitioners employed by a health service operated or managed by a Health Service Provider of the WA Department of Health, or contracted entity.

**Chlamydia co-infection**
The chlamydia co-infection rate among patients with heterosexually acquired gonorrhoea is about 40%.

Because of the high risk of co-infection, treat all symptomatic patients who are suspected to have gonorrhoea, for chlamydia as well.

For suspected urethral and cervical infections, azithromycin 1mg stat (with ceftriaxone 500mg IMI as for gonorrhoea infection) will be adequate.

**For rectal co-infection with chlamydia, treatment should be given for gonorrhoea AND chlamydia i.e.**:

- Ceftriaxone 500mg in 2mL 1% lignocaine, given by intramuscular injection

  **PLUS**

- Doxycycline 100mg orally, twice daily for 7 days if asymptomatic, but 21 days if symptomatic (internationally recognised treatment)

  **OR**

- Azithromycin 1g orally, as a single dose, and repeat in 1 week

**Treating gonorrhoea in other clinical situations**

**Allergy to penicillin**

**Delayed type hypersensitivity (rash)**

- Ceftriaxone 500 mg in 2 mL 1% lignocaine intramuscularly, (Note: should not be used when the allergy to penicillin is recorded as severe and/or hypersensitivity is immediate)

  **AND**

- Azithromycin 1 g (orally), as a single dose, given together as a single treatment

**Severe or immediate type hypersensitivity (anaphylaxis, Stevens Johnson syndrome, toxic epidermal necrolysis)**

- Azithromycin 2g orally, as a single dose - may cause gastro-intestinal intolerance
- Seek advice from a sexual health specialist

**Regarding ciprofloxacin**

- Ciprofloxacin should no longer be used for empirical treatment due to increasing resistance profiles. It should only be used when culture has demonstrated ciprofloxacin susceptibility.
- Ciprofloxacin should not be used in children under 12 years or pregnant women.
**Pharyngeal gonorrhoea**

**Adults**
- Ceftriaxone 500 mg in 2 mL 1% lignocaine given by intramuscular injection
  
  AND

- Azithromycin 2 g orally, as a single dose, given together as a single treatment

**Children**
- Ceftriaxone 50 mg/kg (maximum 500 mg) given by intramuscular injection (using the adult dilution)

  AND

- Azithromycin 20 mg/kg to a maximum of 1 g (oral tablet or syrup), as a single dose, given together as a single treatment

**Special considerations**
- Amoxycillin monotherapy should not be used in either adults or children for gonococcal pharyngeal infections because of the difficulty in achieving an adequate concentration of antibiotic in tissues and cells.

**Anorectal gonorrhoea**

- Ceftriaxone 500 mg in 2 mL 1% lignocaine given by intramuscular injection

  AND

- Azithromycin 1 g (orally), as a single dose, given together as a single treatment

**Prophylactic treatment of neonates**

- Ceftriaxone 50 mg/kg (maximum 250 mg) given by intramuscular injection, as a single dose.

**Gonococcal conjunctivitis**

This disease is most often sporadic due to either auto-inoculation in a person with genital gonorrhoea or from contaminated fingers or fomites (clothes, towels) from another person with genital gonorrhoea. Rarely epidemics may occur in remote communities due to non-sexual transmission from direct contact, fomites or vectors such as flies.

Gonococcal conjunctivitis should be treated as follows:

**Adults**
- Ceftriaxone 500 mg in 2 mL 1% lignocaine given by intramuscular injection

  AND

- Azithromycin 1 g orally, as a single dose, given together as a single treatment

  PLUS

- Frequent irrigation of the eyes with saline to remove purulent discharge.
Children
- Ceftriaxone 50 mg/kg (maximum 500 mg) given by intramuscular injection (using the adult dilution)

AND
- Azithromycin 20 mg/kg to a maximum of 1g (oral tablet or syrup) given together as a single treatment

PLUS
- Frequent irrigation of the eyes with saline to remove purulent discharge.

Management of sporadic disease
A case of gonococcal conjunctivitis in a remote Aboriginal community may herald an outbreak. Gonococcal conjunctivitis in a child may indicate sexual abuse. Therefore all suspected and confirmed cases of gonococcal conjunctivitis should be notified as soon as possible to the local PHU for further investigation.

For a sporadic case of gonococcal conjunctivitis anywhere in WA all contacts should be reviewed and any suspect cases sampled and treated empirically as for the index case. In certain situations, such as in remote Aboriginal communities, empiric treatment of asymptomatic contacts may be undertaken immediately under the guidance of the PHU to help prevent further dissemination.

Management of an epidemic situation
Epidemics of gonococcal conjunctivitis are a public health emergency and the local PHU should be immediately notified. All confirmed and suspected cases and their asymptomatic household and family contacts should be treated immediately.

In remote Aboriginal communities in the Goldfields, Kimberley, Midwest and Pilbara regions of WA, the following may be given:
- Procaine penicillin, as a single dose
    OR
- Amoxycillin (child: 75 mg/kg up to 3 g) orally
    PLUS
- Probenecid (child >2 years: 25 mg/kg up to 1 g) orally, as a single dose.

It is important that the index case and all contacts are treated within the same 24-hour period to prevent reinfection.

Neonatal
- Ceftriaxone 50 mg/kg (maximum 125 mg) intravenously or intramuscularly, daily for seven days
    PLUS
- Frequent irrigation of the eyes with saline to remove purulent discharge.
Special considerations

- Mothers of neonates with gonococcal eye disease should be tested for other STIs and treated for genital gonococcal infection.
- Also test the neonate for chlamydia.
- Specialist advice should be obtained when treating people with serious penicillin allergy. These patients are at risk of anaphylaxis, collapse, breathing difficulties or urticaria if exposed to penicillin or cephalosporin.
- Contact the local PHU as soon as possible.

Treating gonorrhoea complicated by associated infections

- PID
- Epididymitis
- Ophthalmic lesions
- Prostatitis
- Septic arthritis
- Disseminated infections.

These conditions require multiple dose therapy and individualised care. Specialist advice should be sought.

**PID** presents with a range of mild to severe infection. The condition may closely mimic such abdominal emergencies as acute appendicitis or ectopic pregnancy. Such circumstances warrant hospitalisation, as do PID in pregnancy, inability to tolerate oral therapy, or suspected pelvic abscess.

Epididymitis, prostatitis, arthritis and disseminated infections may all require hospitalisation and usually prolonged antibiotic therapy. Single dose therapy is not adequate.

Related links

Gonorrhoea patient fact sheet (HealthyWA website)

Education, counselling and prevention

Counselling is important in managing STIs/HIV and should be considered at every contact with the patient.

As a minimum, consider counselling at the first presentation and subsequently during treatment and follow-up.

- Counselling is an opportunity to educate and support the patient in prevention strategies. This should be done in a confidential setting.

- The key points are:
  - communicating the confidentiality of the diagnosis
  - communicating the reasons for testing and contact tracing
  - formulating expectations from treatment
  - promoting awareness of risk behaviours.

- Counselling should also include discussion of the implications of STI testing (i.e. that testing does not prevent transmission). Emotional reactions can accompany a positive
STI/HIV diagnosis with delayed reactions sometimes occurring several days after the consultation.

Patients should be advised no sexual contact for 7 days after completion of treatment and to avoid sexual contact with any partners from the last 6 months until 7 days after they have been tested and treated.

See also general principles.

Management of partners
All sexual partners of patients with gonorrhoea need to be traced, investigated and treated.

It is the responsibility of all health care providers, including doctors, to begin tracing sexual partners so that they can be assessed and treated. Partners should be advised no sexual contact for 7 days after completion of treatment and to avoid sexual contact with any other partners from the last 6 months until 7 days after they have been tested and treated.

This involves counselling to ensure that the patient understands the implications of infection transmission. Managing sexual partners may require referral to another practitioner or follow up by a public health unit.

Sexual partners of the index patient within the preceding three months should be assessed, and considered for treatment of gonorrhoea and chlamydia.

Contact tracing for gonorrhoea is a high priority. Untreated infections can lead to PID, epididymitis, disseminated infection, or neonatal conjunctivitis.

Special considerations
- Period to trace is three months, consider up to six months, but this will depend on the sexual history and practical capacity to contact partners.
- Gonorrhoea is easily transmitted by oral sex.

For treatment of adults and mature minors (aged 14 years or older) who are a sexual contact of gonorrhoea under a Structured Administration and Supply Arrangement, see Structured Administration and Supply Arrangement - CEO of Health SASA. This is suitable for use by Registered Nurses and Aboriginal Health Practitioners employed by a health service operated or managed by a Health Service Provider of the WA Department of Health.

Follow up
To ensure continuity of care, record follow-up instructions in the patient's medical record.

Review all patients with gonorrhoea one to two weeks after treatment for follow-up and consideration of retesting, and to ensure that contact tracing has been completed. Consider retesting at 3 months for any reinfections.

*N. gonorrhoea* may be detected up to 48 hours by culture and up to 7 days by NAAT following successful treatment.

Patients whose symptoms have not resolved within one to two weeks after treatment should have be assessed for other pathologies; if in doubt, seek advice from a specialist sexual health physician.
Patients whose symptoms have resolved should be prioritised for re-testing if their infection was acquired overseas or if they received a non-standard treatment.

Reasonable steps should be made to review patients three months after exposure as this provides an opportunity to repeat blood tests for syphilis, HIV and HBV.

**Public health issues**

*Penicillinase*-producing *N. gonorrhoea* requires contact tracing be undertaken as a high priority to ensure that these organisms are eliminated as soon as possible from a community. *Ceftriaxone-resistant N. gonorrhoea is a public health emergency and mandates immediate notification to the local PHU.*

Contact tracing is important to prevent further transmission and reinfection. Always test for other STIs. If a child is diagnosed with gonorrhoea, issues of sexual abuse and/or sexual assault should be considered and mandatory notification of the infection forwarded to the local PHU.

**Notification**

This is a notifiable infection. Medical practitioners must complete the appropriate notification forms for all patients diagnosed with a notifiable STI/HIV, as soon as possible after confirmed diagnosis.

**Epidemiological reports and real time notification data**

*Epidemiology of STIs and BBVs in Western Australia (Department of Health website)*

*Real time gonorrhoea notification data (Department of Health website).*
Hepatitis A

Sexual transmission of hepatitis A virus (HAV) is linked to oro-anal contact, and is seen most often in men who have sex with men (MSM). The use of dental dams will help prevent transmission. HAV is also associated with injecting drug use. A vaccine is available to prevent transmission. The current recommendation is for a single dose of 1440 units (IU) intramuscularly in the deltoid muscle, with a booster 6 to 12 months later. Given the cost of hepatitis A vaccine, it is worth establishing that a person is non-immune prior to vaccinating.

The National Health and Medical Research Council’s (NHMRC) Immunisation Handbook (external site) recommends that the following groups are among those who should receive hepatitis A vaccine:

- people whose lifestyle puts them at an increased risk of acquiring hepatitis A, e.g. MSM, people who inject drugs.
- people whose occupation puts them at an increased risk of acquiring hepatitis A, e.g. carers of persons with developmental disabilities, sex industry workers.
- people with chronic liver disease and/or those chronically infected with either hepatitis B or hepatitis C viruses or HIV.

Immunisation

See Guidelines for the Provision of Hepatitis A and B Vaccine to Adults in Western Australia at Risk of Acquiring these Infections by Sexual Transmission and Injecting Drug Use (PDF 248KB).

Public health issues

- Notify WA Health of any cases of HAV.
- Contact tracing is important to prevent further transmission of HAV.
- Offer vaccination for longer-term protection of at risk contacts.
- See Communicable Disease Network Australia’s Hepatitis A guidelines (external site) for more information

Related links

- Hepatitis A (HealthyWA website)
- Epidemiology of STIs and BBVs in Western Australia (Department of Health website)
- Real time hepatitis A notification data (Department of Health website).
Hepatitis B

Organism
Hepatitis B is an infectious disease caused by the hepatitis B virus (HBV) that primarily affects the liver. HBV is mainly spread through direct contact with infected blood and blood products but can be sexually transmitted.

Clinical presentation
Acute hepatitis B virus (HBV) infection may be asymptomatic or may present with the following symptoms:

- lethargy,
- nausea,
- fever,
- anorexia for a few days then jaundice,
- pale stools and dark urine.

The incubation period is 45-180 days (mean: 60 days).

In some cases of HBV infection, the virus will not be eliminated and the person will become chronically infected (i.e. HBsAg or HBV DNA (PCR) has been detected on two occasions at least 6 months apart). Chronic HBV infection is commonly asymptomatic. However, there is no such thing as a healthy carrier. Even if they appear to be healthy, people with chronic HBV should be monitored regularly (every 6-12 months) by their GP for signs and symptoms of liver disease.

Chronic HBV (CHB) infection is usually asymptomatic until the patient has progressed to cirrhosis (liver damage and scarring). Symptoms of cirrhosis include:

- jaundice
- ankle swelling,
- ascites,
- GI bleeding,
- Encephalopathy

There are four phases of CHB:

- Immune tolerance
- Immune clearance
- Immune control
- Immune escape

The patient’s immune response in each phase determines the outcome of infection and the severity of cirrhosis which is caused by the immune response rather than the hepatitis B virus (HBV) itself. Progression to cirrhosis is most likely during the immune clearance and immune escape phases; treatment should be considered for patients in these phases, see Treatment.

People with cirrhosis due to chronic HBV are at increased risk of developing hepatocellular carcinoma.

People with chronic HBV may transmit infection vertically (from mother to baby), or through sexual or percutaneous exposure.
Investigations

Laboratory investigations of HBV infection include:

- tests to diagnose HBV infection
- tests for pre-treatment assessment of people with chronic hepatitis B infection. See Follow up.
- follow up tests to monitor liver function +/- response to treatment. See Follow up.

Tests for diagnosing HBV infection

Patients of unknown HBV status should always have three initial tests performed (HBsAg, Anti-HBs and Anti-HBc) to determine infection status and the need for vaccination. Specify the above tests on the request form rather than ‘hepatitis B serology’

Those at high-risk of HBV who should be offered testing include:

- people who inject drugs
- men who have sex with men
- people who frequently change their sexual partners, including sex workers
- people diagnosed with any STI, test for hepatitis B when testing for STIs and at the 3 month follow-up appointment
- partners and household contacts of people with acute or chronic hepatitis B
- people born in intermediate and high prevalence countries
- Aboriginal and Torres Strait Islander peoples.

HBsAg testing is recommended for all pregnant women in the first trimester of each pregnancy to allow appropriate measures to be implemented to prevent newborn infants developing chronic HBV infection

Window Period

The test detects antibodies to and antigen of the virus. There is a period after infection, when the test will not detect antibody or antigen because they are yet to be produced or are present at a level that cannot be detected. This is called the window period which may last up to 3 months.

Interpreting serology

<table>
<thead>
<tr>
<th>HBsAg</th>
<th>anti-HBc</th>
<th>anti-HBs</th>
<th>Chronic HBV infection</th>
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</thead>
<tbody>
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<td>negative</td>
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<table>
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<th>HBsAg</th>
<th>anti-HBc</th>
<th>anti-HBs</th>
<th>Acute HBV infection <em>(high titre)</em></th>
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<table>
<thead>
<tr>
<th>HBsAg</th>
<th>anti-HBc</th>
<th>anti-HBs</th>
<th>Susceptible to infection (vaccination should be recommended)</th>
</tr>
</thead>
<tbody>
<tr>
<td>negative</td>
<td>negative</td>
<td>negative</td>
<td></td>
</tr>
<tr>
<td>HBsAg</td>
<td>anti-HBc</td>
<td>anti-HBs</td>
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Immune due to Hepatitis B vaccination

<table>
<thead>
<tr>
<th>HBsAg</th>
<th>anti-HBc</th>
<th>anti-HBs</th>
</tr>
</thead>
<tbody>
<tr>
<td>negative</td>
<td>positive</td>
<td>negative</td>
</tr>
</tbody>
</table>

Various possibilities including: distant resolved infection, recovering from acute HBV, false positive, ‘occult’ HBV

Source: [Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine - Decision making in hepatitis B (external site)](https://example.com)

See follow up section below for details of further investigations required prior to referral of patients with chronic HBV infection.

**Treatment**

Treatment of chronic hepatitis B (external site) can significantly reduce progressive liver damage and loss of liver function. It will generally consist of oral antiviral therapy which needs to be taken on a long-term basis. Less commonly, pegylated interferon may be used.

**GPs can be authorised to prescribe hepatitis B medicines (Department of Health website).**

Patients with chronic HBV should be offered hepatitis A vaccination unless they are known to be already immune because the case fatality rate is high if they develop hepatitis A infection.

See Follow up section below for details of further investigations required prior to referral of patients with chronic HBV infection.

**Education, counselling and prevention**

**Informing your patient**

- Provide contact details of support services and relevant material.
- Use a professional interpreter if required. Call Translating and Interpreting Service (TIS) 13 14 50.
- Fact sheets for patients (HealthyWA website)

**Reduce transmission**

- Avoid behaviours that risk re-infection/super-infection and transmission to others.
- Advise care with blood and personal grooming items.
- Counsel patients with chronic HBV about safe sex practices.
- Refer to alcohol and drug services for opioid substitution treatment as necessary, e.g. Mental Health Commission (external site)
- If your patient is continuing to engage in injecting drug use refer to the [Peer Based Harm Reduction WA (formerly WA Substance Users' Association) (external site)](https://example.com)
- Offer hepatitis B vaccination to non-immune household and sexual contacts of patients with chronic HBV - contact your Public Health Unit for further information.
- People with chronic HBV who are health care workers may perform exposure prone procedures (EPPs) if they comply with [Australian National Guidelines for the Management of Healthcare Workers Living with Blood Borne Viruses and Healthcare](https://example.com)
Workers who Perform Exposure Prone Procedures at Risk of Exposure to Blood Borne Viruses (external site)

**Alcohol - a modifiable risk factor for disease progression**

<table>
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<tr>
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<th>Advise</th>
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<tr>
<td>Early disease with no risk factors for progression, consistently normal ALT and normal clinical examination</td>
<td>Alcohol advice as per general population, NHMRC Australian guidelines to reduce health risks from drinking alcohol (external site)</td>
</tr>
<tr>
<td>Significant fibrosis</td>
<td>At most one standard drink/day and no binging</td>
</tr>
<tr>
<td>Cirrhosis</td>
<td>Aim for total abstinence</td>
</tr>
</tbody>
</table>

Refer to alcohol and drug services as necessary

**Immunisation**

People with hepatitis B should be offered HAV vaccination, if not immune. See Guidelines for the Provision of Hepatitis A and B Vaccine to Adults in Western Australia at Risk of Acquiring these Infections by Sexual Transmission.

**Psychological support and counselling**

For parents and their family/partners, telephone support, education and support groups are available through Hepatitis WA (external site).

**Vaccination**

The National Health and Medical Research Council’s (NHMRC) Immunisation Handbook (external site) recommends that the following groups are among those who should receive hepatitis B vaccine:

- household or other close (household like) contacts of people with hepatitis B
- sexual contacts of people with hepatitis B
- men who have sex with men
- people who inject drugs
- sex industry workers
- individuals with chronic liver disease and/or hepatitis C
- haemodialysis patients
- HIV positive people and other immunocompromised people
- inmates of correctional facilities
- people at occupational risk e.g. healthcare workers, ambulance personnel, dentists, police, staff of correctional facilities, embalmers, tattooists and body-piercers
- migrants from hepatitis B endemic countries
- Aboriginal and Torres Strait Islander people.
Serological testing for evidence of past (or current) hepatitis B infection prior to vaccination may be warranted for certain older children, adolescents and adults, especially those at increased risk of acquiring hepatitis B infection, e.g. people who inject drugs, sex industry workers, immunocompromised people, and those living in communities with higher prevalence of HBV, including migrant communities and Aboriginal and Torres Strait Islander people. Serological testing allows people with HBV infection to be identified which facilitates clinical and public health management to prevent liver damage and onward transmission, respectively.

Standard regimes for vaccination include:

- 0, 1 and 6 months
- 0, 1, 2 and 12 months
- 0, 7, 21 days and 12 months for rapid vaccination of those at highest risk.

Vaccination should be administered into the deltoid muscle.

If doses are missed the course does not need to be restarted, but all doses should be completed.

**Serological testing following hepatitis B vaccination**

Post-vaccination testing for Anti-HBs antibody and HBsAg levels is recommended:

- 3 to 12 months after completing the primary vaccine course in infants born to mothers with chronic hepatitis B infection.
- 4 to 8 weeks after completion of the primary course for
  - those at significant occupational risk (e.g. healthcare workers whose work involves frequent exposure to human tissue, blood or body fluids)
  - those at risk of severe or complicated HBV disease (e.g. persons who are immunocompromised, and persons with pre-existing liver disease not related to hepatitis B)
  - sexual partners and household, or other close household-like, contacts of persons who are infected with hepatitis B
  - those in whom a poor response to hepatitis B vaccination may occur (e.g. haemodialysis patients, persons with bleeding disorders vaccinated via the SC route).

Post-vaccination serology is NOT recommended for other groups.

A single booster dose (4th dose) of vaccine can be given to confirm non-responder status. Those who are still non-responders after being given the booster/4th dose should have 2 further doses of hepatitis B vaccine at monthly intervals, and be re-tested for anti-HBs levels at least 4 weeks after the last dose.

**Work**

People with chronic HBV who are health care workers may perform exposure prone procedures (EPPs) if they comply with the [Australian National Guidelines for the Management of Healthcare Workers Living with Blood Borne Viruses and Healthcare Workers who Perform Exposure Prone Procedures at Risk of Exposure to Blood Borne Viruses](https://external site).
Management of partners
On receipt of a notification of a hepatitis B case, the local public health nurse follows up with the reporting doctor and with the case to discuss household and sexual contacts. All household and sexual contacts of a person with chronic hepatitis B should be tested for hepatitis B infection. Non-immune household and sexual contacts should be offered free hepatitis B immunisation (and hepatitis B immunoglobulin if significant exposure has occurred).

For more information see:
- [WA Health Guideline for Accessing State Funded Vaccine for non-immune household and sexual contacts](#)
- [The Australian Immunisation Handbook 10th Edition (external site)](#)

Follow up

Chronic hepatitis B
HBsAg or HBV DNA (PCR) has been detected on two occasions at least 6 months apart.

Assessment
Review your patient for evidence of decompensated liver disease - one or more of the clinical complications of chronic liver disease:

- peripheral oedema
- low albumin
- high INR
- variceal bleeding
- ascites
- encephalopathy.

High risk of progression:

- male
- >45yrs of age
- heavy alcohol intake
- family history of hepatocellular carcinoma (HCC)
- co-infection with HIV/HCV/HDV
- presence of cirrhosis
- long duration of infection.

Management
Initial Investigations (tests in bold are required prior to referral)

- FBC
- U&E
- INR
- Iron studies
- LFTs (AST, ALT, ALP, GGT, Albumin, Bilirubin)
- HBeAg/HBeAb
- HBV DNA (quantitative viral load)
- Alpha-fetoprotein(AFP)
- Liver/abdominal ultrasound
Ongoing

Review every 6-12 months and monitor for signs and symptoms of liver disease e.g. signs: palmar erythema, spider naevi, jaundice, ascites, encephalopathy, hepatosplenomegaly.

Investigations (should be guided by HBeAg and LFT):

<table>
<thead>
<tr>
<th>HBeAg</th>
<th>LFT</th>
<th>LFT (ALT)</th>
<th>HBV DNA</th>
<th>HBeAg and HBeAb</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ve</td>
<td>ALT&lt;2xULN</td>
<td>6-12 monthly</td>
<td>12 monthly</td>
<td>6-12 monthly</td>
</tr>
<tr>
<td>+ve</td>
<td>ALT&gt;2xULN</td>
<td>3-6 monthly</td>
<td>3-6 monthly</td>
<td>3-6 monthly</td>
</tr>
<tr>
<td>-ve</td>
<td>normal</td>
<td>6-12 monthly</td>
<td>12 monthly</td>
<td>-</td>
</tr>
<tr>
<td>-ve</td>
<td>abnormal</td>
<td>3-6 monthly</td>
<td>3-6 monthly</td>
<td>-</td>
</tr>
</tbody>
</table>

ULN = upper limit of normal level

Screening for hepatocellular carcinoma
Ultrasound and AFP every 6 months for those at high risk:

- presence of cirrhosis
- family history of HCC
- Aboriginal and Torres Strait Islander people >50yrs
- Asian men >40yrs
- Asian women >50yrs
- African people >20yrs
- >40yrs with raised ALT +/- high HBV DNA (>2,000 IU/ml).

Symptom Management

- Control of fatigue: advise planning rest periods during the day and the addition of light to moderate exercise into their routines to reduce fatigue.
- Psychological support and counselling available through Hepatitis WA (external site).
Referral

Urgent (seen <1 week): If evidence of decompensated liver disease discuss directly with Gastroenterology/General Physician at your local hospital and fax a completed referral directly to the relevant hospital.

Routine
Metropolitan Perth: Via Central Referral Service to Gastroenterology/Infectious Diseases (external site)

Regional Western Australia: Direct to your regional Physician/Hospital/Hepatology Nurse/Public Health Unit.

Refer those with:

- cirrhosis
- pregnancy
- raised AFP
- HBsAg +ve and HBeAg +ve with ALT >2x ULN
- HBsAg +ve and HBeAg –ve with HBV DNA >2000 IU/ml and raised LFT
- HBsAg +ve and >40yrs of age with ALT 1-2x ULN
- High risk of progression and/or are complex.

Information to include with referral:

- likely date and mode of transmission
- alcohol consumption
- other drugs (include injecting drug use)
- current medications
- symptoms and signs of hepatitis (e.g. jaundice)
- investigation results (those in bold in management section).

Note: Patients with HIV co-infection and who are asymptomatic with no signs of chronic liver disease can be managed by Infectious Diseases/Immunology

Public health issues

- Notify WA Health of any cases of HBV
- Contact tracing, testing and vaccination of non-immune sexual, family and household contacts are important to prevent further transmission of HBV.

Post-exposure prophylaxis

Percutaneous, ocular or mucous membrane contacts should be given hepatitis B immunoglobulin (HBIG) 400 IU intramuscularly (100IU, if body weight <30kg), as a single dose within 72 hours of exposure.

Individuals sexually exposed should be given HBIG within two weeks of sexual contact. Adults should be given HBIG 400 IU intramuscularly, as a single dose, and vaccination commenced within 7 days of exposure. Hepatitis B vaccination and immunoglobulin can be given at the same time, but at different sites.
Notification
This is a notifiable infection. Medical practitioners must complete the appropriate notification forms for all patients diagnosed with a notifiable STI/HIV, as soon as possible after confirmed diagnosis.

Related links
- Hepatitis B (HealthyWA website)
- Gastroenterological Society of Australia (GESA) Chronic Hepatitis B Patient Resources (external site)
- Hepatitis B e-learning (external site)
- Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine (ASHM) (external site)
- The Australian Immunisation Handbook 10th Edition (external site)

Epidemiological reports and real time notification data
- Epidemiology of STIs and BBVs in Western Australia (Department of Health website)
- Real time hepatitis B notification data (Department of Health website).

Hepatitis C

Organism
Hepatitis C is an infectious disease caused by the hepatitis C virus (HCV) that primarily affects the liver.

Clinical presentation
During the initial infection people often have mild or no symptoms. Occasionally a fever, dark urine, abdominal pain and jaundice occur.

Acute infection progresses to chronic disease in up to 75% of cases.

Chronic infection is usually asymptomatic. However, without treatment, around 20–30% of people with chronic HCV infection will develop cirrhosis, generally after 20–30 years of infection. In some cases, those with cirrhosis will develop complications such as portal hypertension, liver failure and liver cancer.

Investigations
Laboratory investigations of HCV infection include:

- tests to diagnose HCV infection
- tests for pre-treatment assessment of people with chronic hepatitis C infection
- follow up tests to monitor liver function +/- response to treatment (see ‘Follow up’)

Tests for diagnosing HCV infection
HCV diagnosis in Australia is based on detecting antibodies to HCV in a blood sample. A positive antibody test indicates past or current infection; these patients should have HCV RNA (NAAT)/HCV PCR testing to distinguish current/active infection (positive HCV RNA (NAAT)/HCV PCR) from past infection (negative HCV RNA (NAAT)/HCV PCR).
Window period
The screening test detects antibody to HCV. There is a period after infection, when the screening test will not detect antibody they are yet to be produced or are present at a level that cannot be detected. This is called the window period. The time after infection at which antibody is identified can be up to three months, although it is usually six weeks.

A negative screening test for HCV excludes HCV infection provided that the last potential exposure was at least 12 weeks before the test. If not, the test must be repeated at an appropriate time.

Pre-treatment assessment of people with chronic hepatitis C virus (HCV) infection

History
- Estimated duration of HCV infection
- Previous HCV treatment experience – date, regimen and response
- Cofactors for liver disease progression: alcohol intake, marijuana use, virological cofactors (HIV, HBV), diabetes, obesity
- For those planned to receive ribavirin, note history of ischaemic heart disease or cardiovascular risk factors
- Vaccinations against HBV and HAV
- Physical and psychiatric comorbidities
- Ongoing risk factors for viral transmission and reinfection
- Social issues – potential barriers to medication adherence

Medication
- Concomitant medications (prescription, over-the-counter, illicit)

Physical examination
- Features of cirrhosis: hard liver edge, spider naevi, leukonychia
- Features of decompensation or portal hypertension: jaundice, ascites, oedema, bruising, muscle wasting, encephalopathy
- Body weight and body mass index

Virology
- HCV genotype and subtype
- HCV RNA level (quantitative)
- HBV (HBsAg, anti-HBc, anti-HBs), HIV, HAV serology

Investigations
- Full blood examination, liver function tests, urea and electrolytes, eGFR, INR
- Pregnancy test for women of childbearing potential
- Liver fibrosis assessment, eg:
  - Elastography (FibroScan, ARFI, SWE)
  - Serum biomarker (APRI*, Hepascore, ELF test, FibroGENE**)
- Liver ultrasound should be performed in people with cirrhosis to exclude hepatocellular carcinoma
- Electrocardiogram should be performed if ribavirin therapy is planned and patient is > 50 years of age or has cardiac risk factors

See: Australian recommendations for the management of hepatitis C virus infection: a consensus statement (September 2018) (external site)
Gastroenterological Society of Australia (GES) (external site)

** Treatment **

GPs and other medical practitioners experienced in the treatment of chronic hepatitis C infection are eligible to independently prescribe hepatitis C treatment under the PBS without consulting an infectious diseases physician, hepatologist or gastroenterologist.

Medical practitioners NOT experienced in the treatment of chronic hepatitis C infection may initiate hepatitis C treatment in consultation with an infectious diseases physician, hepatologist or gastroenterologist by submitting, the remote consultation request for initiation of Hepatitis C treatment form (Word 46KB) or (PDF 451KB).

Please forward the Remote Consultation Request form to the Central Referral Service by:
Secure Messaging: HealthLink secure messaging – crefserv (email)
Fax: 1300 365 056
Post: Central Referral Service
PO Box 3462
Midland WA 6056

Patients who are medically suitable to be treated for hepatitis C in a general practice/primary health care setting and have a valid prescription but do not have a Medicare card can purchase generic hepatitis C medications through FixHepC (external site). All patients with evidence of cirrhosis should be referred via the Central Referral Service to an infectious diseases physician, hepatologist or gastroenterologist for hepatitis C treatment

** Treatment protocols for people with hepatitis C virus (HCV) infection and compensated liver disease **

As it is likely that new hepatitis C treatments will continue to be made available through the PBS, please check the following sources to determine the most appropriate treatment regimen for your patient:

- Clinical guidance for treating hepatitis C virus infection: a summary (external site)
- Australian recommendations for the management of hepatitis C virus infection: a consensus statement (September 2018) (external site)
- Gastroenterological Society of Australia (GES) (external site)
- PBS (external site)

How to treat hepatitis C video (external site)
'How to treat hepatitis C': This video resource provides important information regarding testing for, and treating hepatitis C, and can be used to assist patients as they progress through the testing process, and into treatment if required.

**Education, counselling and prevention**

**Alcohol and other drugs**
Abstinence from alcohol and other drugs is best, tailor according to previous intake and stage of disease.

Early disease with no risk factors for progression, consistently normal ALT and normal clinical examination alcohol advice as per general population, [NHMRC Australian guidelines (external site)](NHMRC Australian guidelines) to reduce health risks from drinking alcohol.

Significant fibrosis - one standard drink/day and no bingeing.

Cirrhosis - aim for total abstinence.

Refer to [alcohol and drug services (external site)](alcohol and drug services) as necessary for alcohol withdrawal, opiate substitution treatment, etc.

If your patient is continuing to engage in injecting drug use refer to the [Peer Based Harm Reduction WA (formerly WA Substance Users' Association) (external site)](Peer Based Harm Reduction WA).

Note that patients who are using alcohol and other drugs can be treated successfully. The best way of predicting adherence with treatment is to discuss treatment options with the patient over two consultations and if they attend both appointments conduct a pre-treatment work-up at the third consultation. Patients who attend all three appointments as scheduled are likely to complete treatment successfully even if they are not totally abstinent from alcohol and/or other drugs.

**Dental care**
Optimise oral health. Visit [Dental Health Services (external site)](Dental Health Services) for more information.

**Immunisation**
People with hepatitis C should be offered HAV and HBV vaccination, if not immune. See [Guidelines for the Provision of Hepatitis A and B Vaccine to Adults in Western Australia at Risk of Acquiring these Infections by Sexual Transmission](Guidelines for the Provision of Hepatitis A and B Vaccine to Adults in Western Australia at Risk of Acquiring these Infections by Sexual Transmission).

**Nutrition**
General recommendations for a healthy diet see [Australian Dietary Guidelines (external site)](Australian Dietary Guidelines) refer to a dietician as necessary.

**Psychological support**
For patient and their family/partners, telephone support, education and support groups are available through [Hepatitis WA (external site)](Hepatitis WA).

**Smoking**
Quitting will lead to improved general health. Visit [Quit Now (external site)](Quit Now) for more information.
Weight management
Aim for an ideal body weight (BMI 18.5-25kg/m2) or in overweight patients a gradual but sustained loss of at least 5-10% body weight. For more information visit Live Lighter (external site).

Work
People with chronic HCV who are health care workers may perform exposure prone procedures (EPPs) if they comply with the Australian National Guidelines for the Management of Healthcare Workers Living with Blood Borne Viruses and Healthcare Workers who Perform Exposure Prone Procedures at Risk of Exposure to Blood Borne Viruses (external site).

Management of partners
Avoid behaviours that risk re-infection/super-infection and transmission to others, such as sharing injecting equipment. A superinfection is generally defined as a second infection superimposed on an earlier one, especially by a different microbial agent of exogenous or endogenous origin that is resistant to the treatment being used against the first infection.

Avoid sharing equipment that could be contaminated with visible or microscopic amounts of blood, e.g. injecting equipment, razor, toothbrush, dental floss, nail clippers, tweezers.

Counsel patients with chronic HIV or HBV co-infection about safe sex practices.

Follow up
Recommended follow-up for people not on treatment.

Ongoing
Review every 6 to 12 months and monitor for signs and symptoms of liver disease e.g. palmar erythema, spider naevi, jaundice, ascites, encephalopathy, hepato-splenomegaly, pruritis, weight loss and/or lethargy.

Monitor FBC, ALT, INR, albumin and bilirubin every 6 to 12 months.

Screening for hepatocellular carcinoma: Ultrasound and AFP every 6 months for those with cirrhosis.

Symptom management
Fatigue: advise planning rest periods during the day and the addition of light to moderate exercise into their routine to reduce fatigue.

Important: Provide immunisation and advice on how to reduce transmission.

Recommended follow-up for people on treatment or post-treatment
Monitoring of patients receiving antiviral therapy for hepatitis C virus (HCV) infection: (A) on-treatment and post-treatment monitoring for virological response; and (B) monitoring after SVR.

A. On-treatment and post-treatment monitoring for virological response

Routine monitoring for a 12 week treatment regimen:
<table>
<thead>
<tr>
<th>Week 0</th>
<th>• FBE, urea and electrolytes, LFTs, INR, HCV RNA level (quantitative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 4</td>
<td>• FBE, LFTs</td>
</tr>
<tr>
<td>Week 12</td>
<td>• FBE, LFTs, HCV PCR (qualitative)</td>
</tr>
</tbody>
</table>

- At each treatment visit, assess for:
  - medications adherence
  - treatment adverse effects
  - drug-drug interactions.

<table>
<thead>
<tr>
<th>Week 12 after EOT (SVR)</th>
<th>• FBE, LFTs, HCV PRC (qualitative)</th>
</tr>
</thead>
</table>

- Routine on-treatment HCV RNA testing is not mandated but may be considered where there is a clinical concern about non-adherence to treatment, especially in people with cirrhosis.
- The need for increased frequency of review should be individualised.
- Patients taking ribavirin may require FBE at Week 2 and Week 4 and then every 4 weeks.
- Patients with cirrhosis require monitoring every 4 weeks, including FBE, LFTs and assessment for hepatic decompensation. Measurement of quantitative HCV RNA level is recommended at Weeks 4, 12 ± 24 on-treatment in patients with cirrhosis.
- Patients with decompensated liver disease require close monitoring, with review every 2–4 weeks.
- Patients taking hepatitis C treatment need monitoring for drug-drug interactions (external site).

**B. Monitoring after SVR**

SVR, no cirrhosis and normal LFT results (males, ALT < 30 U/L; females, ALT < 19 U/L):
- Patients who are cured do not require clinical follow-up for HCV

SVR and abnormal LFT results (males, ALT ≥ 30 U/L; females, ALT ≥ 19 U/L):
- Patients with persistently abnormal LFT results require evaluation for other liver diseases and should be referred for gastroenterology review. Investigations to consider include: fasting glucose level, fasting lipid levels, iron studies, ANA, ASMA, anti-LKM antibodies, total IgG and IgM, AMA, coeliac serology, copper level, caeruloplasmin level and α-1-antitrypsin level
SVR, cirrhosis:

- Patients with cirrhosis require long-term monitoring and should be enrolled in screening programs for:
  - hepatocellular carcinoma — liver ultrasound ± serum α-fetoprotein level
  - oesophageal varices — gastroscopy


See: Australian recommendations for the management of hepatitis C virus infection: a consensus statement (September 2018) (external site)
Gastroenterological Society of Australia (GESA) (external site)

Referral
Refer to a PBS approved specialist for the following (see metro and regional list of approved specialists):

1. If the patient is suspected of having cirrhosis or the hepascore is >0.8;
2. If the ALT following treatment remains elevated;
3. All people with decompensated cirrhosis should urgently be referred.

Hepatitis C and HIV infection
Refer to specialist for treatment.

Hepatitis C in pregnancy and breastfeeding
There are no safety data for the use of any DAA regimen during pregnancy, with all PBS-listed DAA regimens classed as Category B. Treatment of pregnant women with DAA therapy is therefore not recommended.

Hepatitis C in children
Children under the age of 18 years are not currently eligible for treatment with the new HCV medications under the PBS.

People under the age of 18 years should be referred to a paediatrician who is experienced in the treatment of HCV for discussion about therapy.

Public health issues

- No specific prophylaxis or vaccine is available for HCV.
- Notify WA Health of any cases.
- Contact tracing is generally not carried out for all HCV cases.
- Consider testing for other STIs and blood-borne viruses (HIV and HBV).
- Provide information about other sources of information and support, such as HepatitisWA (external site)(see contacts for specialist advice on STIs and HIV for contact details).
- Hepatitis A and B vaccination is recommended.
Notification
This is a notifiable infection. Medical practitioners must complete the appropriate notification forms for all patients diagnosed with a notifiable STI/HIV, as soon as possible after confirmed diagnosis.

Related links
- Hepatitis C (HealthyWA website)
- Managing hepatitis C in primary care (NPS MedicineWise Learning) (external site)
- Hepatitis C e-learning (external site)
- Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine (ASHM) (external site)
- Gastroenterological Society of Australia (GESA) (external site)
- Gastroenterological Society of Australia (GESA) Hepatitis C Treatment Resources (external site)

Epidemiological reports and real time notification data
- Epidemiology of STIs and BBVs in Western Australia (Department of Health website)
- Real time hepatitis C notification data (Department of Health website).
Human immunodeficiency infection (HIV) and acquired immunodeficiency syndrome (AIDS)

Organism

Human immunodeficiency virus (HIV) infection is caused by HIV type 1 or 2. There are multiple subtypes of HIV-1 (which can also be referred to as clades). Viruses that are a combination of these subtypes may also be encountered and are referred to as circulating recombinant forms (CRFs).

The period from exposure to primary HIV infection syndrome (seroconversion illness) is usually two to six weeks. The period from exposure to development of detectable anti-HIV antibodies is usually less than one month and may be much shorter, but may be up to three months. This will vary with the type of test performed. Given the tests used in WA pathology laboratories, an HIV test should be positive within six weeks of exposure. The presence of the virus itself can be detected earlier.

This table shows the risk of transmission associated with a variety of HIV exposures. Please note that the estimated risk of transmission per exposure event presented in the table has been determined on the basis of a HIV positive individual who is not on antiretroviral treatment.

Clinical presentation

HIV disease is characterised by depletion and/or dysfunction of cells in the immune system. A person affected by the HIV disease process is likely to exhibit a range of symptoms related to immune deficiency.

Up to 80 per cent of people who are infected with HIV will experience a glandular fever-like illness within six weeks of infection. This often occurs at the time when HIV antibodies appear, and is called a seroconversion illness or primary HIV infection syndrome. However, some patients may have a HIV-negative result with standard testing for up to three weeks after the onset of symptoms (which is why a second follow-up test may be required). Subsequently, there is a period of months to years during which the person with HIV infection is well, even though there is a progressive depletion of CD4+ T lymphocytes and a progressive increase in HIV viral replication (known in HIV RNA testing as ‘viral load’). Eventually, immune function becomes compromised to the stage whereby opportunistic infections and/or cancers develop. This stage is known as acquired immunodeficiency syndrome (AIDS). The most common cancers are Kaposi’s sarcoma and lymphoma. A wide range of pathogens may cause disease in AIDS. Most are viruses such as cytomegalovirus and other herpes viruses, fungi such as Pneumocystis jiroveci, Cryptococcus neoformans and Candida sp.or mycobacteria.

HIV infection may also affect immune system cells in the nervous system and cause neurological diseases. The most common neurological disease is chronic encephalitis, which may result in a sub-cortical dementia associated with other neurological abnormalities, usually referred to as HIV-associated neurocognitive disorder (HAND).

HIV infection is a progressive condition, which can result in AIDS and death in the majority of infected people if the infection is not treated with antiretroviral therapy. Combination antiretroviral therapy is highly effective in arresting the progression of HIV infection and suppressing viral replication. Patients on antiretroviral therapy can enjoy a normal life expectancy but must remain on treatment.
HIV infection should be considered in patients with risk factors, and/or a consistent clinical illness.

Primary HIV infection syndrome

Primary HIV infection syndrome (seroconversion illness) presents a rare opportunity to identify HIV infection, which otherwise may remain unidentified for years. Primary HIV infection syndrome usually occurs within two to six weeks after HIV exposure and may include:

- fever
- malaise
- anorexia
- myalgia
- headache
- sore throat
- lymphadenopathy
- generalised maculo erythematous rash
- night sweats
- severe lethargy
- nausea
- arthralgia
- photophobia
- diarrhoea
- thrombocytopenia
- mouth ulceration
- rash

Neurological manifestations including meningoencephalitis and peripheral neuritis may also be observed.

The acute illness may be accompanied by neutropenia, lymphadenopathy, thrombocytopenia, and mildly elevated erythrocyte sedimentation rate (ESR) or serum transaminase levels.

Clinical evidence shows that early initiation of antiretroviral therapy is associated with better health outcomes for the patient. Referral to a specialist in HIV medicine as soon as possible after diagnosis is essential to provide the patient with an opportunity to commence antiretroviral therapy as soon as possible after infection.

(See list of contacts in contacts for specialist advice on STIs and HIV).

Primary HIV infection may be followed by:

- chronic lethargy
- depression
- irritability
Non-specific viraemic manifestations include:

- mucosal ulceration
- desquamation of skin
- exacerbation of seborrhoea
- recurrence of *Herpes simplex* virus (HSV).

**Investigations**

Laboratory investigations of HIV infection include tests for three different purposes:

- tests to diagnose HIV infection and if positive to monitor the amount of virus present (i.e. viral load)
- tests to assess for immune deficiency (e.g. CD4 + T cell count)
- tests for opportunistic infections and malignancies arising from HIV-induced immunodeficiency.

Only tests for diagnosing HIV infection and immune deficiency are considered here.

Please also see Education, Preventing and Counselling below for information regarding Pre-test discussion – informed consent for HIV testing and Post-test discussion – conveying HIV test results.

**Tests for diagnosing HIV infection**

An HIV diagnosis in Australia is based on detecting antibodies to HIV in a blood sample. Combination HIV antibody/antigen testing is initially undertaken as a screening test for HIV, detecting the presence of either antigen or antibody. Positive screening tests must be confirmed by a diagnostic assay such as a Western Blot assay. If the requesting clinician is uncertain as to how soon after infection a given test will yield a positive result, a window period of two to six weeks should be used (see below).

HIV testing can also be performed using rapid point-of-care testing which provides results within 30 minutes. Point-of-care tests have a longer window period than laboratory-based assays. Any positive point-of-care test must be followed up with definitive diagnostic testing using laboratory-based assays. Point-of-care tests may be useful in high risk populations such as men who have sex with men, populations that are difficult to reach, and individuals who might otherwise not access HIV testing or return for their results. Point-of-care tests are not recommended for use in populations or settings with very low HIV prevalence.

**Window period**

There is a period after infection, when the screening test will not detect either antibody or antigen because they are yet to be produced or are present at a level that cannot be detected. This is called the window period. The time after infection at which antibody is identified is a function of the individual's response to HIV and the type of test used, but it is usually in the order of two to six weeks. Although HIV testing may be negative, the person is usually highly infectious.
• A negative screening test for HIV excludes HIV infection provided that the last potential HIV exposure was at least 12 weeks before the test. If not, the test must be repeated at an appropriate time.

• Some reactive EIA results are not due to HIV infection. Therefore, all repeatedly reactive results must have confirmatory tests performed such as an HIV Western Blot test and/or a nucleic acid or p24 antigen test if acute HIV infection is suspected.

• If the Western Blot test is positive, then HIV infection is highly likely. It is recommended that the HIV antibody tests be repeated on a second blood specimen from the patient to confirm the diagnosis of HIV infection.

• Tests for detection of HIV proviral DNA are available but are only used in special circumstances, for example when there is uncertainty about the diagnosis of primary HIV infection or for the assessment of the babies of HIV-infected women. This should be discussed with a specialist in HIV medicine or infectious diseases (see list of contacts in contacts for specialist advice on STIs and HIV).

Tests for monitoring HIV infection

• The degree of HIV replication can be assessed by assaying the amount of HIV RNA in plasma. This is often referred to as the viral load. Viral load (RNA) testing is used to monitor the infection after a diagnosis is made.

Tests of immune function

HIV infection causes a decline in the number of several types of lymphocyte, particularly CD4+ T lymphocytes. These are essential cells in the body’s immune system. As they decline, the opportunistic infections and malignancies that are characteristic of HIV-induced immunodeficiency become more frequent.

The CD4+ T cell count is the main laboratory test indicator of the degree of immune deficiency produced by HIV infection:

• Normal: Over 500 CD4+ T cells/µL of blood.
• Early immune deficiency: 350-500 CD4+ T cells/µL of blood. Clinical signs and symptoms are few.
• Intermediate immune deficiency: 200-350 CD4+ T cells/µL of blood. Increasing signs and symptoms, especially infections of skin and mucosa.
• Advanced immune deficiency: <200 CD4+ T cells/µL of blood. Frequent clinical manifestations of immune deficiency.

Assessing HIV risk factors

Assess risk factors for HIV, and consider testing in patients either with a glandular fever-like illness, or with unusual or persistent infections for which there is no adequate alternative explanation. Presence of any of the following lifestyle clues, epidemiological clues or clinical clues indicates that HIV testing should be offered.
Lifestyle clues

- Unprotected sex
- Male-to-male sex
- Injecting drug use
- Use of unsterile tattooing and body piercing equipment
- Unprotected sex with a person who has migrated from or recently travelled to a country with a high prevalence of HIV
- Overseas travel to or work in a country with a high prevalence of HIV, particularly where interaction with local health providers has been reported
- Multiple sex partners/recent or frequent partner change
- History of STI.

Epidemiological clues

- All antenatal women
- Migration from high prevalence country.

Clinical clues

- Presence of another STI
- Seroconversion illness (e.g. fever, myalgia, rash)
- Atypical or severe prolonged infections without other apparent cause (e.g. oral candidiasis, oral hairy leukoplakia, severe persistent genital herpes)
- Tuberculosis

Investigating other STIs and blood-borne viruses

All patients with HIV infection should have investigations to exclude other STIs and blood-borne viruses.

- The presence of HIV indicates a risk of other infections due to shared risk factors.
- The presence of STIs can increase the risk of HIV transmission and acquisition.
- Patients with HIV should also be tested for other STIs and BBVs.

Treatment

The treatment for HIV can be complex, although with newer antiretroviral treatments there has been a significant improvement in simpler therapeutic regimens which can consist of a single tablet daily. Specialist advice must be sought, and the person referred to the appropriate service provider (see contacts for specialist advice on STIs and HIV).

- Advances in HIV treatment mean that most people who live with HIV take daily oral medication to ensure their HIV viral load is at an undetectable level, arresting the HIV viral replication cycle and protecting their immune system. This means that HIV is widely regarded as a chronic but manageable condition whereby HIV positive people can have a normal life expectancy.
- Early identification of HIV infection can lead to early treatment uptake which may slow the decline of immune system function. Early diagnosis and treatment initiation can reduce HIV viral load, which reduces the risk of onwards HIV transmission. This is also referred to as Treatment as Prevention (TasP).
Clinical evidence has demonstrated that patients who have sustained a HIV viral load of below 40 copies per millilitre (referred to as ‘undetectable’ based on current test sensitivity) for more than six months have a negligible risk of onwards sexual transmission. Discussions about HIV viral load and risk of onwards transmission should take place between the HIV specialist and patient, with condom use promoted as a safer sex strategy.

In the absence of antiretroviral therapy, HIV infection usually progresses from no apparent illness to AIDS and death over a median of ten years. However, the pace of disease progression is variable. Almost all people who are infected with HIV will eventually have symptoms related to the infection without antiretroviral therapy.

The use of antiretroviral therapy is a specialised and rapidly changing field of medicine. A patient should initially be referred to HIV specialist services for treatment. General practitioners are encouraged to participate in the shared care of patients with HIV and can be authorised to prescribe HIV medicines. See page on WA HIV s100 community prescribers.

People with HIV may have complex needs, so may need to access a support network that will assist in maintaining good physical and mental health.

Planning HIV care requires the identification of patients who need:

- immediate medical care
- antiretroviral therapy
- management of coinfections
- management of comorbidities.

Hepatitis A and B vaccination should be considered for people who are seronegative for these infections. Pneumococcal vaccine and influenza vaccine should also be considered (refer to the NHMRC’s Immunisation Handbook (external site).

Pregnancy

Australian categorisation system for prescribing medicines in pregnancy

Related links

HIV and AIDS (HealthyWA website)

Education, counselling and prevention

Immunisation

People living with HIV should be offered HAV and HBV vaccination, if not immune. See Guidelines for the Provision of Hepatitis A and B Vaccine to Adults in Western Australia at Risk of Acquiring these Infections by Sexual Transmission.

Prophylaxis for HIV

There are two types of prevention approaches for HIV based on the prophylactic use of antiretroviral drugs.

- Pre-exposure prophylaxis (PrEP) for ongoing exposure to HIV, and

- Post exposure prophylaxis (PEP) for recent exposure (within 72 hours) to HIV.
Pre-exposure prophylaxis

PrEP is a once-daily pill (combination of two antiretroviral medicines tenofovir and emtricitabine) used by HIV negative people at medium to high risk of HIV exposure. PrEP may be a prevention option for: sexually active gay and bisexual men, trans and gender diverse people, heterosexual people with a HIV-positive partner who does not have an undetectable viral load, and people who inject drugs.

It is important that before considering whether PrEP is an appropriate prevention option for a patient, that relevant testing and a full medical history is documented. Contraindications and precautions relating to PrEP include:

- Acute HIV-1 infection
- New onset or worsening renal impairment
- HBV infection, particularly chronic HBV (patients with HBV should be referred to a specialist, see contacts for specialist advice on STIs and HIV)
- Decreases in bone mineral density
- Redistribution/accumulation of body fat
- Pregnancy
- Nursing mothers.

Patients need to take a daily dose of PrEP for 7 days before high levels of protection are achieved for both vaginal and rectal exposure to HIV.

Daily vs on-demand PrEP

Daily PrEP is the commonly prescribed regimen as per the National PrEP Guidelines (external site); however on-demand PrEP can also be prescribed in certain situations.

Daily PrEP must be the preferred regimen when there is ongoing risk of acquiring HIV over long periods of time.

On-demand PrEP as an alternative regimen can also be effective when exposure happens only for relatively short periods of time (e.g. during travel), or around single events of HIV exposure. It may also be considered for people who have adverse events with previous use of daily PrEP. On-demand PrEP is only recommended for men-who-have-sex-with-men (MSM) and transgender women.

Pre-exposure Prophylaxis (PrEP) for HIV prevention has been listed on Australia’s Pharmaceutical Benefits Scheme as an s85 medication, thereby allowing any medical practitioner, and endorsed nurse practitioners, to be able to prescribe PrEP to an eligible Australian resident who holds a current Medicare card.

Although PrEP can now be prescribed by any medical practitioner or endorsed nurse practitioner, a list of WA Department of Health trained PrEP Prescribers can be accessed here WA PrEP Prescribers (external site)
Clinicians interested in prescribing PrEP can access PrEP training on ASHM’s online learning module ‘Prescribing PrEP in Australia’ (external site).

A new PrEP Decision Making Tool has been developed for WA primary care providers to assist with prescribing PrEP and ongoing patient management.

For more information about PrEP see the National PrEP Guidelines (external site)

**Post-exposure prophylaxis**

Post-exposure prophylaxis (PEP) can be for non-occupational and occupational exposure to HIV.

Non-occupational post exposure prophylaxis (NPEP) is a course of antiretroviral drugs (e.g. Truvada® [300 mg Tenofovir and 200 mg Emtricitabine] once daily for 28 days) that should be commenced as soon as possible (and definitely within 72 hours), following exposure to HIV in community settings. NPEP may help reduce the risk of HIV transmission after unsafe sex, sharing of injecting equipment, or when it is known or likely that there has been a high risk of exposure. However, NPEP is no longer routinely recommended for nonoccupational exposure when the HIV-positive source is on antiretroviral treatment and has an undetectable viral load.

To be effective, initiation of NPEP needs to occur within 72 hours, the earlier the better. All patients assessed as requiring NPEP during business hours should be referred to a s100 HIV prescriber (see list of WA HIV s100 community prescribers) or a sexual health clinic (see contacts for specialist advice on STIs and HIV). In geographical areas where these options are not available, or in cases that require attention outside of business hours, people should present to their nearest hospital Emergency Department. Patients who identify themselves as having had a high risk exposure to HIV may also call the 'WA PEP' line (1300 767 161).

For more information about NPEP, including how to assess risk, find out about availability, refer patients and provide follow-up care, see the Department of Health’s operational directive Protocol for non-occupational post-exposure prophylaxis (NPEP) to prevent HIV in Western Australia (external site). For further information please refer to the Australian National Guidelines on Non-Occupational and Occupational exposure to HIV (external site).

For management of occupational exposure to HIV, see the Department of Health’s operational directive Management of Occupational Exposure to Blood and Body Fluids in the Healthcare Setting (OD 0641/15) (external site).

See a business card sized leaflet explaining the difference between PrEP and PEP, which can be given to patients who may be at high risk of HIV. Free copies of this leaflet can be ordered from the WA Health Online Publication Ordering System (external site).

**Treatment as Prevention (TasP)**

Early identification of HIV infection can lead to early treatment uptake. Early diagnosis and treatment initiation can reduce HIV viral load, which reduces the risk of onwards HIV transmission. This is also referred to as Treatment as Prevention (TasP).
Pre-test discussion – informed consent for HIV testing

The purpose of pre-test discussion is to obtain informed consent and should address:

- confidentiality
- the reason for the tests
- identifying risk activities
- understanding of the requirement for statutory notification and contact tracing
- awareness of the disease process and efficacy of treatment
- awareness of modes of transmission and prevention.

Post-test discussion – communicating HIV test results

A positive HIV test result must be discussed with the patient in person.

A negative diagnosis provides an opportunity to reinforce the pre-test discussion and focus on prevention.

HIV is a notifiable disease under the WA Public Health Act 2016 and should be reported to the Department of Health as soon as possible (ideally within 72 hours) after a confirmed diagnosis. To notify a case of HIV please complete the HIV notification form available at WA STI/BBV or HIV Notification (external site) or a hardcopy form can be obtained from your local population/public health unit (see contacts for specialist advice on STIs and HIV).

‘What it means to have HIV’: This video resource provides important information regarding living with HIV, and can be used to assist patients recently diagnosed with HIV, to understand and manage their condition.

When discussing a new HIV diagnosis with a patient, the following would ideally be included within your discussion with the patient:

- Inform your patient about the confidentiality of the test results and explain the legal requirements for completing the notification form, with an emphasis on confidentiality of all information.
- If the patient is willing, discuss contact tracing/partner notification (see Contact tracing).
- Explain to your patient that whilst there is no cure for HIV yet, that HIV is a manageable condition with daily treatment. This treatment is in the form of daily oral tablets, which works to control HIV, and prevent the virus progressing into AIDS. HIV and AIDS are not the same.
- People living with HIV can lead long and healthy lives, with a similar life expectancy to a person who does not have HIV. They can still have relationships, have sex, and have children if they choose.
- Outline to the patient they will be referred onto a HIV specialist (if the diagnosing practitioner is not experienced in HIV medicine, they should avoid technical discussions regarding disease progression or treatment options) and that a nurse from that clinic will be in touch (if an appointment has not already been made) to make an appointment for them (see contacts for specialist advice on STIs and HIV).
While they are waiting for their specialist appointment, discuss with your patient:

- strategies to prevent onward transmission, emphasising the need to practice safer sex (with condoms) and not share injecting equipment

- that they do not have to tell people that they have HIV, however they must ensure they take the appropriate precautions in preventing onwards HIV transmission, as there are laws in place that criminalise HIV transmission when precautions are not taken

- some occupations may require disclosure, and this should be discussed with the specialist.

A new diagnosis for many people can be a traumatic experience, so it may be advisable to refer to a support organisation for counselling or other forms of social assistance such as the WA AIDS Council (see contacts for specialist advice on STIs and HIV). People with HIV should be counselled by a person able to discuss the medical, psychological and social implications of HIV infection. Appropriate social support and psychological resources should be available, either on site or through referral, to assist the patient in coping with emotional distress.

Avoid overloading the patient with excessive information and arrange for further counselling at a later time if needed. Provide patient with a fact sheet (Healthy WA).

At follow-up:

- stress confidentiality
- confirm the patient's understanding of the infection
- if the patient is ready to deal with more information, provide further details of the infection and how to prevent its transmission
- continue to educate about the prevention of onward transmission.
- provide continued support
- provide information about other sources of information and support, such as the WA AIDS Council (see contacts for specialist advice on STIs and HIV).

Emotional distress is a normal response when first being informed of a positive HIV test result. Patients face several major adaptive challenges:

- accepting living with a chronic disease
- coping with possible stigmatising and discriminating behaviours from others
- developing strategies for maintaining physical and emotional health
- initiating changes in behaviours to prevent HIV transmission.

People with HIV should be counselled by a person able to discuss the medical, psychological and social implications of HIV infection. Appropriate social support and psychological resources should be available, either on site or through referral, to assist the patient in coping with emotional distress

Counselling for these patients should embrace:

- contact tracing or management of sexual partners
- patients' rights and responsibilities
• family and community support resources
• the need for continued counselling and support

**Work**

**Management of partners**

**Prophylaxis for HIV**

For people at high risk of HIV infection there are two types of prophylaxis for HIV:

• Pre-exposure prophylaxis (PrEP) if there is ongoing exposure to HIV, and
• Post exposure prophylaxis (PEP) if there is recent exposure (within 72 hours) to HIV.

See **Education, counselling and prevention** in the previous section for more details on PrEP and PEP.

**Contact tracing for HIV**

Every possible effort for thorough contact tracing should be undertaken in all cases of HIV (see also Contact tracing).

Contacts include not only sex partners but also anyone who has shared needles or other injecting equipment with the index case.

Contact tracing for HIV enables early diagnosis and treatment of possible HIV infection and associated illness, and offers the opportunity to encourage risk-reducing and protective behaviours. Contact tracing is a means of concentrating risk-reduction efforts on people at high risk of contracting or transmitting HIV infection.

Contact tracing is undertaken by nurses employed by public health units. GPs and primary health care providers can provide invaluable information to public health nurses to facilitate identification and testing of partners.

• Because HIV can potentially lead to serious health implications and historically has been a highly stigmatised infection, managing sexual partners carries with it a special need for sensitivity and care.
• Particularly with HIV those responsible for contact tracing should have a clear understanding of local community sensitivities.
• People with HIV infection should be advised of any risk they pose to uninfected sexual partners, and of the need to practice safe sex.
• Contacts of HIV-infected patients should be traced, and offered testing and counselling.
• A person who has HIV infection or is at risk of HIV infection must not make any blood, semen or organ/tissue donations.
Special considerations

Several publications have been produced by Australian, State and Territory governments, other agencies and community groups, to assist health care providers and patients in preventive education and in managing HIV infection. These are available from the Department of Health and various other agencies (see contacts for specialist advice on STIs and HIV and contacts for patients – where to go).

• Determining how far back to trace contacts can be difficult.
  o The incubation period for primary HIV infection is one to twelve weeks, but the seroconversion illness may pass unnoticed or be difficult to recall.
  o Trace back at least 12 weeks before a confirmed primary HIV illness. If an infected contact cannot be found, then a source for the infection has not been located. Therefore, extend the trace-back period. Prior HIV negative serology may be beneficial in establishing the time frame needed for contact tracing.
  o If the date of primary infection cannot be confirmed, the trace-back period may be years, depending on the patient's history of risk behaviour and clinical presentation.
  o As HIV-2 infection is not endemic in Australia, expert support for contact tracing should be sought if there is a possibility of a patient with HIV-2 having been infected locally.
  o A patient who presents with AIDS will usually have been infected for several years (median – 8 to 10 years).

• Oral sex, with the presence of broken skin, ulcers or cuts has been reported as a possible means of transmitting HIV infection but overall it remains a negligible risk activity.

• If the index case has donated or received blood products, contact the relevant Blood Transfusion Service.

Follow up

Advise patients of the need for indefinite specialist follow-up and life-long antiretroviral therapy.

Effective HIV management requires access to antiretroviral therapy and monitoring associated with the long term use of these drugs. Shared care arrangements with a general practitioner should be established for all HIV positive patients for the management of non-HIV related health issues. Such an arrangement will most likely include regular monitoring by the specialist, which is communicated to the primary health care provider and vice versa. Ongoing two-way communication between the HIV specialist and primary health care provider is important to ensure that all the patients' health care needs are appropriately met, and that there are no contraindications or concerns in relation to the patient's ongoing antiretroviral therapy.

As discussed previously, patients with HIV should be referred to a HIV specialist or GP specialising in HIV medicine for assessment and for the establishment of a patient management plan.

Special considerations

• Specialist advice should always be sought for treatment and follow-up of HIV-infected patients.
• Review patients three months after exposure to repeat blood tests for syphilis, hepatitis B virus (HBV) and hepatitis C virus (HCV).
• Discuss with patients their desires or plans for conceiving children. People living with HIV are able to safely conceive and give birth to HIV negative babies. Family planning should be discussed in collaboration with the patient’s HIV specialist.

• Discuss with patients their general well-being and any mental health indications they may have.

• While most people living with HIV conscientiously avoid behaviour which exposes others to the risk of HIV infection, a very small number of individuals continue to place others at risk. The Integrated Case Management Program (ICMP), Department of Health Western Australia, assists individuals to modify their behaviour, through intensive and regular counselling, education and support. This preventive approach is usually successful and only rarely has statutory action, been considered necessary to ensure that a person living with HIV adheres to HIV treatment. For more information see the CMP guidelines.

Public health issues
• Contact tracing is important to prevent further transmission and reinfection (see Contact tracing).

• Patients who are not on antiretroviral therapy may be considered infectious, with the most infectious periods being before, during and soon after seroconversion, or when CD4+ T cells are very depleted and the viral load increases.

• Patients may continue be infectious throughout their illness, depending on factors such as whether they are on or adhering to antiretroviral therapy, and whether they have any concurrent co-infections including other STIs.

• Always test for other STIs and blood-borne viruses.

• If a child is diagnosed with HIV, the virus may have been transmitted vertically during pregnancy or delivery. If the mother is HIV-negative, issues of sexual abuse and/or sexual assault should be considered.

Prophylaxis for HIV
For people at high risk of HIV infection there are two types of prophylaxis for HIV:

• Pre-exposure prophylaxis (PrEP) for ongoing exposure to HIV, and

• Post exposure prophylaxis (PEP) for recent exposure (within 72 hours) to HIV.

See Education, counselling and prevention in the earlier section for more details on PrEP and PEP.

Notification
HIV is a notifiable disease under the WA Public Health Act 2016 and should be reported to the Department of Health as soon as possible (ideally within 72 hours) after a confirmed diagnosis. To notify a case of HIV please complete the HIV notification form available at WA STI/BBV or HIV Notification or a hardcopy form can be obtained from your local population/public health unit (see contacts for specialist advice on STIs and HIV).

Epidemiological reports and real time notification data
Epidemiology of STIs and BBVs in Western Australia
Lymphogranuloma venereum

Organism
- Lymphogranuloma venereum (LGV) is caused by *Chlamydia trachomatis* (C. *trachomatis*) serotypes L1 – L3, which differ from those that cause urethritis or cervicitis. LGV has recently been acquired locally so can no longer be seen as only an imported disease. LGV is rare in Australia, but there have been recent increases in MSM (external site).
- LGV among MSM is common in North Europe and North America and is endemic in the general population in several tropical areas such as South-East Asia, Southern Africa and India.

Clinical presentation
The initial lesion is a transient ulcer that usually appears 3 to 10 days after infection. This may go unnoticed, and most patients present some weeks later with inguinal lymphadenopathy, which may progress to form a fluctuant bubo by the time the patient is seen. It may also present as painful proctitis and should be suspected in MSM with ano-rectal symptoms.

Special Considerations
The site of primary lesion depends on the site of inoculation. Proctitis is characterised by rectal pain, bleeding, rectal discharge, tenesmus and changed bowel habit. LGV in Australia is usually symptomatic, hence routine screening of asymptomatic patients is not recommended (external site).

LGV can progress to serious complications, including chronic proctitis, fistulae, strictures and genital oedema. Therefore timely diagnosis and treatment are important.

Investigations
- Demonstration by NAAT of *C. trachomatis* in fluid aspirated from a fluctuant bubo.
- Specific testing for rectal LGV for *C. trachomatis* NAAT positive samples is available on request from PathWest and RPH. All positive rectal chlamydia samples should be sent for confirmatory testing.
- Serology – the LGV complement fixation test (LGV-CFT) is the most widely available serological test. Titres > 1:64 are highly suggestive of LGV in a patient with a compatible clinical picture, but cannot be used to differentiate between recent and prior treated infection.

Treatment
Standard
- Doxycycline 100 mg orally, 12-hourly for 21 days or longer

Special consideration
Advise no sexual contact until treatment is finished
- Azithromycin 1 g orally weekly for three weeks or erythromycin 500mg qid for 21 days should only be considered after discussion with a sexual health physician if patient is a concern. Data on alternative regimens is scanty.
Pregnancy
- Erythromycin 500 mg orally, qid for 21 days or longer (category A).
- [Australian categorisation system for prescribing medicines in pregnancy](#)

Doxycycline is contraindicated in pregnancy.

Related links
- [Lymphogranuloma venereum (HealthyWA website)](#)

Management of partners
Current partners and partners over the previous six months should be assessed and offered STI screening and empirical LGV treatment.

Follow up
- Consider other STIs.
- Test of cure should occur 3 weeks after treatment completion.

Public health issues
This is a notifiable disease.

[Contact tracing](#) is important to prevent further infection and treat contacts.

Always test for other STIs.

Notification
This is a notifiable infection. Medical practitioners must complete the appropriate [notification forms](#) for all patients diagnosed with a notifiable STI/HIV, as soon as possible after confirmed diagnosis.

Epidemiological reports and real time notification data
- [Epidemiology of STIs and BBVs in Western Australia (Department of Health website)](#)
- [Lymphogranuloma venereum notification data (Department of Health website)](#)
Syphilis

Organism
Syphilis is a systemic disease caused by spirochete bacterium Treponema pallidum.

Incubation period:
- Nine to 90 days from exposure to primary syphilis.
- Thirty to 150 days from exposure to secondary stage.
- Usually five to 35 years from exposure to tertiary stage.

The usual mode of transmission is sexual intercourse. T. pallidum may occasionally be spread by blood contamination, for example by needlestick injuries or the sharing of injecting equipment, and also by direct contact with open lesions.

Contact infectivity for primary, secondary and early latent syphilis is around 20% (there are reports ranging from 10-60%). Late latent and tertiary syphilis are not infectious.

Clinical presentation
Syphilis is a multi-system disease and can go through various stages;

Test for syphilis in all patients presenting with a genital ulcer. The ulcer (chancre) is characteristically a single indurated painless ulcer which can occur in the genital region or elsewhere on the body (extragenital).

Particularly in endemic communities, consider syphilis if a patient presents with characteristic signs of secondary syphilis, e.g. hair loss, rashes on hands and feet, and painless enlarged lymph nodes.

- In Australia, syphilis usually presents either as a primary chancre, clinical manifestations of secondary syphilis or through the chance finding of positive serology.
- Congenital syphilis is rare if there is general screening of antenatal patients (additional testing for syphilis should be offered at any stage in pregnancy if antenatal patients have been exposed to any significant risk throughout pregnancy).
- Tertiary syphilis is rarely seen.

Special considerations

- Careful physical examination of the relevant areas and awareness of its likely presence in endemic communities is crucial to establishing an accurate diagnosis of syphilis.
- Untreated, early clinical syphilis usually resolves spontaneously, leading to latent disease, which may proceed to late, destructive lesions.

Staging of syphilis
The appropriate course of treatment can only be decided after the clinical stage of the disease has been determined. This requires examination and serological testing. The stages are:

- Primary syphilis: the signs are an ulcer (chancre) at the site of infection (both genital and extragenital) that is typically solitary, indurated and painless. However chancres may also be multiple, painful, and purulent and can cause syphilitic balanitis of Follmann.
- Secondary syphilis: manifestations are a rash that is typically bilaterally symmetrical and non-itchy; ulcers of the mouth, nasal cavity or vulva; enlarged lymph nodes and condylomata lata. Hair loss involves scalp and eyebrows. Cranial nerve palsies, including
acute deafness and retinitis or uveitis, and other neurosyphilis manifestations may develop.

- **Latent syphilis**: presence of *T. pallidum* in the body without symptoms or signs. Latent syphilis can be either early (within 24 months of primary infection) or late (more than 24 months since primary infection).

- **Tertiary syphilis**: progression of syphilis to involve the heart, nervous system, eye, ear or the development of gummata (granulomatous lesions). The first lesions of tertiary syphilis are usually seen five to 20 years after primary infection, but asymptomatic neurosyphilis may occur within five years.

**Presentation of latent syphilis**

Positive serology in a patient without symptoms or signs of disease is the most common presentation of syphilis in Australia today.

Usually divided into early and late latent. Early latent syphilis (less than 2 years from infection) is usually infective while late latent syphilis (more than 2 years from infection) is non infectious.

- The duration of latency influences potential infectivity of the patient and the treatment required.
- The problem, with a finding of positive syphilis serology without clinical symptoms or signs, is to distinguish adequately treated syphilis from untreated disease.
- The duration of latency must be determined by:
  - identifying the occurrence of primary or secondary lesions, if possible
  - asking about previous syphilis serology at the time of blood donations, previous STI diagnosis or pregnancy
  - checking the records of Community Health, PHUs, ACCHS, PathWest, or other medical practitioners.

**Note**: A clue can also be gained from the RPR titre. Titres of less than 8 are likely to reflect latent syphilis (two years or more from infection) and titres greater than 8 reflect active syphilis, with a proviso that if acute disease is suspected do a repeat blood test in two weeks.

**Presentation of tertiary syphilis**

Tertiary syphilis should be excluded in any patient with the following conditions:

- aortic incompetence
- aneurysm of the ascending arch of the aorta
- dementia
- personality change
- multifocal neurological disorders
- nerve deafness
- pupillary abnormalities
- retinal disease or uveitis.

If tertiary syphilis is suspected, referral to a specialist should occur. Contact details of specialists with appropriate experience are provided on [contacts for specialist advice on STIs and HIV](#).

Cases of suspected tertiary syphilis need to be discussed with specialists because managing patients with tertiary syphilis can be very complex. Such complexities are beyond the scope of these guidelines.
Special considerations

- Practitioners should maintain an awareness of the possibility of tertiary syphilis.
- Tertiary manifestations of syphilis may be 'benign', with development of gummata in almost any organ, or more serious, with cardiovascular or central nervous system involvement. Benign gummatous disease is rare. Cardiovascular disease and neurosyphilis occasionally occur from five to 35 years after exposure.

Exclude other STIs

Investigate all patients presenting with possible syphilis for other STIs, including chlamydia, gonorrhoea, HIV, HBV, hepatitis A (HAV) (if symptomatic or if there is any history of male-to-male and/or oro-anal sex and vaccination is contemplated), and HCV (if there is a history of injecting drug use), as coinfection is likely.

In patients with primary syphilis and at risk for HIV, retesting for HIV should occur after three months. The presence of herpes, donovanosis and warts may be detected during clinical examination.

STI Atlas (external site)

Investigations

All practitioners should be familiar with the types of syphilis serology tests and their interpretation. Diseases caused by other treponemal organisms, including yaws, will cause the same serological reactions as syphilis.

In a patient seen for the first time with a clinical presentation that suggests primary syphilis do a NAAT (PCR) swab of the ulcer. In addition, syphilis serology should be requested.

Patients being treated for primary and secondary syphilis should have a rapid plasma reagin test (RPR) repeated on the day treatment is commenced to provide an accurate baseline for monitoring treatment.

In a patient seen for the first time without any signs or symptoms of syphilis, request syphilis serology.

Choice of tests

Two types of tests are used for syphilis serology: non-treponemal tests and treponemal tests.

Non-treponemal tests

- RPR (monitors disease activity)
- Venereal Disease Research Laboratory (VDRL) test.

These tests do not measure antibodies to T. pallidum (the organism that causes syphilis). Instead, they measure antibodies to another protein called cardiolipin, derived from human cardiolipin, which has been modified by the treponemal infection so that it is perceived as foreign by immune surveillance. These non-treponemal tests are more likely to give false positive results than the treponemal tests because other disease processes can also modify human cardiolipin causing the same antibody development.

- Both tests are quantified (they indicate how much antibody is present), so they can be used to monitor progress of infection or success of treatment. However, titres on the RPR and VDRL may be different, and cannot be directly compared.
VDRL is the only test fully validated for screening cerebrospinal fluid (CSF), although NAAT may be useful in the future.

**Treponemal tests**

- Enzyme immunoassay (EIA) – IgM and IgG
- *Treponema pallidum haemagglutination* test (TPHA)/*Treponema pallidum* particle agglutination test (TPPA)

These tests detect specific treponemal antibodies (commonly IgG) and, once positive, remain so whether the patient has been treated or not. Hence IgG detection in treponemal tests is not an indication of successful treatment. Proper interpretation of tests for syphilis usually requires a detailed history of the patient's illness, when they may have been infected, their treatment, and their previous test results. The history may come from the patient or from previous treating practitioners. The first test performed by the laboratory will be an EIA or TPPA or TPHA.

- **If the result is negative**, it is extremely unlikely that the patient has syphilis. However, in the first two weeks after infection, all tests may be negative, so:
  - repeat syphilis serology in two to four weeks where primary syphilis or re-infection is possible, as other tests may become positive or the antibody titres may rise.

- **If the result is positive**, and the patient is not known to have been infected previously with syphilis, an RPR and other syphilis specific tests will be carried out. If the patient is known to have been infected previously, it is unnecessary to perform a FTA-Abs IgG.

If none of these follow-up tests is positive, the patient may have:

- a false positive TPHA, TPPA or EIA
- very early primary syphilis
- distant past syphilis that may have been treated or untreated.

If any of these follow-up tests is positive, this confirms the presence of genuine syphilis antibodies (meaning that the patient is infected or has been infected in the past). A positive RPR may be found in syphilis at any stage, whether or not the patient has been adequately treated. The most common situation in communities with long standing syphilis endemicity is that the clinical picture and serology are consistent with latent or tertiary syphilis, whether treated or untreated. If it is not certain that the patient has been adequately treated in the past, a full course of treatment is indicated. Special considerations:

- Clinical and CSF examination will determine the need for treatment of neurosyphilis.
- Neurosyphilis should be considered in seropositive patients:
  - with neurological or ophthalmic signs
  - with treatment failures
  - who are HIV-infected
  - who are unable to be treated with any form of penicillin
  - with suspected congenital syphilis.
- Interpretation of CSF serology, protein level and cell counts should be discussed with a specialist.
- A chest X-ray is not recommended as a routine investigation for late latent syphilis. Full cardiovascular examination should be undertaken if patients have any cardiovascular symptoms.
Causes of false positive results in non-treponemal tests

- **An acute false positive reaction** occurs during or after various acute febrile illnesses (e.g. hepatitis, infectious mononucleosis, measles, malaria), pregnancy, immunisation and in one per cent of clinically normal individuals. The reaction disappears within six months. It is usually low titre.

- **A chronic false positive reaction** persists for more than six months. Such a reaction occurs in injecting drug users, autoimmune disease (e.g. systemic lupus erythematosus, immunoglobulin disorders), chronic infections (e.g. leprosy), and malignancy.

Causes of false positive results in treponemal tests

- **TPHA/TPPA**: Pregnancy, some viral infections (e.g. infectious mononucleosis), autoimmune diseases, cancer, injecting drug use and skin diseases.

- **EIA**: Causes are less clear, but include pregnancy, old age, some viral infections (e.g. infectious mononucleosis), autoimmune diseases, cancer, injecting drug use, and alcoholic cirrhosis of the liver.

Causes of false negative syphilis serology

- Antibody is not present. This is most likely in recently acquired infections, in which case the test should be repeated at least one month later. Recent antibiotic therapy may also delay the appearance of antibody.

- The patient is immunosuppressed.

- A negative RPR occurs in 25 per cent of patients with late syphilis. Therefore, EIA, TPHA or TPPA are the preferred screening tests.

- A negative RPR may also occur as the result of the 'prozone reaction' where the presence of a large antibody response in undiluted serum (as seen in some cases of secondary syphilis) overwhelms the test and renders it inaccurate. Asking the laboratory to retest with diluted serum overcomes this problem.

- If tests are negative in a patient suspected to have syphilis on clinical grounds, a specialist with appropriate experience should be consulted (see list of contacts in contacts for specialist advice on STIs and HIV).

**Treatment**

Penicillin remains the drug of choice in treating syphilis.

It is essential that syphilis serology is repeated at commencement of treatment so the response to treatment can be accurately assessed.

If there is any doubt about the clinical stage of the patient's infection, treat as for late latent syphilis.

**Rationale**: The effectiveness of penicillin for treating syphilis has been well established and treponemes have not developed penicillin-resistance. There is little evidence showing the effectiveness of non-penicillin regimens, and they must be regarded as inferior to penicillin.

If you have any difficulty obtaining benzathine penicillin for syphilis treatment, refer the patient urgently to a sexual health clinic or contact your local public health unit for assistance to obtain this medication. See contacts for specialist advice on STIs and HIV.
**Treatment regimens**

Benzathine benzylpenicillin (Bicillin L-A) is now on the [Emergency Drug Supply Schedule (Prescribers Bag)](https://www.ezra.com/).  

Primary, secondary and early latent syphilis (up to 24 months)
- Benzathine penicillin 1.8 g (=2,400,000 units) intramuscularly, as a single dose (see image below)
NB: inject one 900mg (=1,200,000 units) bezathine penicillin syringe into each buttock, i.e. 1.8g total

or

• procaine penicillin 1 g for patients less than 60 kg bodyweight and 1.5 g for patients over 60 kg bodyweight, intramuscularly, daily for 10 consecutive days.

If allergic to penicillin

• Doxycycline 100 mg orally, 12-hourly for 14 days.

For treatment of adults and mature minors (aged 14 years or older) with primary, secondary and early latent syphilis that has not been previously treated under a Structured Administration and Supply Arrangement, see [Structured Administration and Supply Arrangement - CEO of Health SASA (conditions)](conditions). This is suitable for use by Registered Nurses and Aboriginal Health Practitioners employed by a health service operated or managed by a Health Service Provider of the WA Department of Health, or contracted entity, or a health service that is a member of the Aboriginal Health Council of Western Australia.

Late latent syphilis (more than 24 months)

• Benzathine penicillin 1.8 g (=2,400,000 units) intramuscularly, once weekly for three doses. If the 2nd or 3rd dose is delayed by more than 3 days, it is recommended to restart the 3 week course

or

• procaine penicillin 1 g for patients less than 60 kg bodyweight and 1.5 g for patients over 60 kg bodyweight, intramuscularly, daily for 15 days.

If allergic to penicillin

• Doxycycline 100 mg orally, 12-hourly for 28 days.

Tertiary syphilis

Tertiary syphilis includes cardiovascular syphilis and neurosyphilis. Specialist advice should be sought (see list of contacts in [contacts for specialist advice on STIs and HIV](contacts)).

Give steroid therapy 48 hours pre-treatment. Prednisolone 20 mg orally 12 hourly.

• Benzyl penicillin 1.8 g (3 million units) intravenously, four-hourly for 10 days. This can be given as an outpatient where ambulatory antibiotic services are available.

or

• if outpatient treatment is unavoidable, procaine penicillin 1.5 g intramuscularly, daily for 20 consecutive days

plus

• probenecid 0.5 g orally, six-hourly for 20 days.
Pregnancy
Australian categorisation system for prescribing medicines in pregnancy

Special considerations

- Doxycycline should not be used in women who are pregnant or possibly pregnant, or breastfeeding, or in children under nine years of age.
- An appropriately experienced specialist should be consulted for patients allergic to penicillin (some of whom are also allergic to ceftriaxone).
- Neither benzathine penicillin nor aqueous procaine penicillin, at the doses recommended, achieve treponemical levels in CSF, and should not be used in treating neurosyphilis. Consult specialist for advice regarding treatment of neurosyphilis.
- Jarisch-Herxheimer reaction is a common reaction to treatment in patients with primary and secondary syphilis. It occurs six to 12 hours after commencing treatment, and is an unpleasant reaction of varying severity with fever, headache, malaise, rigors and joint pains, and lasts for several hours. Symptoms are controlled with analgesics and rest. Patients should be alerted to the possibility of this reaction and reassured accordingly.
- Procaine reaction is a rare reaction to procaine penicillin. It is characterised by a sensation of impending doom with hallucinations. The reaction is self-limiting and lasts about 30 minutes. The patient needs to be reassured and given general supportive measures.
- Patients being treated for primary and secondary syphilis should have RPR repeated on the day treatment is commenced to provide an accurate baseline for monitoring treatment.
- Co-infection with HIV, see Syphilis in HIV infection (below).

Related links
Syphilis (HealthyWA website)
Structured Administration and Supply Arrangement - CEO of Health SASA (Conditions)
Emergency Drug Supply Schedule (Prescribers Bag)

Education, counselling and prevention
Counselling is important in managing STIs/HIV and should be considered at every contact with the patient.

- As a minimum, consider counselling at the first presentation and subsequently during treatment and follow-up. Counselling is an opportunity to educate and support the patient in prevention strategies. This should be done in a confidential setting.
- The key points are:
  - communicating the confidentiality of the diagnosis
  - communicating the reasons for testing and contact tracing
  - formulating expectations from treatment
  - promoting awareness of risk behaviours.
- Counselling should also include discussion of the implications of STI testing (i.e. that testing does not prevent transmission). Emotional reactions can accompany a positive STI/HIV diagnosis with delayed reactions sometimes occurring several days after the consultation.

See also general considerations in STI HIV counselling.
Management of partners

It is the responsibility of all health care providers, including doctors, to begin tracing sex partners so that they can be assessed and treated.

This involves counselling to ensure that the patient understands the implications of infection transmission.

Managing sex partners may require referral to another practitioner.

Index case with primary syphilis – sex partners from the previous three months plus duration of index case symptoms should be assessed and treated for syphilis.

Index case with secondary syphilis – sex partners from the previous six months plus duration of the index case symptoms should be assessed and treated for syphilis. This may need to be extended back to previous 24 months depending on the patient's clinical features and the outcomes of contact tracing in the shorter time frame.

Index case with early latent syphilis – sex partners from the previous 24 months should be assessed and treated for syphilis.

Special considerations

- Period to trace will depend on the sexual history and clinical stage of the infection.
- The duration of potential infectivity is up to two years. It is important to stress that people with tertiary or late latent syphilis are not infectious except rarely vertically in the case of females. Important sequelae include neurosyphilis and cardiovascular disease. In the case of congenital syphilis, the duration of infectivity is up to eight years.
- Syphilis can be transmitted by oral sex.
- Persons who were sexually exposed to a patient with primary, secondary, or early latent syphilis should be treated presumptively if serological test results are not available immediately and the opportunity for follow-up is uncertain.

See more information about contact tracing.

For treatment of adults and mature minors (aged 14 years or older) who are a sexual contact of primary, secondary and early latent syphilis under a Structured Administration and Supply Arrangement, see Structured Administration and Supply Arrangement - CEO of Health SASA (Conditions). This is suitable for use by Registered Nurses and Aboriginal Health Practitioners employed by a health service operated or managed by a Health Service Provider of the WA Department of Health, or contracted entity, or a health service that is a member of the Aboriginal Health Council of Western Australia.

Follow up

Review all patients initially 3 months after completing treatment, then at 6 months and (if necessary) at 12 months.

The review should consist of:

- clinical assessment
- repeat serology.
Tests for follow-up and management of syphilis
For the primary health care provider, diagnosis and clinical management of syphilis depends largely on the interpretation of the RPR test in comparison with previous RPR results, together with the clinical findings.

Assessing the patient’s response to treatment also depends on tracking the RPR results, which are expressed as 'titres'. Successful treatment is where the titres fall fourfold.

Therefore, it is essential that RPR is checked at the commencement of treatment in order that changes in titre can be accurately assessed.

The diagnosis of re-infection is based on seroconversion from non-reactive to reactive RPR serology, or on the basis of at least a four-fold (eg four to 16) titre rise in RPR.

Re-treatment and lumbar puncture are indicated if:

- clinical signs persist or reappear after treatment
- the RPR titre rises at least four-fold after it has fallen
- (in early syphilis) the RPR titre does not fall at least four-fold within 12 months.

**Syphilis follow-up chart**

*Adapted from the Central Australian Rural Practitioners Association, 2003, Standard Treatment Manual, 4th edn, Alice Springs*

Special consideration
If possible, review all patients who present for STI testing three months later, as this provides an opportunity to repeat blood tests for syphilis, HIV and HBV.
Syphilis in HIV infection

Diagnosis and investigation of patients who are immunosuppressed should be discussed with a specialist with appropriate experience (see contacts for specialist advice on STIs and HIV).

- HIV-positive patients who are immunosuppressed may not form antibodies, so serological tests for disease may give false negative results. Their management, including the best form of investigation, requires specialist expertise.
- Published case reports and expert opinion suggest that HIV-infected patients with early syphilis are at increased risk of neurological complications, and have higher rates of treatment failure with currently recommended regimens. These risks are probably small but should be considered.
- Unusual serological responses have been observed among HIV-infected persons who also have syphilis. Nevertheless, both treponemal and non-treponemal serological tests for syphilis are accurate for most patients with syphilis and HIV co-infection.
- No treatment regimens have been demonstrated to be more effective in preventing development of neurosyphilis in patients with HIV infection than those recommended for patients without HIV infection.
- Careful follow-up after therapy is essential.

Syphilis during pregnancy

All women should have syphilis serology carried out in the first trimester of pregnancy or at the first antenatal visit.

All women in the Kimberley, Goldfields, Pilbara and Midwest and other at-risk women should have further syphilis serology carried out at 28 weeks, 36 weeks, at delivery and at 6-weeks post-partum.

The serological status of mothers should be documented at least once during confinement.

Cord blood testing offers no advantage over the testing of maternal blood in determining syphilis infection.

- Screening and treatment of all pregnant women prevents the following complications of syphilis (providing it is done early enough, preferably in the first half of the pregnancy):
  - miscarriage, stillbirth
  - premature labour
  - congenital syphilis in the infant.
- Seropositive pregnant women should be considered infected unless treatment history is clearly documented in a medical record.
- Women who are treated for syphilis during the second half of pregnancy are at risk of premature labour and/or fetal distress if their treatment precipitates the Jarisch-Herxheimer reaction. Advise these women to seek medical attention after treatment if they notice any change in fetal movements or if they have contractions.

Treating syphilis during pregnancy

Pregnant women with syphilis should be rapidly assessed and treated with penicillin (category A) according to the diagnosed stage of syphilis (see treatment of syphilis above).
• If the mother and sexual partner(s) are treated adequately with penicillin during pregnancy, the risk of the infant acquiring congenital syphilis is low.
• Women who are allergic to penicillin should be managed in consultation with a specialist with appropriate experience.
• Treatment of syphilis in pregnancy can be considered adequate if:
  o it is completed by at least 30 days before delivery
  o there is a documented four-fold drop in RPR titre.
• If adequate treatment has not been documented, the patient should be treated for late latent syphilis.

Follow-up after syphilis in pregnancy
Mothers who have been treated for syphilis during pregnancy should be followed up.
• In subsequent pregnancies, unless there is indication of reinfection and provided the patient has remained HIV negative, no further treatment is indicated.
• RPR titre should be monitored at 16, 24, 30, 36 weeks and at confinement in subsequent pregnancies.
• Re-treatment is indicated if:
  o clinical signs persist or reappear after treatment
  o if the RPR titre rises by at least four-fold after it has fallen
  o (in early syphilis) if the RPR titre does not fall at least four-fold within six months.

Pregnancy
Australian categorisation system for prescribing medicines in pregnancy

Congenital syphilis
Congenital syphilis is syphilis acquired by an infant from the mother during pregnancy.

It is diagnosed by demonstrating T. pallidum in clinical specimens of material taken from nasal discharges, skin lesions, or in placental, umbilical cord or autopsy material of a neonate OR by demonstration of raised protein, raised white cells and/or positive VDRL in the neonate’s CSF. There are other causes of abnormal CSF findings so it is suggestive, not proof. Positive VDRL is very specific.

Concurrent HIV infection should be excluded. Often clinical manifestations of congenital syphilis are not present at birth. In most cases, they appear within three months.

Early congenital syphilis
A child under two years of age who was infected in utero. Clinical signs are similar to secondary syphilis and may include:

• hepatosplenomegaly
• skin rash
• condylomata lata
• rhinitis (snuffy babies)
• bone involvement (osteochondritis)
• pseudoparalysis (due to epiphysitis)
• meningitis
• anaemia
• failure to thrive.
Late congenital syphilis
A child over two years of age who was infected in utero. The child presents with signs such as:

- one or more of Hutchinson's triad (interstitial keratitis, defective incisors and nerve deafness)
- gummata
- neurosyphilis
- frontal bossing and anterior bowing of the shins.

Cardiovascular lesions do not occur in congenital syphilis.

Treating congenital syphilis
Treatment for congenital syphilis should be in consult with an experienced paediatrician who has knowledge in treatment for congenital syphilis.

CSF examination is not routinely recommended for babies born to mothers with positive syphilis serology and investigation should be performed upon advice from a paediatrician.

Infant should be assessed to determine if high or low risk of acquiring congenital syphilis (see below).

**High risk +/- abnormal CSF**
- Benzyl penicillin 50 mg/kg intravenously (IV), 12-hourly for 10 days.

**Low risk**
- Benzathine penicillin 37.5 mg/kg intramuscularly, as a single dose.

**No risk**
- No treatment needed

Special conditions
- The infant should be treated if test results cannot exclude infection.
- Infants delivered to mothers with syphilis treated within 30 days of delivery should also receive treatment.
- Babies should be considered at high risk if:
  - treatment of the mother during pregnancy was not adequate (i.e. the mother’s RPR titre fails to fall four-fold after appropriate treatment for early syphilis in pregnancy)
  - maternal treatment was unknown
  - maternal treatment was with a drug other than penicillin
  - the mother's serology at delivery shows previously undiagnosed syphilis
  - examining the baby reveals signs of congenital syphilis
  - the mother has not had all the recommended antenatal and delivery blood tests.
- Babies should be considered at low risk if:
  - mother had been treated during current pregnancy with penicillin regimen
  - treatment completed more than 30 days of delivery
  - adequate response to treatment (4 fold decrease) of mother with positive syphilis serology during pregnancy.
  - no clinical suspicion of acquiring syphilis in late pregnancy.
  - clinically no signs of congenital syphilis
  - RPR titre of infant is same of less than maternal titre at delivery
- Babies considered no risk if:
Follow-up of congenital syphilis

All neonates who have or are suspected of having congenital syphilis should be followed-up.

- If the child was considered to be at low or high risk for congenital syphilis or had confirmed congenital syphilis: syphilis serology at 1, 3, 6, 12 and 24 months.
- If the child has no clinical signs or serological evidence of congenital syphilis: follow-up mother only.

See WA Guidelines for review of congenital syphilis cases.

The occurrence of a case of congenital syphilis is a sentinel event reflecting potential missed opportunities for prevention in the public health, antenatal and primary health care systems. Therefore it is important to review each case of congenital syphilis for the purpose of health system improvement and preventing future avoidable cases.

These guidelines were prepared by the WA Syphilis Outbreak Response Group’s Ante- and Post-natal Care Working Group, based on the investigation of a case of congenital syphilis in May 2019 and the feedback received from review participants

Public health issues

Contact tracing is important to prevent further transmission or reinfection. Always test for other STIs.

If a child is diagnosed with acquired syphilis, issues of sexual abuse and/or sexual assault (Department of Health website) should be considered.

Notification

This is a notifiable infection. Medical practitioners must complete the appropriate notification forms for all patients diagnosed with a notifiable STI/HIV, as soon as possible after confirmed diagnosis.

Epidemiological reports and real time notification data

Epidemiology of STIs and BBVs in Western Australia (Department of Health website)
Non-notifiable Infections

Bacterial vaginosis

Organism
This is a condition caused by a change in vaginal bacterial flora from predominantly *Lactobacilli* species to various bacteria including *Gardnerella vaginalis, Mobiluncus spp, Bacteroides spp,* and other anaerobes.

The incubation period is unknown.

Clinical presentation
This condition is not traditionally considered as an STI, although it is often associated with sexual activity. It presents as a smelly, 'fishy' discharge that is grey in colour. It is not an inflammatory condition, so the vagina is not usually red and inflamed.

However, it can be associated with other inflammatory conditions such as candidiasis. The smell is often more noticeable after sex or at menstruation.

Vulval irritation is usually mild, if present. However, many women with bacterial vaginosis have no symptoms.

This condition has been associated with:

- premature labour
- chorioamnionitis
- PID especially after:
  - termination of pregnancy
  - intra-uterine device (IUD) insertion or other instrumentation.
- increased risk of HIV transmission to male partners
- increased risk of other STI transmission/acquisition including gonorrhoea and herpes simplex type 2.

Investigations
Bacterial vaginosis can be diagnosed if at least three of the following four criteria are met:

- raised vaginal pH >4.5
- 'fishy' odour
- characteristic discharge
- presence of clue cells.

Thus, the diagnosis can be made at the examination and confirmed by a Gram stain smear from a high vaginal swab. Culture for the causative organisms is not performed routinely.

Treatment
Symptomatic cases should be treated. Treatment is not required for asymptomatic cases, as this condition can often resolve spontaneously, but is recommended before gynaecological procedures and considered in pregnant women with a history of preterm labour. If a patient has
an intrauterine device (IUD) leave IUD in place and treat as recommended. Seek specialist advice as needed.

**Standard/initial therapy**
- Metronidazole 400 mg orally, 12-hourly with food for 5 days
- Metronidazole 2 g orally, as a single dose (less effective)
- Metronidazole gel 0.75 per cent gel 5 g, nocte for 5 nights (not on PBS)
- Tinidazole 2 g orally, as a single dose with food
- Clindamycin 2 per cent vaginal cream 5 g, daily for 7 days (not on PBS)
- Clindamycin 300 mg orally, 12-hourly for 7 days (not on PBS).

Advise avoidance of alcohol with either metronidazole or tinidazole treatment and for 24 hours thereafter. Clindamycin cream is oil-based and may weaken latex condoms and diaphragms. Vaginal douching should be avoided.

Contact tracing is not required.

**Recurrent disease**
Single dose therapy is not recommended.

**Pregnancy**
- Clindamycin 300 mg orally, 12-hourly for 7 days (category A)
- Metronidazole 400 mg orally, 12-hourly for 5 days (category B2). Metronidazole can be used in the first trimester of pregnancy where the benefits outweigh the potential risks.
  - [Australian categorisation system for prescribing medicines in pregnancy](#)

Systemic treatment is better in pregnancy and as clindamycin cream may not treat the upper genital tract adequately, oral therapy is preferred.

**Related links**
- Bacterial vaginosis (HealthyWA website)

**Management of partners**
There is no evidence that treatment of male partners is necessary, unless they have symptoms. This condition is common in women who have sex with women and there is some evidence that treatment of female partners of an index case may be beneficial.

**Follow up**
Review the patient if symptoms persist.

**Public health issues**
This is not a notifiable disease.

Symptomatic partners should be investigated.
Candidiasis

Organism
Candidiasis is caused predominantly by *Candida albicans*, although other *Candida* species can be found.

The incubation period is variable, 2-5 days in infants. The period of communicability is while lesions are present and contact infectivity is unknown.

Clinical presentation
This condition is not considered to be an STI, although male partners can sometimes be secondarily infected. Signs and symptoms vary. Classically, there is thick, curd-like discharge with adherent plaques on the vaginal wall. However, the discharge can be thin and homogeneous, with extensive irritation leading to excoriation of the vulva and perianal region.

In males, there is often a red rash on the glans and under the foreskin (balanitis), which may be itchy and swelling of the foreskin in severe cases.

Investigations
A high vaginal swab with a Gram stain is very sensitive for the diagnosis, with the smear showing hyphae. It is an easy organism to culture. A swab for culture can be taken from the affected area (i.e. vulva or penis). It should be stored and transported at 4–8 °C.

Treatment
Asymptomatic disease does not need treatment.

Topical therapy
Any of the available imidazole preparations are effective, either as cream or pessaries. Various preparations (e.g. clotrimazole 10% vaginal cream, 1 applicatorful intravaginally at night) are available for either single dose therapy, or three to seven days of therapy.

Prolonged use should be avoided as contact dermatitis may result.

Where there is severe vulvitis or balanitis associated with candidiasis, one per cent hydrocortisone preparations may be given with antifungal therapy to resolve symptoms. Unopposed steroids may make the condition worse.

Avoid local irritants e.g. soaps, bath oils, and vaginal lubricants.

Vaginal creams and pessaries may weaken latex condoms and diaphragms.

Oral therapy
Oral therapy should be reserved for resistant or recurrent cases (see refractory candidiasis). These are expensive treatments and are no more effective than topical preparations for uncomplicated infections.

Pregnancy
Topical treatment must be used for 12–14 days in pregnancy because of lower response rates and more frequent relapse. Systemic treatment should be avoided. Both fluconazole and intraconazol are contraindicated in pregnancy.
Refractory candidiasis
Some strains of candida are more resistant to treatment than others. In cases of refractory candidiasis the fungus should be speciated.

Candida glabrata which is recurrent can be treated with a 3-7 days course of imidazole cream and/or fluconazole 150mg PO, for 3 doses, 3 days apart, followed by maintenance with fluconazole 100mg PO, weekly for 6 months. An alternative is intraconazole 100mg PO, daily until asymptomatic then 100mg weekly for 6 months.

Candida glabrata which has failed treatment with imidazoles can be treated with boric acid 600 mg pessaries per vagina (one per night) for two weeks. These need to be manufactured. Seek specialist advice.

Related links
• Thrush (HealthyWA website)

Management of partners
Partners do not require treatment unless they are symptomatic.

Follow up
Patients with recurrent candidiasis require investigation for possible underlying causes such as diabetes mellitus, or immunosuppression (including HIV). Other causes of vulvitis such as herpes or dermatitis should also be excluded. The presence of herpetic lesions often makes local conditions favourable for the development of candidiasis.

*Candida* can be difficult to eradicate, and treatment is not necessary unless there are symptoms. Therefore, regular swabbing is not recommended.

Speciation should be performed if the disease is recurrent or persistent, as resistant *Candida* may be present. These cases may require referral to a specialist.

Public health issues
This is not a notifiable disease.
Cervicitis

Cervicitis (inflammation of the cervix) is considered the female equivalent of non-specific urethritis (NSU), although it may be a finding on clinical examination. Cervicitis is defined as >30 WBC/HPF, plus inflammation and/or a discharge. The cervix may be friable.

Cervicitis may be associated with pelvic inflammatory disease (PID) and an assessment for PID should occur, including a bimanual exam with testing to elicit cervical excitation and adnexal tenderness.

Organism

- Common infective causes of cervicitis include *Chlamydia trachomatis* and *Neisseria gonorrhoeae*
- Other possible STIs may include *Mycoplasma genitalium* and Herpes Simplex Virus (HSV)
- Non-STI causes for cervicitis can occur, and an organism may not be found.
- Trichomoniasis can cause inflammation to the vagina and ectocervix and the appearance known as “strawberry cervix”

Clinical presentation

Symptoms

The symptoms of cervicitis include:

- Intermenstrual bleeding or post-coital bleeding,
- low abdominal pain
- vaginal discharge
- pain on sexual intercourse

Signs

The signs of cervicitis include:

- endocervical discharge
- contact bleeding from the cervix
- cervical tenderness on examination
- friable cervix.

Investigations

- **Endocervical specimens are essential.** A vaginal speculum and bimanual exam should be performed.
- Endocervical microscopy – >30 WBC/HPF in the absence of gonococci.
- Endocervical culture for gonorrhoea and other organisms (glass slide and swab in charcoal [black] or non-charcoal [clear] agar gel transport medium.
- Endocervical NAAT for chlamydia and gonorrhoea and *M. genitalium* (no transport medium).
- Separate endocervical NAAT for *M. genitalium* (no transport medium).
• Vaginal microscopy, and culture, to exclude other causes of discharge, eg candidiasis, bacterial vaginosis, anaerobes (Consider pH testing, elevated for BV and trichomoniasis).
• Vaginal PCR for *Trichomonas vaginalis.*
• Consider HSV as a cause of cervicitis especially if ulceration present.
• Added STI screen – treponemal serology, and HIV and HBV serology.
• Consider pregnancy testing in those at risk.
• Consider cervical cancer screening especially in those with abnormal bleeding. If not significantly overdue, may consider deferring pap smear if significant inflammation and patient likely to reattend.

**Treatment**
The following is for uncomplicated cervicitis, If PID is suspected clinically, treat accordingly.

**Adult**
- Doxycycline 100mg orally, twice daily for 7 days
  
  OR
  
  • Azithromycin 1 g orally, as a single dose

- Consider treatment for gonorrhoea if:
  - Patient in at-risk population or in areas where this infection is common.
  - Clinical exam reveals mucopurulent cervicitis, and
  - Treat with ceftriaxone 500mg, given by intramuscular injection, and azithromycin 1g orally, as a single dose.

**Pregnancy or breastfeeding**
- Azithromycin 1g orally as a single dose.
- See [Australian categorisation system for prescribing medicines in pregnancy](https://www.spira.org.au/)

If the organism is known, see relevant STI guidelines for treatment recommendation:

- **Chlamydia**
- **Gonorrhoea**
- **Herpes**
- **M. genitalium**
- **Trichomoniasis**

**Management of partners**
No sexual contact for 7 days after treatment and avoid sexual contact with prior partners until 7 days after they have been tested and treated.

Male sexual partners should be tested and treated for presumed NSU. Partners should be advised no sexual contact for 7 days after completion of treatment (if required) and to avoid sexual contact with partners from the last 6 months until 7 days after they have been tested and treated.
**Education, counselling and prevention**
Patients should be advised no sexual contact for 7 days after completion of treatment and to avoid sexual contact with partners from the last 6 months until 7 days after they have been tested and treated.

**Follow up**
Until post-treatment review ask patients to avoid unprotected sexual intercourse. Review at one week after cessation of treatment and:

- Assess resolution of signs and symptoms,
- Review results of tests and manage appropriately, and
- Review success of contact tracing.

**Public health issues**
This is not a notifiable disease, unless a specific cause is found.

Contact tracing and further counselling are important.

Always test for other STIs.

**Cervical Cancer Screening**
The renewal of the National Cervical Cancer Screening Program will be implemented on 1 December 2017.

For more information on cervical cancer screening see [The National Cervical Cancer Screening Program (external site)](https://www.nccsp.gov.au/).
Epididymitis / epididymo-orchitis

Clinical presentation
Epididymo-orchitis is a condition that presents with pain in the scrotum, often accompanied by swelling.

It needs to be differentiated from torsion of the testis by scrotal ultrasound scan. It may be associated with a urethral discharge, dysuria and frequency.

Causative organisms are either from the urinary tract or are sexually transmitted. For patients aged under 35 years, consider treatment for STIs. For patients over 35 years, consider examining for urine pathogens.

In men who practice insertive anal sex, enteric pathogens, e.g. *Escherichia coli* and *Proteus* species should be considered. For patients over 35 years, consider examining for urine pathogens.

STI Atlas (external site)

Investigations
A first void urine should be collected for chlamydia, gonorrhoea and *M. genitalium* NAAT, and a mid-stream urine should be sent for routine bacterial culture.

Ultrasound scan may be necessary to rule out torsion of the testis.

Treatment

- Ceftriaxone 500 mg in 2 mL 1% lignocaine, given by intramuscular injection, as a single dose

  PLUS

  - Doxycycline 100mg (orally), starting the next day, twice daily for 14 days

  OR

  - Azithromycin 1g (orally) as a single dose, stat, and repeated after 1 week

This regime can be amended once the causative organisms have been identified.

The patient may require admission for pain relief, and scrotal support is often useful. Complete resolution of the swelling may take several weeks, but a substantial reduction of swelling should occur within 4-5 days.

Management of partners
Partners should be assessed and offered STI screening and treatment.

Follow up

- Consider other STIs.
- Review at end of treatment.

Public health issues
This is not a notifiable disease unless a notifiable infection is found.
Contact tracing is important to prevent reinfection.

Always test for other STIs.

**Genital herpes**

**Organism**

Genital herpes can be caused by either *Herpes simplex* virus type 1 (HSV-1) which is the usual cause of oro-labial herpes, or by *H. simplex* virus type 2 (HSV-2). HSV infection may be acquired from either symptomatic or asymptomatic partners, and from either genital or oral sexual contact. The majority of recurrent genital infections are caused by HSV-2.

The incubation period ranges from 2-12 days but can be for years. The period of infectivity is 2-7 weeks after primary infection, and 5 days after recurrences. Intermittent shedding may be lifelong in presence or absence of clinical lesions. Contact infectivity is high if lesions are present, lower if no lesions.

**Clinical presentation**

Most HSV infections are asymptomatic. Clinical manifestations depend on the site of viral entry, and immunity from previous oral or genital HSV exposure. Manifestations of newly acquired infection may be severe in non-immune persons who have had no previous exposure. Primary infection is a systemic disease, and flu-like illness can occur. Initial infections are less severe in persons with prior exposure to HSV-1. Sexually acquired manifestations include genital ulceration, urethritis, cervicitis, proctitis and gingivostomatitis.

First noticed lesions can be multiple, widespread, bilateral, at different stages of development and resolution, and at sites of direct mucosal infection. Recurrent lesions are typically grouped and localised, unilateral, at identical stages of development and at cutaneous sites along sacral dermatomes. Autoinoculation can occur with primary infection and patients should be counselled to prevent this occurring.

**STI Atlas (external site)**

**Investigations**

- Swab for NAAT

**Special considerations**

A negative test result does not exclude HSV infection. The tests above are the preferred tests because they are cost efficient and identify the anatomical site of infection. Currently, a positive test is required to meet PBS requirements for suppressive therapy.

- Type specific herpes serology is available and may be useful in the following circumstances:
  - to aid diagnosis in lesions which are consistently virus negative
  - to assist in counselling in couples where one is known to be positive and the other is unknown.

Serology is **not** a substitute for NAAT or culture.
Treatment

First episode
- Valaciclovir 500 mg orally, 12-hourly for 5 to 10 days
- aciclovir 200 mg orally, 5 times daily for 5 to 10 days.

Recurrent herpes

Episodic
Episodic treatment is indicated for infrequent recurrences (i.e. intervals of more than six to eight weeks). Episodic therapy should be initiated early on by the patient at the first sign of prodrome or very early lesions.
- Valaciclovir 500 mg orally, 12-hourly for 5 days
- famciclovir 500 mg stat and 250 mg twice daily for 3 doses
- aciclovir 200 mg orally, 5 times daily for 5 days.

Suppressive therapy
Suppressive therapy is indicated in significant, frequent disease.
- Valaciclovir 500 mg orally, daily
- famciclovir 250 mg orally, 12-hourly
- aciclovir 200 mg orally, 8-hourly.

For immunocompetent individuals having at least 10 out-breaks per year, or immunosuppressed individuals:
- valaciclovir 1 g orally, per day
- famciclovir 500 mg orally, 12-hourly
- aciclovir 400 mg orally, 12-hourly.

There is no evidence that vitamins, zinc, lysine or other complementary remedies are any more effective than placebo in the prevention of recurrences.

Pregnancy
Aciclovir (category B3) is not recommended for routine use during pregnancy. However, it may be used in individual cases when the patient's condition requires it.

Perinatal transmission, with disseminated HSV infection in the neonate, is most likely to occur with vaginal delivery at the time of, or shortly after, primary maternal infection. The risk is much lower with recurrent HSV lesions or asymptomatic infection at the time of delivery in a woman with a history of genital herpes because passive cross-placental transfer of maternal antibodies provides good protection for the baby. A woman with a history of genital herpes, or who has had a partner with herpes, should alert her obstetrical team to this situation. The decision whether to proceed to vaginal delivery depends on the presence of lesions at term, availability and results of virological tests, and the outcome of discussion between the obstetrician and the mother.

Australian categorisation system for prescribing medicines in pregnancy

Related links
Genital herpes (HealthyWA website)
Management of partners
Partners should be provided with information about viral shedding and transmission. Viral shedding occurs maximally during the first few days of clinical lesions. However, viral shedding and possible transmission can occur at times when there are no clinical signs.

Provide advice on appropriate safe sex practices.

Follow up
As determined by the individual case

Public health issues
This is not a notifiable disease.

Always test for other STIs.

If a child is diagnosed with an STI, issues of sexual abuse and/or sexual assault (Department of Health website) should be considered.
Genital warts HPV

Organism
Genital warts are caused by the human papilloma virus (HPV). There are over 200 subtypes of the virus of which over 25 cause genital infection.

HPV infections of the genital epithelium are thought to be sexually transmitted and are classified as oncogenic (cancer forming or high-risk) (commonly caused by types 16 and 18) and non-oncogenic (low-risk) (commonly caused by types 6 and 11). Infection with the low-risk types may be associated with the formation of genital warts.

Cervical cancer is now known to be caused by oncogenic strains of HPV. It is thought that cervical cancer is preceded by the development of high-grade cervical dysplasia, and that cervical cancer can be prevented by removal of these high-grade lesions. People who develop genital warts may acquire an oncogenic strain of HPV at the same time. Low-grade dysplasia may be caused by either an oncogenic or non-oncogenic strain, or both.

The incubation is 2-3 months although it can range from 1-20 months. The period of communicability is probably at least as long as visible lesions persist. Contact infectivity is high if lesions are present. The school-based quadrivalent HPV vaccination program has been successful in preventing warts in young people.

Clinical presentation
The majority of newly acquired HPV infections appear to be subclinical and asymptomatic. Clinically visible manifestations of HPV include warts that may be condylomatous, papular, flat or keratotic in appearance. Since the near eradication of genital warts with vaccination, care must be taken not to confuse the infection with molluscum contagiosum.

Investigations
Essentially, diagnosis of warts is clinical. Tests to detect the high-risk viruses are now available. HPV DNA testing of the cervix, with liquid based cytology should be performed at the time of genital wart diagnosis. Acetic acid testing, in an attempt to demonstrate areas of external genital HPV infection, is not reliable.

Treatment
Treatment of genital warts is encouraged as they are highly infectious. In addition, if left untreated, the warts may enlarge. However, recurrence is common. Up to 50 per cent of cases have recurrence within the first 6 months following treatment. First line therapy is usually with patient self-applied podophyllotoxin or provider-applied cryotherapy. Advise patients not to shave the pubic area as this spreads the infection.

- Apply podophyllotoxin paint (0.5 per cent, 3.5 mL) (not on PBS) twice daily for three days, and then do not treat for four days. Continue the seven-day cycle for up to four weeks. Some patients may not be able to tolerate this intensity of treatment and reduced frequency is required.
- Apply podophyllotoxin cream (0.15 per cent) topically twice daily for three days, and then do not treat for four days. Continue the seven-day cycle for up to four weeks.
• Cryotherapy: apply liquid nitrogen to visible warts weekly until resolution occurs.
• Surgical ablative therapy may be indicated for extensive lesions. It is useful for single large warts and requires local anaesthesia. Care should be taken to ensure the warts are not condylomata lata of secondary syphilis or donovanosis where, in both cases, antibiotic therapy is the appropriate treatment.
• Apply imiquimod 5 per cent cream topically, 3 times a week for up to 16 weeks (not on PBS).
• Biopsy of atypical or longstanding lesions is recommended to exclude dysplasia, especially in HIV-infected individuals.
• Cervical warts should always be referred to sexual health physicians or gynaecologists for further investigation.
• Quadrivalent vaccination of adolescents is funded by the National Immunisation Program and delivered in high schools.

**Pregnancy**
- Surgical ablative therapy
- Liquid nitrogen.
- Medicines in pregnancy.

**Precaution**
Podophyllotoxin and imiquimod should not be used in pregnancy or breastfeeding.

**Related links**
- [Genital warts (HealthyWA website)](#)

**Management of partners**
Partners should be provided with information about viral shedding and transmission. Viral shedding occurs maximally during the first few days of clinical lesions. However viral shedding and possible transmission can occur at times when there are no clinical signs.

Provide advice on appropriate safe sex practices.

**Follow up**
As determined by the individual case

**Public health issues**
This is not a notifiable disease.

Always test for other STIs.

If a child is diagnosed with an STI, issues of sexual abuse and/or sexual assault ([Department of Health website](#)) should be considered.
Molluscum contagiosum

Organism
Molluscum contagiosum is caused by a poxvirus. Transmission is by direct contact, and can be sexual or non-sexual, the latter including spread by fomites.

Incubation period from clinical reports is 7-days to 6 months (usually 2-6 weeks), experimental inoculation reports 19-50 days. The period of communicability is probably as long as the lesions persist with contact infectivity high.

Clinical presentation
The lesions occur most often around the pubic area, thighs, buttocks and lower abdomen in adults. Lesions have a pearly edge with an umbilicated centre but may vary in colour from pink to yellow. They are highly infectious, and molluscum can be spread by skin contact. Lesions may be misdiagnosed as genital warts. HIV-infected individuals may develop quite large lesions that may appear as several lesions grouped together and these may not always be in genital or nearby sites (e.g. may appear on face, neck and upper trunk).

The incubation period can vary from days to months.

STI Atlas (external site)

Investigations
Diagnosis is usually made by observation. NAAT is available for difficult diagnoses. Use a fine swab to collect material from the centre of the lesion. Biopsy with H&E staining is diagnostic but rarely necessary.

Treatment
In immunocompetent patients watchful waiting should be encouraged as lesions usually resolve spontaneously although it may take 6-12 months for all lesions to clear. Treatment may be offered to reduce transmission and to speed up lesion resolution.

Trauma to the lesion is required by:

- cryotherapy using liquid nitrogen, CO2 snow or N2O cryoprobe (preferred treatment)
- de-roofing the lesions with a sharp stick or needle, and expressing the contents (with care to avoid inoculation of adjacent skin)
- diathermy and curettage.
- Other options include podophyllotoxin 0.5% twice daily for 3 days then rest for 4 days. Repeat up to 4 times.

The patient should be advised to avoid shaving, waxing, shared towels or bedding.

Pregnancy
Australian categorisation system for prescribing medicines in pregnancy

Avoid podophyllotoxin in pregnancy.

Related links
Molluscum contagiosum (HealthyWA website)
Management of partners
Partners should be offered assessment if they have noticed lesions.

Follow up
The patient should be advised to return for further treatment if any lesions remain after first treatment. New lesions may occur.

Public health issues
This is not a notifiable disease.
Advise patients not to shave the pubic area as this spreads the infection.
Always offer tests for other STIs.
Lesions are probably communicable for as long as they persist.

Mycoplasma genitalium
*M. genitalium* is an emerging STI and important cause of non-gonococcal, non-chlamydial urethritis and cervicitis. It was first identified in 1980. Many aspects of research including pathogenicity and treatment recommendations have been hampered by difficulties in detecting and culturing this bacteria. Relatively recent advances in molecular microbiology have led to progress in determining clinical significance, community-based investigation and management of this infection. However, there are still unanswered questions (especially regarding potential complications) and molecular resistance testing will likely be required to assist with significant issues related to increasing antibiotic resistance.

Organism
*M. genitalium* is a mollicute class bacteria. It is of several types of mycoplasma in the human genital tract, not all are pathogens.

Characteristics include:
- one of the smallest bacteria
- extremely slow growing
- lacks a peptidoglycan cell wall (beta-lactams and other antibiotics targeting the cell wall will be ineffective)

Clinical presentation

Urethritis
Symptoms: dysuria, urethral discharge, meatal irritation.

There is strong evidence for *M. genitalium* as a cause of acute and chronic urethritis in men. It is thought that up to a third of non-chlamydial, non-gonococcal urethritis may be due to *M. genitalium*.

Cervicitis, Endometritis and PID
Symptoms: inter-menstrual bleeding, post-coital bleeding, pelvic pain, pain with sex, vaginal discharge.
A significant association also exists for cervicitis and endometritis and increasing studies and meta-analysis support a role in pelvic inflammatory disease (PID). As with chlamydia, it is thought that there will likely be a higher proportion of asymptomatic presence in women, but testing of asymptomatic women or men is not recommended.

**Proctitis**

In MSM with symptomatic proctitis, *M. genitalium* is more common in HIV positive than negative men.

Testing for Mycoplasma genitalium should be:

- Considered as a first line test in HIV positive MSM with symptomatic proctitis.
- Recommended as a second-line test in MSM with symptomatic proctitis if baseline tests negative for chlamydia, gonorrhoea and herpes.

**Epididymitis, sexually acquired reactive arthritis (SARA), acute conjunctivitis and tubal factor infertility**

Given the association with the above conditions and other STIs, most notably chlamydia, it is plausible that there could be a causal association with *M. genitalium*. Cases of epididymitis, SARA, and conjunctivitis associated with *M. genitalium* have been described in the literature. In addition, seroprevalence studies are suggestive of a possible link with *Mycoplasma genitalium* and infertility. However, the data to date is considered inconclusive and more study is required for all of the above conditions.

**STI Atlas (external site)**

**Investigations**

Testing for *M. genitalium* is performed by NAAT technology. Standard microscopy and culture will not detect this infection.

**Testing recommendations**

- **Asymptomatic individuals**
  Do not test, *unless* contact of known infection, then test as per symptomatic individuals

- **Symptomatic individuals**
  *M. genitalium* testing is indicated in cases where a man or woman presents with symptoms consistent with urethritis, cervicitis, PID, endometriosis or proctitis.

  - **Women with cervicitis or PID**
    Endocervical swab (no transport medium)

  - **Proctitis**
    Rectal NAAT (no transport medium)

  Ensure appropriate testing for other STIs such as chlamydia and gonorrhoea is performed, as well as screening for syphilis and BBVs.

**Treatment**

Macrolide resistance has been an increasing issue in Australia with over 30% of individuals failing therapy with a 1 G stat dose of Azithromycin in a recent study. Studies from the eastern
states indicate macrolide resistance is likely to be present in at least half of infections in Australian cities. Therefore a test of cure should be performed at three weeks.

**First line therapy**

Doxycycline is used to lower the bacterial load, increasing the chance of cure with a subsequent antibiotic.

- Doxycycline 100mg (orally), twice daily for 7 days

**FOLLOWED BY**

- Azithromycin 1g (orally) as a single dose, then 500mg daily for 3 days (total 2.5g)

Due to the development of resistance and a very limited number of second and third-line therapy options, it is recommended to refer or discuss cases with a sexual health physician prior to consideration of further therapy.

**If the infection is known or suspected to be macrolide-resistant *M. genitalium***:

- Doxycycline 100mg (orally), twice daily for 7 days

**FOLLOWED BY**

- Moxifloxacin 400mg daily for 7 days

**For Pelvic inflammatory disease (PID) caused by *M. genitalium only, i.e. chlamydia and gonorrhoea NAAT negative***:

- Moxifloxacin 400mg daily for 14 days

If moxifloxacin fails or cannot be used, seek specialist advice.

**Education, counselling and prevention**

Patients should be educated regarding:

- We are still learning about this bacterium and the effects, including long-term complications it may or may not have on the body
- *M. genitalium* can be difficult to treat, therefore follow-up testing is important to ensure it has been cured
- There are only a limited number of treatment options due to treatment resistance. Reinfection, by having sex with unsuccessfully treated or untreated partners may increase the likelihood of development of treatment resistance.

Patients should be advised no sexual contact for 7 days after completion of treatment, and no unprotected sex until after successfully proven treatment, by test of cure at 3 weeks. Patients should also be advised to avoid sexual contact with partners from the last 6 months until 7 days after they have been tested and treated.

**Management of partners**

Partners should be tested and treated with an appropriately sensitive antibiotic choice, if required. Partners should be advised no sexual contact for 7 days after completion of treatment, and no unprotected sex until after successfully proven treatment, by test of cure at 3 weeks.
They should also be advised to avoid sexual contact with partners from the last 6 months until 7 days after they have been tested and treated.

- If the patient has proven treatment resistance, then the partners should likewise be treated with an appropriate next-line treatment option. There is little benefit in treating partners exposed to a macrolide resistant infection with Azithromycin
- It is recommended to ensure that all sexual contacts over the last 6 months are tested specifically for *M. genitalium*
- Ensure patient provides written name of infection to give to their partners to then pass on to health care provider in order to facilitate appropriate testing. Patients and their partners may not realize that *M. genitalium* will not be found on routine STI screening and has to be specifically requested.

**Follow up**

- Test of cure should be performed 3 weeks after therapy is complete.
- Reasonable steps should be made to review patients three months after exposure as this provides an opportunity to test for reinfection and repeat blood tests for syphilis, HIV and HBV.
- Encourage patients not to have unprotected sexual intercourse until they and all their partners have negative tests.
- Ensure testing for other STIs such as chlamydia and gonorrhea was performed, as well as appropriate screening for syphilis and BBVs.
- Also follow-up treatment compliance, partner notification, and abstinence / condom use.
- Resistant *Mycoplasma genitalium* should be referred to a sexual health physician for review.

**Infection during pregnancy**

There is a lack of sufficient data to draw conclusions of the effect of *M. genitalium* on pregnancy. Prevalence rates have been lower in studies where pregnant populations have been examined. Early studies have suggested there may be an association with preterm birth and early pregnancy loss, but more evidence is required. Similarly, more evidence is required to determine a possible link to infertility.

Treatment with a 1g dose of Azithromycin has been deemed acceptable in pregnancy for the treatment of Chlamydia and could be used for this indication. For further information see [Australian categorisation system for prescribing medicines in pregnancy](#).

**Public health issues**

There is no clear data to suggest the best period to contact trace and 6 months had been used as the default standard.

At this time, *M. genitalium* is not a notifiable infection.
Non-specific urethritis persistent or recurrent NSU

Non-specific urethritis (NSU) has a very broad meaning. It used to apply to any urethritis, which is not gonococcal in origin (also referred to as non-gonococcal urethritis [NGU]). However, since chlamydia and mycoplasma can now be diagnosed specifically, NSU, in these guidelines, refers to chronic or persistent urethritis where gonorrhoea, chlamydia, mycoplasma and other infections have been excluded, and where there are > 5 WBC/HPF on microscopy.

It is assumed that the patient presenting with a discharge has already had treatment for gonorrhoea and/or chlamydia as per the management of discharge. If the patient is no longer symptomatic following treatment no further treatment is required at follow-up.

For the management of men with a discharge at first presentation, see Urethral discharge dysuria.

It is important that the partner is also tested and treated.

It is important to exclude the following possibilities before diagnosing NSU:

- gonorrhoea and/or chlamydia infection or re-infection from a new or untreated partner
- non-compliance with treatment
- chronic checking for discharge by an anxious patient can result in an often clear discharge due to mechanical irritation after inflammation of the urethra
- antibiotic therapy prior to initial testing which may have resulted in a false negative test.

Organism

If *Chlamydia trachomatis* and *Neisseria gonorrhoeae* have been satisfactorily excluded consider:

- *Mycoplasma genitalium* (thought to be responsible for around 30% of NSU in Aus.)
- *Trichomonas vaginalis*
- HSV
- Adenovirus (often associated with URTI in partner and oral sex)
- Meatal candidiasis

If chlamydia and gonorrhoea have not been completely excluded re-test for both, and consider the need for testing at other sites, e.g. MSM and rectal and pharyngeal testing.

See below for discussion of ureaplasmas as possible pathogen in NSU.

Clinical presentation

Symptoms:

- a clear or muco-purulent scanty to copious discharge from the penis, which can range from persistent to intermittent
- pain on passing urine
- discomfort or irritation at the meatus.

History

- non-compliance with treatment
- any sexual contact since treatment:
  - new infection with new sexual partner
  - reinfection – partners not investigated and/or treated
squeezing – ongoing mechanical irritation of the urethra any symptoms at other extra-genital sites.

**STI Atlas (external site)**

**Investigations**

- Urethral M, C, & S to confirm the diagnosis i.e. > 5 WBC/HPF on microscopy
- Consider whether re-testing for *Chlamydia trachomatis* and *Neisseria gonorrhoeae* is appropriate (NAAT FVU +/- urethral swab [no transport medium])

The following infective causes of urethritis should be excluded before making a diagnosis of NSU:

- *Mycoplasma genitalium* FVU +/- urethral NAAT (no transport medium)
- *Trichomonas vaginalis* FVU +/- urethral NAAT (no transport medium)
- Herpes FVU +/- urethral NAAT (no transport medium)
- Adenovirus urethral NAAT (no transport medium) where available.

**Treatment**

Treatment depends upon what treatment has been given previously.

- Doxycycline 100 mg orally, 12-hourly for 2 weeks
  - or
- roxithromycin 300 mg orally, daily for 2 weeks (second-line)
  - plus
- metronidazole 2 g orally, as a single dose
  - or
- tinidazole 2 g orally, as a single dose.

Provide [herpes treatment](#) if appropriate.

Patients may require longer therapy.

Advise avoidance of alcohol with either metronidazole or tinidazole treatment.

**Related links**

[Non-specific urethritis (HealthyWA website)](#)

**Management of partners**

No sexual contact for 7 days after treatment and avoid sexual contact with prior partners until 7 days after they have been tested and treated.

Female sexual partners should be tested and treated for presumed cervicitis – the female equivalent of NSU. The term non-specific genital infection, which applies to both these conditions, is rarely used.

Recent studies have shown up to 70% of female partners of NSU have either:

- symptoms of infection
- signs of infection OR
Follow up
- Patients need to be reviewed to ensure symptoms have resolved, preferably one week after treatment has concluded.
- Review after treatment for management of any causative organisms that have been identified.
- If possible, also review partners' management if the index case remains symptomatic with no cause evident.
- Consider referral to or review by a sexual health physician in persistent cases.

Until post-treatment review, ask patients to avoid:
- squeezing of the penis and self-examination.

Public health issues
This is not a notifiable disease.
Contact tracing and further counselling are important.
Always test for other STIs.

Testing for Ureaplasmas in NSU
NAAT tests exist for both *U. urealyticum* and *U. parvum*.

Testing for Ureaplasma species is a contentious issue. There is an opinion that more research is required before generalized STI testing occurs both in terms of pathogenicity and treatment.

Ureaplasmas can be found in 30% of men as a commensal. Rarely, it may result in a urethritis and be a cause of NSU. Therefore, detection in NSU does not confirm it as the causative organism (often a causative organism is not found in NSU).

Effective antibiotic treatment has yet to be established. Doxycycline [100mg BD for 14 days] is used with some effect in treating the symptoms, but often does not eradicate the organism.

This highlights the dilemma, if NSU is already being treated with doxycycline, what benefit is conferred by testing for ureaplasmas as their presence does not necessarily indicate causality for the NSU? More research is required before the use of these tests can be widely recommended.

The Royal College of Physicians have made the following recommendations:

"Ureaplasma species are part of the normal genital microbiota and there are typically high rates of colonisation of the organism in sexually active adults. Testing or screening for genital infection with ureaplasma species is not recommended outside specialist or research settings as they have not been established as a cause of lower genital tract disease."

Pelvic inflammatory disease (PID)

Acute PID
- An acute clinical syndrome comprising a spectrum of inflammatory disorders of the upper female genital tract, including any combination of endometriosis, salpingitis, tubo-ovarian abscess and pelvic peritonitis.
The syndrome is due to ascending spread of micro-organisms from the vagina and endocervix to the endometrium, fallopian tubes, ovaries, and peritoneum of the pelvis. The majority of severe acute symptomatic PID (STI in origin) is caused by gonorrhoea, though PID caused by chlamydia may be also present with acute pelvic symptoms, it is more often associated with low-grade symptoms. A role for Mycoplasma genitalium in pelvic inflammatory disease is emerging.

**Similar terms:** Acute salpingitis, adnexitis, pelvic peritonitis.

### Organism
- Polymicrobial
- Up to 70% of cases have an unidentified cause.
- STIs such as *Neisseria gonorrhoeae, Chlamydia trachomatis* and *M. genitalium* are often implicated, especially in women <25 years.
- Vaginal facultative bacteria and anaerobic flora present in the vaginal tract have also been implicated.
- Ascending spread of normal commensals, which become pathogenic, may follow surgical or other trauma, pregnancy, or intra-uterine device (IUD) insertion, although this is only a risk in the first 3 weeks post insertion.

### Clinical presentation
New onset of pelvic pain among women <25 years is highly predictive of PID, excluding surgical emergencies. Risks include recent partner change, partner with STI or STI symptoms, recent intrauterine instrumentation or pregnancy.

**The following symptoms may be present:**
- Lower abdominal pain - typically bilateral, may worsen with movement or localise to one side or refer to upper right quadrant. Pain may be acute or chronic and may be misdiagnosed as appendicitis.
- Pain with intercourse
- Pain with periods
- Intermenstrual or post-coital bleeding
- Lower genital tract infection – discharge
- Dysuria (pain on passing urine)
- Heavy periods
- Feeling unwell
- Fever, nausea and vomiting indicate presence of severe infection. Absence of these symptoms does not exclude a diagnosis of PID.

**The following signs may be present:**
- Abdominal tenderness – guarding or rigidity, rebound tenderness.
- Tenderness in one or other adnexa – may be unilateral, or a mass may be felt.
- Cervical excitation – pain on rocking the cervix. Speculum examination is recommended to allow for visualisation of the cervix; the presence of mucopurulent discharge in the cervix supports the diagnosis of PID.
- Raised temperature (>38 degrees).
- Perihepatitis and peritonitis are possible and present with abdominal pain, tenderness, guarding/rigidity and right upper quadrant pain.

[STI Atlas (external site)](https://www.sti-atlas.org)
Investigations

- High vaginal swab for MC&S and endocervical swab for MC&S (charcoal or non-charcoal agar gel).
- Endocervical swab for gonorrhoea and chlamydia and *M. genitalium* NAAT (no transport medium).
- Separate endocervical swab for *M. genitalium* NAAT (no transport medium).
- First void urine for gonorrhoea, chlamydia and *M. genitalium* NAAT.
- Full blood picture – ESR as well as C reactive protein.
- Pregnancy test and, if positive, urgent pelvic ultrasound to exclude ectopic pregnancy.
- Pelvic ultrasound may be indicated; transvaginal ultrasound is preferred.
- Urinalysis for differential diagnosis of UTI.
- Consider referral for laparoscopy.

Treatment

- Because of the difficulty of diagnosis and the potential for damage to the reproductive tract, health care providers should have a low threshold for diagnosis and treatment of PID.
- Empirical treatment for PID should be given to sexually active women with pelvic and lower abdominal pain that do not have another cause for their illness and that have one or more of the following minimum criteria:
  - Cervical motion, uterine or adnexal tenderness
  - Temperature > 38°C
  - Abnormal cervical discharge or friability
  - Positive gonorrhoea, chlamydia or *M. genitalium* test.
- Begin treatment early. Delayed treatment is associated with a significantly increased risk of tubal infertility or ectopic pregnancy.
- Advise rest and use non-steroidal anti-inflammatory medications for pain relief.
- Prevent any *Candida* infection with pessaries during the treatment period.
- Consider admission if:
  - Diagnosis uncertain.
  - Surgical emergency such as appendicitis or ectopic pregnancy cannot be excluded.
  - Suspicion or diagnosis of pelvic abscess/tuboovarian abscess.
  - Severe illness, nausea or vomiting or high temperature or no response to outpatient medicine
  - The patient cannot take oral therapy.
  - Pregnancy.
- Advise patient to avoid sexual intercourse until they are non-infectious and symptomatically better.
- Remove intrauterine device (IUD) if no response to treatment in 48-72 hours.

Immediate treatment

- Ceftriaxone 500 mg in 2 mL of 1% lignocaine intramuscularly, as a single dose

**PLUS**

- Doxycycline 100mg orally, twice daily for 14 days (For patients who may be non-adherent to doxycycline, consider replacing with azithromycin 1g PO, as a further single dose 1 week later)
PLUS

- Metronidazole 400mg orally, twice daily for 14 days

For mild to moderate infection (outpatient treatment)
- Ceftriaxone 500mg in 2ml of 1% lignocaine intramuscularly, as a single dose

PLUS

- Metronidazole 400mg orally, twice daily for 14 days

PLUS

- Doxycycline 100 mg orally, twice daily for 14 weeks (For patients who may be non-adherent to doxycycline, consider replacing with azithromycin 1g PO, as a further single dose 1 week later)

Advise no alcohol consumption during treatment with either metronidazole or tinidazole, and for 24 hours thereafter.

For severe infection (inpatient treatment)
- Ceftriaxone 2g, administered intravenously, daily

OR

- Cefotaxime 2g, administered intravenously, three times daily

PLUS

- Azithromycin 500mg, administered intravenously, daily

PLUS

- Metronizadole 500mg, administered intravenously, twice daily

Intravenous treatment should continue until there is substantial clinical improvement. Patients with tubovarian abscess need at least 24 hours admission. Following that, the above oral regimen (for mild to moderate infections) can be used to complete two weeks of treatment.

Special Treatment Situations

If M. Genitalium confirmed, 2 weeks of Moxifloxacin 400mg daily for 14 days.

If moxifloxacin is required, seek specialist advice as this requires a private prescription, cannot be used in pregnancy, is expensive and is associated with diarrhoea, occasional tendinopathy and rare neurological and cardiac events.

If pregnant or breastfeeding, substitute for doxycycline
- Ceftriaxone 500mg in 2ml of 1% lignocaine intramuscularly, or 500mg, administered intravenously as a single dose
PLUS

- Metronidazole 400mg orally, twice daily for 14 days

PLUS

- Azithromycin 1g orally, as a single dose

PLUS

- Azithromycin 1g orally, as a single dose, 1 week later

See Australian categorisation system for prescribing medicine in pregnancy.

Seek specialist advice for complicated infection or where allergy to the principal treatment choice is present.

Related links
Pelvic inflammatory disease patient fact sheet (HealthyWA website)

Education, counselling and prevention

Women who have had an episode of PID are at increased risk of further episodes: 25% will experience a recurrence. PID is known to be associated with the sequelae of infertility and ectopic pregnancy, especially with repeated infections. Counselling should be undertaken to encourage risk reduction and early presentation if symptoms of STIs and ectopic pregnancy occur.

See also general considerations in STI/HIV counselling.

Women with PID should be advised no sexual contact for 7 days after completion of treatment and to avoid sexual contact with any partners from the last 6 months until 7 days after they have been tested and treated.

Management of partners

It is essential to investigate and treat the partners, who are mostly asymptomatic in cases of PID.

It is important to treat partners, as reinfection increases the risk of tubal infertility and ectopic pregnancy. Current sexual partners should be treated to cover chlamydia (and gonorrhoea if likely) immediately, irrespective of test results.

Where the organism is known and isolated, refer to the relevant STI guideline for contact tracing and treatment recommendations:

- Chlamydia
- Gonorrhoea
- M. genitalium

Partners should be advised no sexual contact for 7 days after completion of treatment and to avoid sexual contact with any other partners from the last 6 months until 7 days after they have been tested and treated.
**Follow up**
Follow up in three days, then weekly until the condition has improved or resolved. It is important to monitor patients closely to ensure compliance with medication and resolution of signs and symptoms. Perform a test of cure at four weeks if a gonococcal or chlamydial infection was found.

Intrauterine devices cause little if any increased risk of infection. The risk of PID is primarily limited to the first 3 weeks after insertion and is uncommon thereafter. If an IUD user receives a diagnosis of PID the IUD does not need removal unless there is no clinical improvement after 48-72 hours of treatment.

Barrier contraception is protective.

**Public health issues**
This is not a notifiable disease, unless a notifiable organism is detected.
Prostatitis

Clinical presentation
Prostatitis may present either as an acute or chronic condition. Although in pre-antibiotic days acute prostatitis was a well recognised complication of gonorrhoea, today it is extremely rarely caused by STI organisms, but appropriate STI investigations should still be undertaken. Treatment is similar to epididymo-orchitis if gonorrhoea or chlamydia is identified as the cause. If no STI is identified, treatment is usually directed at the typical urinary tract pathogens, which are mostly associated with prostatitis, and is not within the scope of these guidelines.

STI Atlas (external site)

Treatment
Chronic prostatitis is a difficult condition to treat. It usually presents as pain and discomfort in the pelvis, perineum, penis or inguinal region. Pathogens are uncommonly identified but again, urinary tract organisms are most commonly involved and need to be excluded.

The management of this condition is beyond the scope of these guidelines, and management should be discussed with a sexual health physician, infectious diseases physician or urologist.

Public lice

Organism
The crab louse *Phthirus pubis* is transmitted by close body contact. The incubation period is usually between five days and six weeks, although some people have a prolonged period of infestation before symptoms appear.

Adult lice infest pubic hairs, body hair in men, and rarely, eyebrows, eyelashes, beards and moustaches. They are not found on head hair. The lice lay eggs (nits) which adhere firmly to the hair shaft. The louse is most commonly found below the waist.

The life cycle of the crab louse is 15 days and the period of infectivity is as long as the lice or eggs remain alive. Contact infectivity is high.

Clinical presentation

Symptoms
There may be no early symptoms, or there may be an itch due to hypersensitivity, producing a macular rash in the hairy areas.

Sometimes fine gritty debris from the lice is seen on the underwear.

Signs
There are signs of pale brown lice and pale small, oval nits adherent to the hairs.

Blue macules (*maculae caeruleae*) may be visible at the feeding sites.

STI Atlas (external site)

Investigations
This is based on finding lice and/or nits in the hair.
Examination of the nits or lice confirms the diagnosis. Often it is impossible to remove the louse without crushing it, so it is better to cut the hair for examination under the microscope.

A full screen for other STIs should be conducted, as often, other concurrent diseases are present.

**Treatment**

- **Lotions:** The patient should be advised to wash all over with soap and water in the evening and dry well. Apply the lotion and leave on overnight, and wash off in the morning.
- **Shampoos:** These are usually applied to the hairy areas and left on for 10 minutes before being washed off in the shower.
- The application should be reapplied again in a week to kill any newly hatched lice.
- Patients should be advised to avoid close body contact until they and their partners have completed treatment and follow-up.
- Patients should be advised that dead nits may remain adherent to the hairs and do not imply treatment failure. These may be removed with a fine-toothed comb.
- Usually advice is also given to wash all currently used underwear and night clothes.

**Standard**

Treatment should be repeated after one week.

- Permethrin 5 per cent cream – apply and leave on overnight, and wash off in the morning.
- Pyrethrin or Permethrin shampoo – apply and wash out after 10 minutes.
- Maldison 0.5 per cent lotion – apply and leave on overnight, and wash off in the morning.
- Petroleum jelly can be used for eyelash infestation twice daily for seven days. The lice can subsequently be removed from eyelashes and eyebrows with tweezers or forceps.

**Allergic**

- Avoid treatments to which there is a known sensitivity.

**Pregnancy**

- Permethrin (category B2) is safe during pregnancy or breastfeeding.
- Avoid maldason in pregnancy.
- [Australian categorisation system for prescribing medicines in pregnancy](https://www.apharm.edu.au/)

**Related links**

- Pubic lice (HealthyWA website)

**Management of partners**

All sexual and household contacts should be treated

Partners from the previous three months should be seen.

**Follow up**

Patients should be re-examined after two weeks.

Treatment failures should be given an alternative from the above list.
Public health issues
This is not a notifiable disease.

Always test for other STIs.

Scabies

Organism
Scabies infestation is caused by the mite *Sarcoptes scabiei*. Transmission is by skin-to-skin contact. Mites burrow into the skin where they lay eggs. The offspring crawl out onto the skin, and make new burrows.

The incubation period is 2-6 weeks before the onset of itching in people without previous exposure, 1-4 days after re-exposure. The period of communicability is until the mites and eggs are destroyed by treatment. Contact infectivity is high.

Clinical presentation
Any part of the body can be affected.

Symptoms
- The main symptom, which may take 4 to 6 weeks to develop, is a generalised itch, usually worse at night or when the body is warm (e.g. after a shower).
- The itching is due to a hypersensitivity reaction to the absorption of mite excrement into skin.

Signs
- An itching rash on the body and limbs. Classic sites of infection are flexures, which are warmer – interdigital folds, the wrists, elbows, knees, buttocks, genital region, and under the breasts.
- Characteristic silvery lines may be seen where the mite has burrowed, with the mite sometimes visible at the end of the burrow. However, scratching often obliterates the burrow.
- In the genital region, particularly on the glans penis, the rash becomes papular or nodular.
- In patients with HIV infection or others with suppressed immune function, or in the elderly, the rash is severe and crusted. These lesions team with mites, and are a significant risk to others.

STI Atlas (external site)

Investigations
- Scrapings, taken from the burrows with a fine needle to reveal the mite, may be examined under light microscopy.
- Usually the rash is characteristic but can be confused with dermatitis or eczema.

Treatment
- Patients should be advised to avoid contact with their partners or other skin-to-skin contact until they have completed treatment, and their partner and any affected household contacts have completed treatment.
• Patients should be given topical antipruritic creams or tablets. They should be advised that, despite successful treatment, they will continue to itch for a further four weeks due to the debris from the scabies mite in the skin. This advice prevents patients over-treating themselves and, as a result, causing eczema.

• At night, adults should:
  o wash the entire body with soap and water, and then dry
  o apply one of the treatments below, from the neck down.

• The cream should be rubbed in well and left on for 24 hours, then washed off. The patient may require a second dose of treatment a week later.

• Usually, advice is also given to wash all currently used underwear, nightclothes, bed linen and bath towels in hot water, and dry them well.

**Standard**

- Permethrin 5 per cent cream. Leave on for 24 hours. Repeat in 7 days if necessary. 
  or
- Benzyl benzoate 25 per cent lotion. Leave on for 24 hours. Repeat in 7 days if necessary.

Most patients will continue to itch for several weeks, so symptomatic treatment for the itch can be given in the meantime:

- crotamiton 1 per cent lotion or cream (Eurax)
  or
- 1 per cent hydrocortisone in calamine cream twice daily.

Crusted or resistant scabies can be treated with ivermectin. For a person >15kg, oral 200 microgram/kg/dose for 2 doses 7 days apart or 3 doses on days 1, 2, and 8. More severe cases will require extra doses on days 9 and 15 (and on days 22 and 29 if very severe).

Treatment of scabies in HIV-positive patients should be referred to a specialist.

**Pregnancy**

Permethrin (category B2) is safe during pregnancy.

[Australian categorisation system for prescribing medicines in pregnancy](https://www.health.gov.au/)

**Related links**

[Scabies (HealthyWA website)](https://www.healthwa.gov.au/)

**Management of partners**

An arbitrary period of two months is quoted for contacts to be notified and treated if symptomatic. All sexual, household and institutional contacts should be treated.

**Follow up**

No follow-up is usually required. If new burrows appear after treatment, then the treatment should be repeated.

Always test for other STIs when sexual transmission is suspected.

**Public health issues**

This is not a notifiable disease.
**Trichomoniasis**

**Organism**
Trichomoniasis is caused by a motile, flagellated protozoan *Trichomonas vaginalis*, which infects the vagina, urethra and paraurethral glands and may less commonly infect the ectocervix, bladder, Bartholin's glands and prostate.

The incubation period is 4-28 days, average of 7 days. However many people are symptom free carriers for years. The period of communicability is for the duration of persistent infection. Infectivity is low to moderate. Carriage in men is often self-limited although they may present with urethral discharge and/or dysuria.

**Clinical presentation**
Trichomoniasis causes an irritating discharge with associated vulvitis and vaginitis. The discharge is usually profuse, malodorous and often frothy. Vaginal pH is >4.5. Microscopic ulceration may be present on the cervix (‘strawberry cervix’). Females may be asymptomatic, and males are usually (75%) asymptomatic. Chronic infection may be present with itch and dyspareunia (pain on sexual intercourse).

Unlike other STIs, there is also a higher prevalence in older women in areas where trichomonas infection is prevalent and women can remain infected for some years if not treated.

Trichomoniasis is is associated with premature rupture of membranes, low birth weight delivery and premature labour, as well as increased risk of HIV transmission. It can also be associated with other inflammatory conditions such as candidiasis and bacterial vaginosis.

Infected neonates can present with fever, respiratory problems, UTI, nasal discharge, and vaginal discharge.

**STI Atlas (external site)**

**Investigations**
Detection of trichomoniasis can be difficult.

NAAT has superior sensitivity and specificity and can be used on vaginal swabs (SOLVS or posterior fornix) or FVU samples if available.

Other tools include:
- Vaginal pH >4.5
- Immediate microscopic examination of wet prep vaginal sample for motile trichomonads if facilities are available. This method detects 50-60% of women with vaginal trichomoniasis and a smaller proportion of infection in men
- Gram stain only detects up about 25% of infected females
- Culture will detect a much larger proportion of women with vaginal trichomoniasis but is slow and generally not available.
- Immediate microscopic examination of a wet prep – if facilities are available. Sensitivity is about 50 to 70 per cent in experienced hands.

**Treatment**

**Standard**
- Metronidazole 2 g orally, as a single dose with food
• tinidazole 2 g orally, as a single dose with food

or

• metronidazole 400 mg orally, 12-hourly for 5-7 days.

Advise avoidance of alcohol with metronidazole for 24 hours afterwards and with tinidazole (72 hours afterwards). If there is relapse, the longer course of metronidazole may be required.

Women with co-existant BV should be offered the longer duration of treatment.

Patients should be advised no sexual contact for 7 days after completion of treatment and to avoid sexual contact with partners from the last 6 months until 7 days after they have been tested and treated.

Pregnancy
It is unclear whether treatment in pregnancy affects the risk of premature rupture of membranes and pre-term delivery, however symptomatic pregnant women should be tested and treated. Women at risk of, or with HIV, should be tested and treated in the first trimester. Routine testing is not recommended for other asymptomatic pregnant women. Metronidazole can be safely used in all stages of pregnancy.

• Metronidazole 2 g orally, as a single dose (category B2)
• Metronidazole 400 mg orally, 12-hourly for 5 days (category B2). Metronidazole can be used in the first trimester of pregnancy where the benefits outweigh the potential risks.
• Clotrimazole 1 per cent vaginal cream can be used for 6 days (category A), but cure is less likely.

Vaginal treatment with metronidazole gel is not recommended as cure rates are less than 50%.

Breastfeeding
Breastfeeding women can be treated with a single 2mg dose of metronidazole. It is secreted in breast milk although doses infants receive are less than those used to treat infection in infants. A cautious approach is for mothers to express and discard their milk for 12-24 hours to allow excretion of the drug.

Australian categorisation system for prescribing medicines in pregnancy

Related links
Trichomoniasis (HealthyWA website)

Management of partners
Trichomoniasis is always an STI and sexual partner(s) should also be treated. Making the diagnosis of trichomoniasis in an asymptomatic male is difficult if no NAAT is available. Therefore, male partners should be checked for other STIs and given empirical treatment with single dose metronidazole or tinidazole when they attend. Consider when infection may have occurred.

Partners should be advised no sexual contact for 7 days after completion of treatment and to avoid sexual contact with any partners from the last 6 months until 7 days after they have been tested and treated.
Follow up
Review the patient at one week to assess resolution of symptoms and to review contact tracing. NAAT test of cure can be done 2 weeks after treatment if the patient prefers.

Public health issues
This is not a notifiable disease.
Always test for other STIs.

If a child is diagnosed with an STI, issues of sexual abuse and/or sexual assault (Department of Health website) should be considered.
# List of abbreviations

<table>
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<tr>
<th>Acronym</th>
<th>Definition</th>
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<tr>
<td>ACCHS</td>
<td>Aboriginal Community Controlled Health Service</td>
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<td>AGPS</td>
<td>Australian Government Publishing Service</td>
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<tr>
<td>AHW</td>
<td>Aboriginal Health Worker</td>
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<tr>
<td>AIDS</td>
<td>acquired immune deficiency syndrome</td>
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<tr>
<td>ALT</td>
<td>alanine transaminase</td>
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<tr>
<td>ANCA</td>
<td>Australian National Council on AIDS</td>
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<tr>
<td>ATSI</td>
<td>Aboriginal and Torres Strait Islander</td>
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<tr>
<td>BBV</td>
<td>blood-borne virus</td>
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<tr>
<td>CARPA</td>
<td>Central Australian Rural Practitioners’ Association</td>
</tr>
<tr>
<td>CD4+ T LYMPHOCYTE</td>
<td>special type of lymphocyte</td>
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<tr>
<td>CDCD</td>
<td>Communicable Disease Control Directorate</td>
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<tr>
<td>CIN</td>
<td>cervical intra-epithelial neoplasia</td>
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<tr>
<td>CMW</td>
<td>cytomegalovirus</td>
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<tr>
<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>CO₂</td>
<td>carbon dioxide</td>
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<tr>
<td>CRF</td>
<td>circulating recombinant form</td>
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<tr>
<td>CSF</td>
<td>cerebrospinal fluid</td>
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<tr>
<td>DNA</td>
<td>deoxyribonucleic acid</td>
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<tr>
<td>DOT</td>
<td>directly observed therapy</td>
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<tr>
<td>ECS</td>
<td>endocervical swab</td>
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<tr>
<td>EIA</td>
<td>enzyme immunoassay</td>
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<tr>
<td>ESR</td>
<td>erythrocyte sedimentation rate</td>
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<tr>
<td>FVU</td>
<td>first void urine</td>
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<tr>
<td>FTA-ABS</td>
<td>fluorescent treponemal antibody absorption test</td>
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<tr>
<td>GNID</td>
<td>Gram-negative intracellular diplococci</td>
</tr>
<tr>
<td>GUD</td>
<td>genital ulcer disease</td>
</tr>
<tr>
<td>HAND</td>
<td>HIV-associated neurocognitive disorder</td>
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<tr>
<td>HAV</td>
<td>hepatitis A virus</td>
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<tr>
<td>HBIG</td>
<td>hepatitis B immunoglobulin</td>
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<tr>
<td>HBV</td>
<td>hepatitis B virus</td>
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<tr>
<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>HCV</td>
<td>hepatitis C virus</td>
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<tr>
<td>HIV</td>
<td>human immunodeficiency virus</td>
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<tr>
<td>HPF</td>
<td>high-powered field</td>
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<tr>
<td>HPV</td>
<td>human papillomavirus</td>
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<tr>
<td>HRT</td>
<td>hormone replacement therapy</td>
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<tr>
<td>HSV</td>
<td>herpes simplex virus</td>
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<tr>
<td>IDU</td>
<td>injecting drug user</td>
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<tr>
<td>IGG</td>
<td>immunoglobulin G</td>
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<tr>
<td>IGM</td>
<td>immunoglobulin M</td>
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<tr>
<td>IMI</td>
<td>intramuscular injection</td>
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<tr>
<td>IU</td>
<td>international unit</td>
</tr>
<tr>
<td>IUD</td>
<td>intra-uterine device</td>
</tr>
<tr>
<td>LCR</td>
<td>ligase chain reaction</td>
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<tr>
<td>LGV</td>
<td>lymphogranuloma venereum</td>
</tr>
<tr>
<td>LGV-CFT</td>
<td>lymphogranuloma venereum complement fixation test</td>
</tr>
<tr>
<td>MACBBVS</td>
<td>Ministerial Advisory Committee on Blood Borne Viruses and Sexually</td>
</tr>
<tr>
<td>Acronym</td>
<td>Definition</td>
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<td>-------------------------------------------------</td>
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<tr>
<td>MC&amp;S</td>
<td>microscopy, culture and sensitivity testing</td>
</tr>
<tr>
<td>MSM</td>
<td>men who have sex with men</td>
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<tr>
<td>N,O</td>
<td>nitrous oxide</td>
</tr>
<tr>
<td>NAAT</td>
<td>nucleic acid amplification test</td>
</tr>
<tr>
<td>NGU</td>
<td>non-gonococcal urethritis</td>
</tr>
<tr>
<td>NHIG</td>
<td>normal human immunoglobulin</td>
</tr>
<tr>
<td>NHMRC</td>
<td>National Health and Medical Research Council</td>
</tr>
<tr>
<td>NPEP</td>
<td>non-occupational post-exposure prophylaxis</td>
</tr>
<tr>
<td>NSU</td>
<td>non-specific urethritis</td>
</tr>
<tr>
<td>PAP SMEAR</td>
<td>Papanicolaou smear</td>
</tr>
<tr>
<td>PBS</td>
<td>Pharmaceutical Benefits Scheme</td>
</tr>
<tr>
<td>PCR</td>
<td>polymerase chain reaction</td>
</tr>
<tr>
<td>PEP</td>
<td>post-exposure prophylaxis</td>
</tr>
<tr>
<td>PHU</td>
<td>population/public health unit</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
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</tr>
<tr>
<td>PID</td>
<td>pelvic inflammatory disease</td>
</tr>
<tr>
<td>RNA</td>
<td>ribonucleic acid</td>
</tr>
<tr>
<td>RPR</td>
<td>rapid plasma reagin test</td>
</tr>
<tr>
<td>SARC</td>
<td>Sexual Assault Resource Centre</td>
</tr>
<tr>
<td>SOLVS</td>
<td>self-obtained low vaginal swab</td>
</tr>
<tr>
<td>SOPV</td>
<td>sex-on-premises venue</td>
</tr>
<tr>
<td>STD</td>
<td>sexually transmitted disease</td>
</tr>
<tr>
<td>STI</td>
<td>sexually transmitted infection</td>
</tr>
<tr>
<td>TPHA</td>
<td><em>Treponema pallidum</em> haemagglutination test</td>
</tr>
<tr>
<td>TPPA</td>
<td><em>Treponema pallidum</em> particle agglutination test</td>
</tr>
<tr>
<td>UTI</td>
<td>urinary tract infection</td>
</tr>
<tr>
<td>VDRL</td>
<td>Venereal Disease Research Laboratory test</td>
</tr>
<tr>
<td>WA</td>
<td>Western Australia</td>
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<tr>
<td>WA HEALTH</td>
<td>Western Australian Department of Health</td>
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<tr>
<td>Acronym</td>
<td>Description</td>
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<tr>
<td>WANIDD</td>
<td>Western Australian Notifiable Infectious Diseases Database</td>
</tr>
<tr>
<td>WBC</td>
<td>white blood cells</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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</tbody>
</table>
Glossary

A

Aboriginal Health Worker
An Aboriginal or Torres Strait Islander person who has undertaken a training program at a recognised training institution to act as a health worker for Aboriginal or Torres Strait Islander people. The precise role of Aboriginal health workers is still evolving and varies considerably both within WA and between the states.

Acquired immunodeficiency syndrome (AIDS)
The stage in HIV infection when the immune system is severely depleted and opportunistic infections and cancers develop.

Amies
Amies transport medium: a semisolid solution of buffers and nutrients designed to preserve the viability of bacteria during transport to the testing laboratory.

Anaphylaxis
A potentially fatal allergic reaction to foreign protein or other substances.

B

Behcet’s syndrome
A chronic inflammatory disorder of unknown aetiology with recurrent ulceration of the oral and pharyngeal mucous membranes and the genital skin.

Bimanual pelvic examination
An examination technique that uses both hands, one for feeling the cervix through the vagina, and the other for feeling the body of the uterus through the lower abdominal wall. This provides considerable information about the state of the uterus, adnexae and the pelvic cavity.

C

Chancre
The ulcer of primary syphilis.

Clue cells
Vaginal epithelial cells covered in bacteria and seen on a Gram stain of a high vaginal swab.

Communicable Disease Control Directorate (CDCD)
That section of the Department of Health (Western Australia) with responsibility for communicable diseases including STIs/HIV.

Condom
A thin latex rubber sheath worn over the penis for disease prevention or contraception.

Condylomata lata
Wart-like lesions seen in second stage syphilis, often in the perianal region and other warm moist areas.
Conjunctivitis
An inflammation of the conjunctiva or lining of the eye usually accompanied by purulent discharge.

Contact
A person who has had sex with, shared injecting equipment with or has had some other high-risk exposure to the index case.

Contact tracing
The process of identifying contacts of the index case so that they can also be given appropriate testing, counselling and treatment.

Counselling
Interviewing a patient to give advice and support. For patients with STIs, counselling involves education about risk behaviour, disease and treatment, and helping patients to cope with the psychosocial implications of their infection.

Cytobrush
A wire brush on a short stick for taking specimens from the cervix.

D
Diplococcus
Diplococcus is the form of the organism causing gonorrhoea. It is a kidney shaped bacterium that occurs in pairs. This organism stains red with the Gram stain and hence is referred to as Gram-negative.

Dysuria
Pain on passing urine.

E
Ectopic pregnancy
A pregnancy occurring outside the uterus, i.e. in the fallopian tube.

Ectopy
Extension of columnar epithelium onto the vaginal surface of the cervix.

Enzyme immunoassay (EIA)
A test for an antigen or antibody that uses a colour reaction produced by an enzyme to indicate a positive result.

Epididymitis
Inflammation of the epididymis of the testicle.

F
First void urine
First amount of urine passed (not a midstream sample nor first sample of the day).
**Fluorescent treponemal antibody absorption (FTA-Abs) test**
A specific test for antibodies to syphilis. This test remains positive for life after syphilis has been contracted, whether treated or not.

**G**

**Gram stain**
A common dye stain used in microbiology for classifying bacteria.

**Guarding**
A rigidity of the muscles of the abdominal wall on physical examination; a sign of underlying peritonitis.

**Gummata**
Granulomatous lumps that can occur in almost any organ; a manifestation of tertiary syphilis.

**H**

**Hepatosplenomegaly**
Enlargement of the liver and spleen.

**Human immunodeficiency virus (HIV)**
A virus which attacks specific cells of the immune system giving rise to immune deficiency.

**Hysterectomy**
The removal of the uterus by surgical operation.

**I**

**IgG**
Immunoglobulin of class G antibodies produced in response to an antigen. This immunoglobulin is longer lasting than IgM.

**IgM**
Immunoglobulin of class M antibodies. This antibody is produced on first exposure and the levels fall more rapidly than do those of IgG.

**Immunosuppressed**
The state of an immune system that has been suppressed and as a result does not produce antibodies. Such suppression may be medication-induced (e.g. corticosteroids), or by disease (e.g. HIV).

**Index case**
The original person identified with an infection. The index case may or may not have infected other persons but represents a starting point for the process of contact tracing (sometimes referred to as "index patient").

**Informed consent**
A patient's agreement to a medical procedure (including physical examination), obtained after telling the patient what will be done and why. Patients are entitled to know what risks, if any, are
involved in medical procedures offered to them. No medical procedures can proceed without the patient's informed consent.

**J**

Jarisch-Herxheimer reaction
A common reaction to treatment in patients with primary and secondary syphilis. It is a mild reaction with fever, headache, malaise, rigors and joint pains and lasts for several hours.

**L**

Ligase chain reaction (LCR)
See Nucleic Acid Amplification Test (NAAT).

**M**

Meningitis
Inflammation of the meninges or the lining of the brain.

**N**

NAAT
The term “NAAT” has been used throughout the Guidelines as a generic term, which includes “PCR” and “LCR”. See Nucleic Acid Amplification Test (NAAT).

Needlestick injury
Inadvertent piercing of the skin with a hyperdermic needle or other sharp instrument.

Neonate
An infant from birth to the age of four weeks (28 days).

Neutrophils
One of the variety of white cells circulating in the blood stream, an increase of which occurs mostly in response to bacteria.

Nucleic Acid Amplification Test (NAAT)
A generic name for tests, most commonly the polymerase chain reaction (PCR), to detect the genetic material of an organism (e.g. *Neisseria gonorrhoeae, Chlamydia trachomatis*) in specimens of body fluids or tissues, rather than growing the organism itself. The tests work by amplifying the small amount of the organism’s genetic material in the specimen over a million-fold so that it can be more easily detected, making NAAT a very sensitive method.

**O**

Orchitis
Inflammation of the testicle.
Pelvic inflammatory disease (PID)
A condition characterised by lower abdominal pain caused by inflammation of the upper genital tract organs and their adnexae secondary to infection, that mimics a range of abdominal emergencies such as acute appendicitis or ectopic pregnancy and which can have serious outcomes, including peritonitis and infertility.

Penicillinase
An enzyme produced by some bacteria, that is capable of antagonizing the antibacterial action of penicillin and certain other antibiotics.

Perihepatitis
Inflammation around the liver, usually in the region of the portal vein and bile ducts.

Polymerase chain reaction (PCR)
See Nucleic Acid Amplification Test (NAAT).

Pre-term delivery
The delivery of an infant before the normal term of pregnancy.

Procaine reaction
A rare reaction to procaine penicillin, characterised by a sensation of impending doom with hallucinations.

Proctitis
Inflammation of the rectum.

Proctoscope
A short tubular instrument used for examining the rectum.

Proctoscopy
The direct examination of the anorectal mucosa with the aid of a proctoscope.

Prostatitis
Inflammation of the prostate gland.

Rapid Plasma Reagin (RPR)
A test that measures antibodies to a protein called cardiolipin, which are formed during infection by Treponema pallidum. It can be quantified and hence can be used to monitor progress of infection or treatment.
Safe sex
Sexual activity that minimises the risk of transmitting infection: no exchange of bodily fluids; no penetrative sex without the use of a condom.

Safer sex practices
Mutual monogamy with a non-infected partner, avoiding frequent change of sexual partners or anonymous and other casual sex, and consistent and correct use of condoms with all partners not known to be free of infection.


Salpingitis
Inflammation of the fallopian tubes.

Screening
The process of testing individuals or individuals within communities who are not known to have an infection for the purpose of identifying otherwise unknown cases.

Serology
Tests on the patient's serum (blood tests) to detect antibodies or antigens (e.g. hepatitis B surface antigen) to infectious agents.

Sexual contact
Oral, vaginal, anal or some other form of sexual contact with the index case during the period when there was risk of transmission of infection.

Speculum
A metal or disposable plastic instrument used to enable a visual examination of the vagina, ectocervix and cervical os.

Syndrome
A group of symptoms that patients describe, combined with the signs that providers observe during examination.

T

Titre
The extent to which an antibody-containing substance can be diluted before losing its power of reacting with the appropriate antigen. Expressed as titres of 1:2, 1:4, 1:8, 1:16, and so on.

Treponema pallidum haemagglutination test (TPHA)
A specific blood test for syphilis. This test remains positive for life after syphilis has been contracted, whether treated or not.
Treponema pallidum particle agglutination test (TPPA)
A specific blood test for syphilis. This test remains positive for life after syphilis has been contracted, whether treated or not.

Trichomonas vaginalis
A flagellated protozoan that causes inflammation of the vagina.

U

Urethritis
Inflammation of the urethra that may or may not be accompanied by a discharge.

Urticaria
A skin rash of varying type due to allergy. The rash is usually itchy.

V

Venereal Disease Research Laboratory (VDRL) test
A test that measures antibodies to a protein called cardiolipin, which are formed during infection by Treponema pallidum. It can be quantified and hence can be used to monitor progress of infection or treatment.

Venereal Diseases Research Laboratory (VDRL) test
A test that measures antibodies to a protein called cardiolipin, which are formed during infection by Treponema pallidum. It can be quantified and hence can be used to monitor progress of infection or treatment.

W

Western blot
A test for antibodies to various antigens. Particularly used to confirm a positive EIA test for HIV.

Window period
The period after infection, before sufficient antibodies have developed to be detected by tests. Test results will be negative, although the person is infected and infectious.
## Contacts for specialist advice on STIs, hepatitis and HIV

### Specialist investigations and treatment

<table>
<thead>
<tr>
<th>Service</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Immunology (HIV only), Royal Perth Hospital</td>
<td>9224 2899</td>
</tr>
<tr>
<td>Infection and Immunity Service, Fiona Stanley Hospital</td>
<td>6152 2222</td>
</tr>
<tr>
<td>Sexual Health Clinic, Royal Perth Hospital</td>
<td>9224 2178</td>
</tr>
<tr>
<td>South Terrace Clinic, Infectious Diseases Department, Fremantle Hospital</td>
<td>9431 2149</td>
</tr>
<tr>
<td>Gastroenterology, Fiona Stanley Hospital</td>
<td>0414 857 669</td>
</tr>
<tr>
<td>Gastroenterology, Royal Perth Hospital</td>
<td>9224 2186</td>
</tr>
<tr>
<td>Gastroenterology, Sir Charles Gairdner Hospital</td>
<td>6457 3228</td>
</tr>
</tbody>
</table>

### Information and education for GPs and medical officers

**Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine (external site)**

### Contact tracing

<table>
<thead>
<tr>
<th>Unit</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Metropolitan Public Health Unit</td>
<td>HIV/STI: 9222 8588</td>
</tr>
<tr>
<td></td>
<td>Hepatitis A/B: 9222 8588</td>
</tr>
<tr>
<td>South Metropolitan Public Health Unit</td>
<td>HIV/STI: 9431 0230 /</td>
</tr>
<tr>
<td></td>
<td>9431 0212</td>
</tr>
<tr>
<td></td>
<td>Hepatitis A/B: 9431 0218</td>
</tr>
<tr>
<td>Regional Public/Population Health Units (for outside the metropolitan area)</td>
<td>See list below</td>
</tr>
</tbody>
</table>

### Consumer advice and patient support

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>WA AIDS Council (WAAC)</td>
<td>9482 0000</td>
</tr>
<tr>
<td>Service</td>
<td>Contact Details</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-------------------------------------------</td>
</tr>
<tr>
<td>Derbarl Yerrigan Health Service</td>
<td>9421 3888</td>
</tr>
<tr>
<td>Sexual Health Quarters (SHQ)</td>
<td>9227 6177</td>
</tr>
<tr>
<td>Sexual Health Helpline</td>
<td>9227 6178 (Toll-free: 1800 198 205)</td>
</tr>
<tr>
<td>HepatitisWA (Inc)</td>
<td>9328 8538 (Toll-free: 1800 800 070</td>
</tr>
<tr>
<td>Magenta (sex worker organisation)</td>
<td>9328 1387</td>
</tr>
<tr>
<td>Regional Public Health Units</td>
<td>See list below</td>
</tr>
<tr>
<td>Peer Based Harm Reduction WA (external site)</td>
<td>9325 8387</td>
</tr>
<tr>
<td>Women’s Health and Family Services</td>
<td>6330 5400</td>
</tr>
<tr>
<td>Multicultural HIV and Hepatitis C Service</td>
<td>(02) 9515 1234</td>
</tr>
<tr>
<td>Multicultural fact sheets</td>
<td></td>
</tr>
<tr>
<td>Regional public and population health units</td>
<td></td>
</tr>
<tr>
<td>Goldfields (Kalgoorlie – Boulder)</td>
<td>9080 8200</td>
</tr>
<tr>
<td>Great Southern (Albany)</td>
<td>9842 7500</td>
</tr>
<tr>
<td>Kimberley (Broome)</td>
<td>9194 1630 / 9194 1646</td>
</tr>
<tr>
<td>Midwest/Gascoyne (Carnarvon)</td>
<td>9941 0515</td>
</tr>
<tr>
<td>Region</td>
<td>(Location)</td>
</tr>
<tr>
<td>----------</td>
<td>--------------</td>
</tr>
<tr>
<td>Midwest</td>
<td>(Geraldton)</td>
</tr>
<tr>
<td>Pilbara</td>
<td>(South Hedland)</td>
</tr>
<tr>
<td>Southwest</td>
<td>(Bunbury)</td>
</tr>
<tr>
<td>Wheatbelt</td>
<td>(Northam)</td>
</tr>
</tbody>
</table>
Contacts for patients – where to go

Confidential testing and treatment are available from the following services.

(Most of these services are free. Please telephone first to see if you need an appointment).

A doctor of your choice, some regional Aboriginal community controlled health services or:

Sexual Health Helpline Phone: 9227 6178, 1800 198 205

North metropolitan

Royal Perth Hospital
Sexual Health Clinic
Level 4, Ainslie House
48 Murray Street
Perth 6000
Phone: 9224 2178

Derbarl Yerrigan Health Service
156 Wittenoom Street
East Perth 6004
Phone: 9421 3888

Sexual Health Quarters
Street address: 70 Roe Street Northbridge WA 6003
Postal address: PO Box 141 Northbridge WA 6865
Phone: 08 9227 6177
Fax: 08 9227 6871
General email enquiries: info@shq.org.au
Website: www.shq.org.au

Women's Health and Family Services
227 Newcastle Street
Northbridge 6003
Phone: 6330 5400

Derbarl Yerrigan Health Service
Railway Workshop
6 Centennial Place
Midland 6056
Phone: 9374 1400

M Clinic
(this clinic is for gay and other homosexually active men only)
548 Newcastle Street (corner of Cleaver Street)
West Perth
Phone: 9227 0734

South metropolitan

South Terrace Clinic
(formerly Sexual Health Services B2 Clinic)
A Block, Fremantle Hospital
South Terrace
Fremantle 6160

Derbarl Yerrigan Health Service
1–3, 4 Binley Place
Maddington 6109
Phone: 9452 5333
Headspace Fremantle
(for under 25 years of age)
Wednesdays
Level 1 Wesley Centre
Cnr Market and Cantonment St
Fremantle 6160
Phone: 9335 6333

Headspace Rockingham
(for under 25 years of age)
Tuesday (2.00pm to 5.00pm doctor and nurse)
Thursday (2.00pm to 5.00pm nurse)
3/18 Goddard St
Rockingham 6168
Phone: 6595 8888

South Coastal Women's Health Services
Wednesday (9.30am to 3.00pm)
4 Civic Boulevard
Rockingham 6168
Phone: 9550 0900

Gascoyne
Midwest/Gascoyne Population Health
Cnr Johnson and Cleaver Streets
Carnarvon 6701
Phone: 9941 0515

Pilbara
Pilbara Population Health
Hedland Health Campus
Colebatch Way
South Hedland 6722
Phone: (08) 9174 1660

For more information
Communicable Disease Control Directorate (CDCD)
Department of Health
PO Box 8172
Perth Business Centre WA 6849
Phone: 9222 2355
Healthdirect Australia
Phone: 1800 022 222 (telephone advice)

For assistance with languages
Translating and Interpreting Service (TIS)
Phone: 13 14 50 (24 hour service)
Cultural Diversity Policy Officer
Cultural Diversity Unit
Medicines in pregnancy

An Australian categorisation of risk of drug use in pregnancy*

The categories defined below are limited to those referred to in these guidelines. The categorisation applies only to recommended therapeutic doses in women in the reproductive age group.

In situations such as overdose, occupational exposure and others when the recommended dose is exceeded, it cannot be assumed that the classifications assigned to individual medicines are valid.

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**Category A**

Drugs which have been taken by a large number of pregnant women and women of childbearing age without any proven increase in the frequency of malformations or other direct or indirect harmful effects on the fetus having been observed.

---

**Category B1**

Drugs which have been taken by only a limited number of pregnant women and women of childbearing age, without an increase in the frequency of malformation or other direct or indirect harmful effects on the human fetus having been observed. Studies in animals have not shown evidence of an increased occurrence of fetal damage.

---

**Category B2**

Drugs which have been taken by only a limited number of pregnant women and women of childbearing age, without an increase in the frequency of malformation or other direct or indirect harmful effects on the human fetus having been observed. Studies in animals are inadequate or may be lacking, but available data show no evidence of an increased occurrence of fetal damage.

---

**Category B3**

Drugs which have been taken by only a limited number of pregnant women and women of childbearing age, without an increase in the frequency of malformation or other direct or indirect harmful effects on the human fetus having been observed. Studies in animals have shown evidence of an increased occurrence of fetal damage, the significance of which is considered uncertain in humans.

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**Category C**

Drugs which, owing to their pharmacological effects, have caused or may be suspected of causing harmful effects on the human fetus or neonate without causing malformations. These effects may be reversible. Accompanying texts should be consulted for further details.

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**Category D**

Drugs which have caused, are suspected to have caused or may be expected to cause, an increased incidence of human fetal malformations or irreversible damage. These drugs may also have adverse pharmacological effects. Accompanying texts should be consulted for further details.
**Category X**

Drugs which have such a high risk of causing permanent damage to the fetus that they should not be used in pregnancy or when there is a possibility of pregnancy.


For drugs in the B1, B2 and B3 categories, human data are lacking or inadequate, and subcategorisation is therefore based on available animal data. The allocation of a B category does not imply greater safety than the C category.
### Risk of transmission following HIV exposure

**Table 1: Exposure and transmission risk/exposure with known HIV-positive source who is NOT on antiretroviral treatment**

<table>
<thead>
<tr>
<th>Type of exposure with known HIV-positive source who is NOT on antiretroviral treatment</th>
<th>Estimated risk of HIV transmission/exposure*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receptive anal intercourse (RAI)</td>
<td></td>
</tr>
<tr>
<td>- ejaculation</td>
<td>1/70</td>
</tr>
<tr>
<td>- withdrawal</td>
<td>1/155</td>
</tr>
<tr>
<td>Shared needles and other injecting equipment</td>
<td>1/125</td>
</tr>
<tr>
<td>Insertive anal intercourse (IAI) uncircumcised</td>
<td>1/160</td>
</tr>
<tr>
<td>Receptive anal intercourse (IAI) circumcised</td>
<td>1/900</td>
</tr>
<tr>
<td>Receptive vaginal intercourse (RVI)</td>
<td>1/1250</td>
</tr>
<tr>
<td>Insertive vaginal intercourse (IVI)</td>
<td>1/2500</td>
</tr>
<tr>
<td>Receptive or insertive oral intercourse</td>
<td>Unable to estimate risk - extremely low</td>
</tr>
<tr>
<td>Needlestick injury (NSI) or other sharps exposure</td>
<td>1/440</td>
</tr>
<tr>
<td>Mucous membrane and non-intact skin exposure**</td>
<td>&lt;1/1000</td>
</tr>
</tbody>
</table>

Table source: [2016 National guidelines for post-exposure prophylaxis after non-occupational and occupational exposure to HIV (external site)](http://example.com).

**Footnotes**

*These estimates are based on prospective studies, not cross-sectional data or figures derived from modelling. These estimates do not take into account source viral load, which if undetectable markedly reduces risk estimates.

** Human bites are extremely low risk.