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Bulletin No. 1

**Diagnosis &
Management of STDs
(including HIV Infection)**

April 2000

**STD Services
Royal Adelaide Hospital**

Note to Medical Practitioners

These guidelines on diagnosis and management have been prepared on the basis of local experience, review of the literature and consultation of the current recommendations of the United States Centers for Disease Control and Prevention (CDC) and the World Health Organization. They were developed predominantly for use by Clinic 275 staff and some flexibility is required in applying them to some private practice situations. Sections 1 and 2 provide guidance to the practitioner on risk assessment and appropriate testing and other sections provide concise information on diagnosis and management of individual diseases. For additional convenience checklists on HIV testing and counselling, chlamydia, STD interviews and points on prevention have been provided for use as desktop reminders. Clinic 275 offers additional services to facilitate STD management by the general practitioner:

- Patients may be referred to Clinic 275 or the practitioner may obtain telephone consultation by contacting a senior clinic medical officer on 8226 6025.
- A 24 hour emergency consulting service is available by phoning the Royal Adelaide Hospital switchboard on 8222 4000 and asking for “the venereologist on call”.
- Ad hoc training at Clinic 275 is available for interested practitioners. Individual arrangements are made by negotiation with Dr Russell Waddell, Clinic Manager at Clinic 275.
- A toll free telephone line 1800 806 490 is available for country callers.

This bulletin is available on the STD Services web site (www.stdservices.on.net/management). The web site also contains management updates, photographs and information for patients.

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Checklists

Sexual Practices and Risk Levels for STDs including HIV Infection

When counselling patients about safe sex, it is important to remember that STDs such as genital herpes, genital warts, pubic lice (crabs), and scabies are not necessarily prevented by condom use and may be transmitted by close body contact alone.

- There is negligible risk for activities which do not involve transfer of body fluids, eg kissing, masturbation, massage.
- Oral sex (cunnilingus, fellatio) poses a high risk for transmission of herpes simplex infection but its risk for other STDs is poorly defined.
- Vaginal and anal sex pose a definite risk for all the STDs.
- Condom use reduces the risk of transmission for all STDs.

HIV Testing and Counselling Checklist

- | | |
|--|--|
| Take STD history | <ul style="list-style-type: none">• Determine HIV risk• Determine when exposure to risk occurred |
| Previous HIV test | <ul style="list-style-type: none">• Check date and result |
| Explanation of test | <ul style="list-style-type: none">• Rationale for testing (early detection can improve long-term prognosis and reduce risk of transmission)• HIV antibody test• Difference between HIV and AIDS• 3-month 'window period' from exposure to development of antibodies• Advise if repeat test will be necessary• Confidentiality issues around HIV testing include appropriate policies within the surgery to protect the patient. Patients should be advised about protecting their own confidentiality by carefully considering and limiting whom they tell• Obtain informed consent from patient• It is recommended that all HIV results are given in person by medical practitioners |
| Implications of a negative result | <ul style="list-style-type: none">• Provides reassurance• Provides opportunity to discuss prevention through safe sex• If exposure to risk was less than 3 months ago, a repeat test may be indicated |

**Implications of
a confirmed
positive result**

- Discuss the difference between HIV and AIDS
- Check if there is a trusted support person available
- Discuss medical follow-up and treatments
- Support lifestyle changes, eg diet, smoking, rest, safe sex
- Contact tracing of past sexual partners
- Arrange another appointment for further counselling or refer to another agency

The STD Interview – Checklist

This determines:

WHOM to test, WHICH sites to test, WHAT tests to perform.

History

- Previous STDs
- Allergies
- Current contraception
- Last menstrual period
- Operations or medical illnesses
- Medications

Presenting signs and symptoms

- Anogenital discharge
- Dysuria
- Menstrual irregularity
- Dyspareunia
- Lower abdominal pain
- Genital ulcers or lumps
- Rashes
- Itching
- Pelvic tenderness

**Sexual
behaviours**

- Regular sexual partner
- Last sexual contact with other partner(s)
- Gender of sexual partner(s)
- **Any** history of male-to-male sex
- Type of intercourse – oral, vaginal, anal
- Use of condoms
- Overseas sexual contact, eg America, Asia, Africa (may need to screen for penicillin-resistant gonorrhoea, syphilis, HIV, etc.)

**Exposure to
blood**

- Injecting drug user
- Tattoos
- Previous transfusions (pre-1985 for HIV risk, pre-1990 for hepatitis C risk)
- Needlestick injury or other occupational exposure
- Imprisonment

Points on Prevention

The following practices will provide some protection from STDs/blood borne diseases.

- Condoms**
 - Recommend the regular use of condoms with a water-based lubricant, eg *KY jelly*, *Wet Stuff*
- Check-ups**
 - Recommend STD check-ups when patients have been exposed to risk.
 - Recommend to patients who have recently changed sexual partners that they use condoms for the first 3 months, and then have an STD screen. If the tests are negative (and they are relatively sure that the relationship is monogamous), condoms may be discontinued
- Communication**
 - Encourage communication between people about sexual partners and behaviours
- Clean needles and syringes**
 - Advise injecting drug users of needle exchange programs (Drug & Alcohol Services Council, telephone 131340, can be contacted for information on locations and times)
 - Only new needles, syringes and other injecting equipment should be used. Cleaning and bleaching used equipment does not protect the user against hepatitis C

Clinical presentation

- Suggest that people do not have sex if an STD is suspected until a negative diagnostic test
- If an STD is diagnosed, suggest no sex until test of cure, or completion of medication

Alternatives

- To lower risk, suggest alternatives to penetrative sexual practices when condoms are not available

Health care

- Encourage general health care and well-being

Chlamydia Checklist

Clinical presentation

- Asymptomatic in at least 50% of individuals
- Early symptoms may include genital discharge and dysuria
- More severe signs and symptoms in women may include: menstrual irregularity, lower abdominal pain, backache, dyspareunia, and mucopurulent cervical discharge
- Men can develop a mucopurulent urethral discharge and epididymo-orchitis

Which patients should be tested

- If a contact of chlamydial infection or other STD
- If symptomatic
- Where there has been unprotected intercourse and one or more of the following exist:
 - (i) change of sexual partners in previous 2 months
 - (ii) more than one sexual partner
 - (iii) patient's partner has other sexual partners
- If patient is under 25 years and there has been unprotected intercourse, there is a greater likelihood that one or more of the above factors will exist
- If patient has an IUCD *in situ* and any of the above factors exist, there is a high risk of upper genital tract infection

The chlamydia test

- Usually PCR test performed on a swab collected from the endocervix in women and the urethra in men
- Urine PCR may be preferred
- Because chlamydia is an intracellular pathogen, swabs should be gently rotated at the testing site to allow cellular absorption
- The chlamydia swab should be the last to be performed if it is part of a series of tests
- The chlamydia swab can be done if a woman is menstruating

Treatment

- **Azithromycin 1 g orally as a single dose** or
- **Doxycycline 200 mg orally daily for 10 days**

Health Advice

- Chlamydial infection is a common STD
- It is a notifiable infection
- All sexual contacts need to be tested
- Advise no sex until 1 week after treatment

Follow-up

- Review and check compliance with medication and/or compliance with safe sex guidelines
- Reinforce prevention and safe sex practices
- Ensure all sexual contacts have been tested

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Clinical Assessment

Overview

Sexual history taking, information gathering and assessment must be done in a manner that establishes rapport between the patient and clinician, assures accurate definition of the problem(s), and leads to successful patient management, viz. the problem is solved, does not recur and the patient is satisfied with the process. Lifestyle factors influencing risk for some STDs (eg injecting drug use, male-male sex) should be elicited.

Routine History

- Problem description
 - symptom(s): onset, character, periodicity, duration, and relationship to sexual intercourse and urination
 - similarity to previous problems
 - medical problems of sexual partner(s)
- Sexual activity
 - date of most recent exposure and other exposures in the preceding 3 months
 - sex of partner(s) and specific exposure sites: oral, vaginal, anal
 - illness among recent partner(s)
 - location of sexual activity and travel history

- Past STDs
- Current and past serious illnesses
- Current medication: prescribed, over-the-counter, illicit
- ***All patients must be asked about allergy to antibiotics, especially penicillin***
- Hepatitis B vaccination
- History of injecting drug use, including type of drug, age first injected

Routine Examination

For all complaints relating to the genital area

- inspection of pubic hair for lice and nits
- palpation of inguinal and femoral lymph nodes
- men: inspection of penis, including meatus, retraction of foreskin, and expression of any discharge from the urethra; palpation of scrotum. The perianal area should be routinely inspected
- women: inspection of external genitalia, perineum, anus; speculum examination of vagina and cervix; bimanual pelvic examination

In most cases examination also includes inspection of the skin of face, trunk, forearms and palms, and the oral mucosa

Routine Tests

For maximum impact correct collection of specimens is essential (Appendix 1).

Men

- urethral Gram stain, culture on selective medium for gonorrhoea and chlamydia test for all potentially infected men
- oropharyngeal or rectal culture for gonorrhoea if symptoms or exposure relates to these sites, or if requested.

Women

- endocervical culture for gonorrhoea and endocervical chlamydia test on all women
- urethral smear and culture for women at high risk of gonorrhoea (ie sexual contacts) and urethral chlamydia test for women who have had a hysterectomy
- oropharyngeal or rectal culture if symptom or exposure relates to these sites, or if requested
- vaginal tests for trichomonads, candida and bacterial vaginosis
- Pap smear at first visit (if none within previous two years) and thereafter every two years. More frequent smears may be indicated for women with viral STDs or previously abnormal Pap smears

Blood Tests

Syphilis serology

- at first visit
- when syphilis is suspected on clinical grounds
- new episodes involving high risk exposures - ie sex overseas, male to male sexual contact, Aborigines or sex with Aboriginal partners, sex workers
- three monthly follow-up after gonococcal and chlamydial infection
- if HIV infection has been diagnosed

Hepatitis B serology

- at first visit for all clients
- further testing according to risk, eg Aborigines, Asians, male to male sexual contact, injecting drug users, sex workers or anyone with a history of sexual contact overseas, sexual contact with any one of the foregoing
- patient should not be retested once protective immunity is confirmed

Hepatitis C serology

At first visit for all clients; further testing according to risk, eg injecting drug use, non-professionally applied tattoos

HIV serology

Offered to all individuals with risk activity in the past 15 years including any sexual activity overseas; patients should return for results and post-test counselling in one week; further testing according to risk

Other Investigations

Darkfield examination for treponemes

Suspicion of primary syphilis - almost any lesion may be syphilis but darkfield is mandatory for solitary, indurated, painless lesions

Herpes culture

For initial confirmation of typical lesions or when diagnosis is uncertain (patient should not be retested once a positive culture has been obtained)

Midstream urine

When urinary tract infection is suspected

Diagnosis

The foregoing assessment, in combination with the algorithms for urethral discharge, vaginal discharge and penile or vulval lesions (Appendix 2) should enable diagnosis of most cases of STDs. If unsure, consult a sexual health physician.

Management

Proper management of a sexually transmitted disease has three components:

(i) Treatment

Antibiotic therapy or other treatment is provided in accordance with the recommendations in this bulletin.

(ii) Health advice/contact tracing

The clinician is responsible for counselling the patient about the natural history of the disease, its sequelae and method of spread; about the therapy and its possible side effects; and about the necessity of follow-up and investigation of sex partners. The clinician should enquire routinely about any anxieties the patient has and any uncertainty about instructions given.

Prophylactic methods should be discussed with the patient so that the risk of reinfection will be minimised. Hepatitis B vaccination should be offered to all those at risk (see chapter 15).

Contact tracing is required for all cases of gonorrhoea, chlamydia, syphilis, hepatitis B, hepatitis C and HIV infection.

(iii) Follow-up

At least one follow-up visit is essential to

- assess clinical response to therapy
- perform investigations to demonstrate cure
- assess side effects of therapy
- confirm that all current sex partners have been investigated and treated

Also check whether medication has been taken in accordance with instructions and whether further sexual activity has occurred since the last visit.

Notification

There is a legal requirement for the attending clinician to notify all cases of gonorrhoea, syphilis, chlamydial infection, hepatitis B, hepatitis C, and HIV infection to the Department of Human Services (see Appendix 3 for details).

Summary of Testing/Follow-up Schedule

Registration visit

- Syphilis serology for all clients
- Pap smear if none within past 2 years or if genital warts or HIV infection have been diagnosed since last Pap smear
- Hepatitis B serology for all clients
- Hepatitis C serology for all clients
- HIV serology - offered to all, especially those with high risk behaviour

New episodes

- All women examined
 - cervix: gonorrhoea and chlamydia
 - vagina: trichomonads, candida, bacterial vaginosis
 - urethra: for women at high risk of gonorrhoea, and for chlamydia if no cervix
- All men: at risk of urethritis (symptoms/exposure)
 - urethral swabs for gonorrhoea and chlamydia or urine PCR for chlamydia in low risk, asymptomatic men
- Other tests as indicated by symptoms and/or exposure, ie hepatitis C if continuing injecting drug use, rectal/throat swabs

Health Advice and Follow-up as per Following Table:

Disease	Follow-up (time after completion of medication)	Further follow-up	Notific- ation
HIV infection	Immune assessment	3-6 monthly immune assessment	Yes
Gonorrhoea	5-10 days for test of cure, including rectal culture in women	HIV serology in 3 months	Yes
Early syphilis	4 weeks clinical assessment	Syphilis serology at 3, 6, 12 months	Yes
Herpes	As required		No
Chlamydia	1 week for clinical assessment	HIV serology in 3 months	Yes
NSU	5-10 days for clinical assessment if symptoms persist		No
Urethral irritation	Return for results		No
Warts	Clinical assessment at one week	Treat weekly until resolved	No
Candidiasis	Return for results		No

Disease	Follow-up (time after completion of medication)	Further follow-up	Notifi- cation
Trichomoniasis	5-10 days for test of cure	Regular partner tested and treated even if test negative	No
Pediculosis pubis	Return for results		No
Scabies	Return for results		No
Molluscum contagiosum	Clinical assessment at one week	Treat weekly until resolved	No
Bacterial vaginosis	Return for results		No
Hepatitis B surface antigen positive	Liver function tests (LFTs), α -fetoprotein, e antigen/antibody and repeat serology in 6 months	Referral if abnormal LFTs. Regular sex partner(s) should be offered hepatitis B vaccination	Yes
Hepatitis C infection	LFTs, α -fetoprotein, hepatitis C PCR if not previously positive	Refer to specialist if LFTs remain elevated for 6 months. Liver ultrasound, screening for non-infective causes of chronic hepatitis	Yes

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Human Immunodeficiency Virus (HIV) Infection

Diagnosis

Patients presenting for HIV serology should initially be interviewed by a medical officer for STD (including HIV) risk assessment and appropriate tests. Risk assessment requires taking a detailed sexual and blood exposure history:

- Has the person had a previous HIV test? When? Result?
- Why does the patient think they need a test - history of exposure?
- Does the patient have a steady partner - often a key factor in patient anxiety, and may be a primary focus in management.
- Sexual exposures, blood exposures
 - number of partners in past three months
 - sex outside South Australia — where?
 - type of sexual behaviour
 - male to male sex ever
 - injecting drug use ever
 - blood transfusions
 - tattoos — particularly those applied in prison or non-professionally

Patient examination - discharge/ ulcers/ other indicators of sexual exposure. Concomitant or previous STD may increase the likelihood of HIV transmission.

It is advisable that all patients who are at risk of HIV should be advised of the risk of other STDs and be offered testing for these. Specifically, serology for hepatitis B and C should be included with HIV serology.

Testing

After counselling and with informed consent, blood is sent to the laboratory where an HIV ELISA screening test is performed. Should this be positive, a confirmatory Western Blot test (WB) is performed. If the Western Blot is negative, the ELISA result is considered to be a false positive, indicating the patient is not infected with HIV. Repeat testing is only indicated if the patient has been at risk in the three month period prior to the test.

If the Western Blot yields an indeterminate result, the patient may have been recently infected with HIV and may be in the process of seroconverting. HIV antibody testing should be repeated at 1 to 2 weekly intervals to determine whether the Western Blot test will yield a positive result.

If the Western Blot is positive, a report is sent back with a “confirmed positive” statement. These patients should be given a follow-up appointment for medical assessment and counselling. Regular assessments every 3 - 6 months are recommended.

Clinical Presentation

The following categories indicate the spectrum of HIV disease. A brief synopsis of available therapy is given for specific conditions.

Acute infection (seroconversion)

50-70% of patients experience a mononucleosis-like illness (fever, lethargy, myalgia, arthralgia, headache, maculopapular rash, lymphadenopathy, splenomegaly) 3-6 weeks after infection.

Asymptomatic infection

Following seroconversion patients may remain asymptomatic for many years.

Symptomatic infection

Persistent generalised lymphadenopathy (nodes ≥ 1 cm diameter, at 2 extrainguinal sites for 3 months) occurs commonly but is not of prognostic significance.

The degree of immune suppression (conveniently measured as the CD4 cell count) influences the likelihood of particular illnesses occurring eg

Usual CD4 Cell Count	Common Clinical Features
150-500/ μ L	Oral and vaginal candidiasis, oral hairy leukoplakia, sinusitis, gingivitis, seborrheic dermatitis, psoriasis, warts, molluscum contagiosum, recurrent varicella-zoster and herpes simplex infection, cervical dysplasia, tuberculosis, fever, sweats, weight loss
< 150/ μ L	<i>Pneumocystis carinii</i> pneumonia, Kaposi's sarcoma, oesophageal candidiasis, cerebral toxoplasmosis, lymphoma, HIV dementia, cryptococcal meningitis
< 50/ μ L	<i>Cytomegalovirus</i> retinitis, cerebral lymphoma, <i>Mycobacterium avium</i> complex infection

The identification of presenting symptoms is summarised in the following table.

Infectious Agent	Diagnosis	Clinical Features
<i>Pneumocystis carinii</i>	<i>Pneumocystis carinii</i> pneumonia (PCP)	Dry cough Dyspnoea Fever Night sweats
<i>Candida</i> species	Oral candidiasis (thrush) Oesophageal candidiasis Vaginal candidiasis	White mucosal plaques or erythema in oral cavity Dysphagia +/- chest pain Vaginal discharge, erythema, itching
<i>Herpes simplex</i> virus (HSV)	Oral, genital and anal vesicular dermatitis	Clusters of painful vesicular lesions or shallow ulcers
<i>Varicella zoster</i> virus (VZV)	Shingles/ <i>Herpes zoster</i>	Dermatomal pain Vesicular lesions in dermatomal distribution
<i>Mycobacterium tuberculosis</i>	Pulmonary tuberculosis Extrapulmonary tuberculosis	Cough Fever Weight loss Fatigue Enlarged lymph nodes or spleen
<i>Cryptococcus neoformans</i>	Cryptococcal meningitis	Headaches Neurologic abnormalities +/- meningism +/- fever

Infectious Agent	Diagnosis	Clinical Features
<i>Cytomegalovirus</i> (CMV)	Retinitis Enterocolitis	Visual disturbance Diarrhoea Abdominal tenderness Bloating
<i>Mycobacterium</i> <i>avium</i> complex (MAC)	MAC bacteraemia, wasting	Chronic or recurrent fever Weight loss Fatigue
<i>Toxoplasma gondii</i>	<i>Toxoplasma</i> encephalitis	Headache Drowsiness Fever Focal neurologic abnormality Seizures
<i>Cryptosporidium</i>	Cryptosporidial enteritis +/- cholangitis	Chronic diarrhoea —may resolve spontaneously in early HIV infection Right upper quadrant pain
Microsporidia (several organisms)	Microsporidial enteritis +/- cholangitis	Chronic diarrhoea May be asymptomatic

Malignancies	Clinical Features
Kaposi's sarcoma	Red/purple skin and mucosal lesions Bleeding oral lesions Gastrointestinal obstruction causing nausea/vomiting Pulmonary disease—dyspnoea Lymphatic system involvement—swelling of extremities
Non-Hodgkins lymphoma	Splenomegaly Focal neurologic abnormality Increasing asymmetrical lymphadenopathy
Primary lymphoma brain	Headache Focal neurologic abnormality
Cervical dysplasia/cancer	Post-coital bleeding, intermenstrual bleeding Abnormal Pap smear
Anogenital cancer	Mucosal lesion—non-healing Abnormal biopsy

The case definition of AIDS-defining illnesses used in Australia and the United States is shown in Appendix 4.

Management

Medical Assessment

At the first follow-up appointment, the following should be carried out:

Medical history

Full medical history, including current state of health and systems review

- past history
- medications and allergies

- overseas travel
- history of recreational drug use
- full sexual history including the practice of anal (insertive and receptive) and oral (insertive and receptive) sexual contact
- family history and social history

Examination

A complete medical examination should be performed, in particular looking for

- the patient's weight and vital signs
- lymphadenopathy: cervical, axillary and inguinal
- skin lesions or rashes
- oral lesions
- hepatosplenomegaly
- genital, including anorectal, lesions
- any neurologic abnormalities
- inspection of fundi (in patients with CD4 < 50/ μ L review by an ophthalmologist should be performed 3 to 6 monthly)

Tests

The following tests are to be performed on all HIV antibody positive persons:

- baseline tests (first visit)
 - repeat HIV antibody test for confirmation
 - liver function tests (LFTs), electrolytes, renal function tests
 - amylase, CK
 - full blood examination (FBE)
 - CD4, CD8 lymphocyte markers
 - HIV viral load
 - STS (serologic tests for syphilis)
 - Hepatitis B serology
 - Hepatitis C serology

- Hepatitis A serology
- EBV, CMV, toxoplasmosis serology
- G6PD in case future use of sulfas is required
- repeated tests (each visit)
 - FBE, CD4/CD8 lymphocyte surface markers, HIV viral load, LFTs, electrolytes, renal function tests.
 - amylase, CK, lipase, lactate to check for medication side effects
 - When the CD4 count falls below 100, regular screening for MAC should be performed (*Mycobacterium F*)
 - Pap smear should be performed 6-12 monthly, more frequently as CD4 count declines.
 - STD check should be included if relevant symptoms exist or if exposure has occurred.

Antiretroviral Therapy

Combination antiretroviral therapy has been demonstrated to significantly increase life expectancy and delay the progression to AIDS in individuals with a CD4 cell count below 500/ μ L. As yet, there are no published data on the effect of combination therapy in individuals with early infection and a normal CD4 cell count.

Patients are usually prescribed a minimum of three drugs to include drugs from at least two of the following categories.

Treatment recommendations are constantly changing and detailed description of specific treatment of HIV infection is beyond the scope of this manual. Antiretroviral therapy should only be initiated by practitioners experienced in their use.

Currently, the main antiretroviral agents for the management of HIV infection in Australia include:

Nucleoside analogue reverse transcriptase inhibitors

- abacavir (*Ziagen*)
- didanosine (ddI, dideoxyinosine, *Videx*)
- lamivudine (3TC; *Combivir* – combined formulation with zidovudine)
- stavudine (d4T, *Zerit*)
- zalcitabine (ddC, dideoxycytidine, *Hivid*)
- zidovudine (ZDV, AZT, *Retrovir*; *Combivir* – combined formulation with lamivudine)

Non-nucleoside analogue reverse transcriptase inhibitors

- delavirdine (*Rescriptor*)
- efavirenz (*Stocrin*)
- nevirapine (*Viramune*)

Protease inhibitors

- indinavir (*Crixivan*)
- nelfinavir (*Viracept*)
- ritonavir (*Norvir*)
- saquinavir (*Invirase* – hard-gel capsule, *Fortovase* – soft gel capsule)

Management of Opportunistic Infections

(less likely to occur because of the efficacy of antiretroviral and preventive therapy)

Infection	Management
<i>Pneumocystis carinii</i>	
Prophylaxis:	trimethoprim-sulfamethoxazole (TMP-SMX)
CD4 < 200/ μ L	1 DS tablet (160 mg/800 mg) daily or dapsonsone 100 mg twice weekly or pentamidine 300 mg by nebuliser once a month. Nebulised salbutamol may be used as a premedication to reduce bronchospasm.

Infection	Management
<p><i>Pneumocystis carinii</i></p> <p>Acute infection:</p>	<p>Intravenous therapy if acutely ill, unable to take oral medication, or $pO_2 < 60$: trimethoprim 20 mg/kg/day and sulfamethoxazole 75-100 mg/kg/day in 4 divided doses for 21 days or pentamidine 3 mg/kg once daily <i>plus</i> hydrocortisone 100 mg iv qid for 7 days</p> <p>Oral therapy TMP-SMX 2 DS tablets qid for 14-21 days or trimethoprim 200 mg qid and dapsone 100 mg daily for 14-21 days <i>plus</i> prednisolone 50 mg/day orally for 7-14 days.</p>
<p>Candidiasis</p> <p>Oral (treat until symptoms resolve)</p> <p>Vulvovaginitis</p> <p>Oesophagitis</p>	<p>nystatin 100,000 unit tablet dissolved in mouth 3-5 times daily or amphotericin B 10 mg lozenges orally 3-5 times daily</p> <p>See chapter 10 of this book</p> <p>fluconazole 200 mg orally daily for 2 weeks, then 50-100 mg daily Long term secondary prophylaxis is recommended to prevent relapse.</p>

Infection	Management
<i>Cryptococcal meningitis</i>	
Acute infection	amphotericin B 0.6-0.8 mg/kg/day iv plus 5-flucytosine 100 mg/kg/day orally qid for 2 weeks followed by fluconazole 400 mg daily for 6-10 weeks
Maintenance	fluconazole 200 mg once daily There is a 60% recurrence rate if maintenance therapy is not taken.
<i>Toxoplasma encephalitis</i>	
Acute Infection	pyrimethamine 200 mg orally as a single dose then 50 mg orally daily plus folinic acid 10 mg orally daily plus sulfadiazine 1 g orally qid for 6 weeks or pyrimethamine, folinic acid as above plus clindamycin 900 mg iv qid for 3 weeks, then 450 mg orally qid for 3 weeks
Maintenance	pyrimethamine, folinic acid plus sulfadiazine 500 mg orally qid or pyrimethamine, folinic acid, plus clindamycin 300 mg orally qid
Prophylaxis	TMP-SMX 1 DS tablet daily
<i>Mycobacterium avium</i> complex	
Treatment	rifabutin 300 mg orally daily, plus ethambutol 400 mg orally bd, plus clarithromycin 500 mg orally bd. The required duration of treatment is uncertain, but should be at least 12 weeks. Indefinite maintenance therapy (with 2 agents) should continue.

Infection	Management
<i>Mycobacterium avium</i> complex Prophylaxis: CD4 \leq 100/ μ L	azithromycin 1.2 g orally weekly
Herpes simplex/zoster Severe Moderate Suppression	aciclovir 5 mg/kg iv tds for 7 days valaciclovir 1 g orally tds for 7 days valaciclovir 500 mg orally bd
<i>Cytomegalovirus</i> retinitis Initial treatment Maintenance	ganciclovir 5 mg/kg iv bd for 2 weeks or foscarnet 90 mg/kg iv bd for 2 weeks ganciclovir 10 mg/kg iv 3 days/week or foscarnet 90 mg/kg iv 5 days/week
<i>Cryptosporidium</i> enteritis	paromomycin 500 mg orally tds until resolution
Bacterial pneumonia	ceftriaxone 1 g iv daily for 10-14 days followed by <i>Augmentin Duo</i> 850 mg orally bd until resolution

Prophylactic Therapy against Opportunistic Infections

Primary prophylaxis is given in order to prevent opportunistic infection in an immunosuppressed patient.

- Trimethoprim-sulfamethoxazole (TMP-SMX, co-trimoxazole) is usually commenced when the CD4 count falls below 200/mL or 20% as prophylaxis against *Pneumocystis carinii* pneumonia.
- Valaciclovir is given to immunosuppressed patients with a history of anogenital HSV infection.

Secondary prophylaxis is prescribed after an infection has been successfully treated to prevent relapse.

Health Advice

By the time an HIV positive patient has been referred for follow-up medical assessment, they will have been counselled, and will have had the meaning of antibody positivity explained. They should have been advised about safe sexual practices, caution with needles for injecting drug users, the availability of psychological support groups and general health and fitness programs. (See Appendix 5 for patient handout.)

The medical officer should be available to clarify and further answer any questions regarding these matters, and be prepared to interpret the results of medical tests to each patient.

It is important to remind the patient of the following:

- NOT to donate blood, semen or other body tissues or organs
- to use safe sexual practices, ie bodily fluids should not be exchanged
- to advise their dentist of being HIV seropositive

- to give the same information to any health worker dealing with the patient's body fluid, eg during surgical procedures
- if the patient has a regular general practitioner, to let that doctor know their positive antibody status
- the patient should not receive any vaccinations without prior discussion with the medical officer involved in the ongoing HIV management.

The patient should be assured of confidentiality at all times.

As with all STD matters, no information regarding any patient is to be divulged to anyone without the patient's written consent.

Follow-up

The frequency of follow-up visits depends upon the duration of infection and state of disease.

The asymptomatic patient with normal CD4 cell count can be seen for assessment and investigations 3-6 monthly.

Patients on therapy should be assessed 2-3 monthly.

Patients with AIDS need close medical surveillance by their general practitioner in conjunction with the consultant staff of an infectious diseases department at Royal Adelaide Hospital (RAH), Flinders Medical Centre (FMC) or The Queen Elizabeth Hospital (QEH).

Reasons for referral include

- Initiation of antiretroviral therapy
- Prophylactic pentamidine aerosol therapy
- Onset of a serious opportunistic infection
- Onset of a secondary malignancy
- Investigation of persistent symptoms such as diarrhoea with weight loss, pyrexia of unknown origin and neurological symptoms.

Post-Exposure Prophylaxis

Post-exposure (occupational or recreational) prophylaxis is available at the RAH, QEH and FMC. Patients are offered double or triple antiretroviral therapy, eg *Combivir* or *Combivir* plus nevirapine, for one month.

FBE and LFTs are performed weekly. Baseline HIV serology is performed, with follow up serology at 3 and 6 months after exposure.

3

Gonorrhoea

Diagnosis

Smear diagnosis (presumptive)

Typical Gram negative intracellular diplococci on direct Gram stain smear

Culture diagnosis (presumptive)

Typical colonial morphology on selective culture medium, typical Gram stain morphology, positive oxidase reaction, positive superoxol reaction

Culture diagnosis

Typical colonial morphology on selective culture medium, typical Gram stain morphology, positive oxidase reaction confirmed with sugar utilisation, coagglutination or antigenococcal fluorescent antibody testing.

Management

Antibiotic treatment

Routine treatment for gonococcal infection

ceftriaxone 250 mg im as a single dose

Observe patient in clinic for 15 minutes after administering any antibiotic.

Ciprofloxacin is a useful alternative if there is no history of interstate or overseas travel in the last 3 months. Not to be used in pregnancy or for children or adolescents

ciprofloxacin 500 mg orally as a single dose

Penicillin allergic patients

- anogenital infection
spectinomycin 2 g im as a single dose
- pharyngeal infection
**trimethoprim (80 mg) / sulfamethoxazole (400 mg),
9 tablets orally daily for 5 days**

Children weighing less than 45 kg

- uncomplicated genital infection, rectal or pharyngeal infection and penicillinase-producing *Neisseria gonorrhoeae* (PPNG)
ceftriaxone 125 mg im as a single dose
- children with penicillin allergy
spectinomycin 40 mg/kg im as a single dose

Children who weigh 45 kg or more should receive adult regimens.

Disseminated gonococcal infection

ceftriaxone 1 g im or iv every 24 hours for 7 days

Penicillin allergic patients

spectinomycin 2 g im every 12 hours for 7 days

or

ciprofloxacin* 500 mg iv every 12 hours. 24 – 48 hours after initial improvement therapy may be switched to **ciprofloxacin* 500 mg orally twice a day to complete a full week of therapy.**

- * *Ciprofloxacin is a useful alternative if there is no history of interstate or overseas travel in the last 3 months. Not to be used in pregnancy or for children or adolescents*

Since 1995 the susceptibility pattern of isolates from men and women for infections acquired in metropolitan South Australia have shown increasing Chromosomal Mediated Resistance (CMR). In 1997, 38% of non-PPNG isolates in men and women were resistant to penicillin. However, gonorrhoea acquired in central Australia may still be sensitive to penicillin.

Patients living in remote areas of south and central Australia may be treated with **amoxicillin (3 grams) with probenecid (1 gram) orally as a single dose** after discussion with STD Services.

There is currently no third generation cephalosporin suitable for oral single dose therapy available in Australia.

Epidemiologic treatment

Epidemiologic treatment refers to treatment with standard regimens, after laboratory tests have been taken, but before confirmatory results are available, on the basis that the benefits of treating outweigh the benefits of not treating. Epidemiologic treatment is to be given to all patients

- who are contacts of a person with proven gonorrhoea
or
- from whom an endocervical, urethral or rectal smear show Gram negative intracellular diplococci

Health Advice

Stress

- the importance of immediate testing of all sex partners
- need to take all medication when multiple dose regimens have been used
- no sex until a test of cure is performed—hence importance of returning for test of cure

Provide the patient with literature on gonorrhoea.

Advise them that this is a notifiable disease

Refer all patients for contact tracing.

Follow-up

All patients should return 5-10 days after completion of treatment for

- check on compliance (for multidose treatment)
- evaluation of symptoms and signs
- check reaction to medication
- enquiry about sexual activity since treatment
- culture from infected sites, to include rectal culture from all women with endocervical gonorrhoea
- re-interview with contact tracer.

4

Syphilis

Diagnosis

Primary

Definite diagnosis involves demonstration of *Treponema pallidum* by darkfield microscopy in lesions from the anogenital area. There is no merit in performing this test on oral lesions because other treponemes, microscopically indistinguishable from *T. pallidum*, occur in the mouth.

A presumptive diagnosis can be made if a typical ulcer is associated with a consistent history of syphilis in sex partners and/or serologic pattern before or after treatment in the patient.

Secondary

Typical lesions of secondary syphilis (rash, condylomata, alopecia) and a consistent serologic pattern before and/or after treatment, viz. a rising RPR titre before treatment (fourfold within 6 months) and a corresponding fall after treatment. In secondary syphilis the RPR titre will usually be 1:8 or greater.

Early Latent Syphilis

An asymptomatic patient with positive RPR and TPHA and one of the following:

- negative serology within the previous 2 years
- fourfold increase in RPR titre on subsequent testing
- fourfold decline in RPR within 12 months after treatment

Late Syphilis

Late symptomatic syphilis is suggested when a positive treponemal test (RPR may be negative) occurs in association with typical neurologic or cardiovascular signs.

Asymptomatic neurosyphilis is suggested by positive serology and a positive CSF-VDRL. The disease is active if there are 5 or more mononuclear cells/mm³ in the CSF.

CSF examination is indicated

- before treatment of any patient with a non-penicillin regimen
- for patients who do not respond adequately or relapse after therapy
- for patients with positive serology and signs of neurosyphilis
- for all HIV positive patients who have syphilis

Late latent syphilis is characterised by a positive treponemal test (TPHA or FTA-ABS) and a negative or stable low titre RPR test. This same pattern may be due to adequately treated syphilis or a false positive treponemal test.

Management

Early Syphilis (less than 2 years duration)

Standard penicillin regimens have been very effective in the treatment of early syphilis. Recently some cases of apparent treatment failure have been documented and the problem is likely to be more severe in patients with impaired immunity, eg HIV infection.

It is possible that treatment with benzathine penicillin is less effective than treatment with procaine penicillin. To achieve significant advantages in CSF levels over benzathine penicillin, procaine penicillin dosage should exceed 2 million units daily and probenecid should be administered concurrently.

While such large dose regimens of procaine penicillin may offer small theoretical advantages over benzathine penicillin, these regimens have low acceptance among patients and medical practitioners. For these reasons, when a procaine penicillin regimen is employed it should be preceded by an effective dose of benzathine penicillin as a safeguard against premature termination of a course of procaine penicillin.

Treatment

Preferred treatment for all patients particularly

- patients with HIV infection
- patients at high risk of acquiring HIV infection
- patients with recurrent syphilis

benzathine penicillin G 1.8 g (2.4 million units) im as a single dose followed by procaine penicillin 3 g (3 million units) im daily plus probenecid 500 mg orally 4 times daily for 10 days

For situations where compliance with the above regimen is unlikely

benzathine penicillin G 1.8 g (2.4 million units) im as a single dose

For patients who are allergic to penicillin

doxycycline 200 mg orally daily for 20 days

or

tetracycline HCl 500 mg orally four times daily for 20 days

Health Advice

Warn the patient about the possibility of a Herxheimer reaction and its management.

Stress the importance of examining all contacts immediately. The patient should not have sex until treatment is completed and sex partners have been examined (if possible).

It is undesirable for the patient (or a sex partner - as appropriate) to become pregnant until a good response to therapy has been demonstrated.

All patients are to be referred for contact tracing.

Follow-up

4 weeks - clinical assessment and sex partner review.

3, 6, 12 months - clinical assessment and repeat serology.

Late Syphilis

Treatment of late latent syphilis

benzathine penicillin G 1.8 g (2.4 million units) im as a single dose followed by procaine penicillin 3 g (3 million units) im daily plus probenecid 500 mg orally 4 times daily for 20 days

OR

benzathine penicillin G 1.8 g (2.4 million units) im weekly for three weeks

For patients allergic to penicillin

doxycycline 200 mg orally daily for 30 days

OR

tetracycline HCl 500 mg orally 4 times daily for 30 days

Treatment of symptomatic late syphilis

Requires hospitalisation and treatment under consultant supervision.

Health Advice

Late syphilis is essentially non-communicable and contact tracing is not indicated. The degree of certainty of the diagnosis, and uncertainty (but generally be optimistic) of the prognosis should be discussed with the patient.

Follow-up

Repeat serology 3, 6, 12, 24 months after treatment. If CSF has been examined repeat at 3 monthly intervals until the cell count returns to normal.

Syphilis In Pregnancy

If congenital syphilis is suspected a specialist should be consulted

All women should have an RPR in the first trimester; women at high-risk, eg Aboriginal women, should have a further test in the third trimester.

Women with a positive test should be evaluated rapidly - history, examination, testing of contacts and if unresolved a further RPR (2 weeks after the first test).

If active syphilis cannot be reasonably excluded by this process the woman should be treated for early syphilis, with **benzathine penicillin G 1.8 g (2.4 million units) im as a single dose** as a safeguard against foetal infection, and the reasons for treatment explained fully. If the patient is allergic to penicillin treat with **erythromycin 500 mg orally 4 times daily for 15 days**.

If the mother is treated with penicillin more than 4 weeks before delivery risk to the infant is minimal and follow-up of the infant involves clinical examination at birth, serology at birth and thereafter 3 monthly until the RPR is negative.

If maternal treatment was inadequate, unknown, with drugs other than penicillin, was completed less than 4 weeks before delivery, or if adequate follow-up of the infant cannot be assured, the infant should be treated at birth and have repeat serology 3 monthly until the RPR becomes negative. The CSF should be examined before treatment if there is a substantial risk of congenital syphilis.

For asymptomatic infants with normal CSF and for whom follow-up cannot be guaranteed treat with **benzathine penicillin G 50,000 units/kg im as a single dose**; and for other infants treat with **aqueous procaine penicillin G 50,000 units/kg im daily for 10 days**, or **aqueous crystalline penicillin G 100,000 units/kg iv daily in two doses for 10 days**.

5

Genital Herpes

Diagnosis

Definite

Isolation of herpes simplex virus (HSV) in cell culture from the cervix, urethra or a genital or perianal lesion. Ideally, the specimen should be taken within 72 hours of the appearance of a suspicious lesion.

Presumptive

Specimen from genital lesion demonstrates typical HSV morphology by electron microscopy
or

Evidence of HSV on Pap smear

Please note: ELISA test is not recommended because of defects in both sensitivity and specificity

Clinical

Dark field negative, typical herpetic genital lesions (pre-emergent paraesthesiae; blisters; multiple, painful shallow ulcers)

Management

Specific Treatment

No treatment is available to eradicate the virus.

Antiviral agents reduce viral shedding from lesions, hasten healing and reduce the risk of recurrence while being administered. In the STD clinic valaciclovir is used with the aim of avoiding hospitalisation and/or reducing severe patient distress in acute first episode infection.

The recommended regimen is:

valaciclovir 500 mg orally twice daily for 5 days (the patient should be reviewed after 5 days to check for resolution of symptoms; a further 5 days of valaciclovir may be indicated)

In cases of HSV proctitis, the recommended regimen is:

aciclovir 400 mg orally 5 times daily for 7 to 10 days

Recurrent Herpes

Intermittent Therapy

Most immunocompetent patients with recurrent disease do not benefit from intermittent antiviral therapy. If indicated, treatment should be instituted during the prodrome or within 2 days of onset of lesions. The recommended regimen using valaciclovir is as for first episode genital HSV illness. **Famciclovir 125 mg orally twice daily for 5 days** is an alternative treatment regime.

Suppressive Therapy

In patients with frequent (6 or more per year) or severe recurrences, daily suppressive therapy reduces the frequency of recurrences, although it does not totally eliminate symptomatic or asymptomatic viral shedding.

The recommended regimen is:

valaciclovir 500 mg orally daily for a minimum of 6 to 12 months (this dose may be increased to 500 mg twice daily if the patient has recurrences while on suppressive therapy)

or

famciclovir 250 mg orally twice daily for a minimum of 6 to 12 months

After 6 to 12 months, medication should be discontinued to allow evaluation of the rate and severity of recurrences.

General

The primary aim is supportive treatment by keeping lesions as clean and dry as possible while spontaneous healing occurs. This may be achieved by saline bathing (or other cleansing) of the ulcerated area, drying with tissues, application of *Betadine* paint and/or exposing the ulcers to air or the warmth of a reading light (a fan or hair dryer may be useful) for 10 to 15 minutes several times a day, particularly after urination (for women). Topical lignocaine, antiseptics and zinc creams should not be used.

Analgesics by mouth are often useful, particularly at night time.

Hospitalisation should be considered for patients who are in obvious distress from the physical effects of their lesions, particularly when pain is aggravated by walking or leads to urinary retention. This pattern occurs mainly in first attacks involving widespread ulceration of the vulval or perineal area.

Health Advice

Stress that the disease is common, is unlikely to interfere significantly with the patient's life after the first attack and is not likely to have serious complications. Women should be advised to continue with routine two yearly Pap smears and to inform the doctor managing any future pregnancies of the diagnosis.

The patient should not have sex whilst the lesions are present, but should also be made aware of the potential for asymptomatic viral shedding.

Provide the patient with or recommend literature on genital herpes.

Follow-Up

- Provide the results of tests performed at the first visit and explain their significance. False negative results are common and do not exclude herpes in individuals with characteristic clinical signs. Patients with recurrent ulceration where HSV has not been isolated should be reviewed by a sexual health physician.
- Record clinical progress and perceived value of the therapeutic measures used.
- Enquire about any anxieties or further questions the patient may have.
- Enquire whether the patient recalls the need for Pap smears and the procedure for pregnant women.
- Be supportive: genital herpes often causes great distress for the patient and/or sexual partner.

6

Genital *Chlamydia trachomatis* Infection

Diagnosis

Diagnosis is made on the basis of a positive chlamydia test which is performed on a urethral swab or urine from a male and on an endocervical swab from a female. For women without a cervix (post-hysterectomy) a urethral specimen is taken. Urine PCR or urine LCR are alternative tests.

Serology is of no value in the diagnosis of genital tract chlamydial infection.

Management

Treatment

First line

azithromycin 1 g orally as a single dose

Patients allergic to or intolerant of macrolides

doxycycline 200 mg orally daily for 10 days

Pregnant women

azithromycin 1 g orally as a single dose

(ADEC Category B1)

or

amoxicillin 500 mg orally 3 times daily for 10 days

The latter regimen is less likely to result in side effects. There is evidence in the literature to support its efficacy, but there has not yet been a large amount of clinical experience. Therefore, test of cure 3-4 weeks after treatment is completed and post-delivery is essential.

Epidemiologic Treatment

Epidemiologic treatment is given to sexual partners, regardless of age or gender, of persons with proven chlamydia.

In all cases, appropriate investigations for chlamydia should be performed before treatment is provided.

Health Advice and Contact Tracing

For most patients, the diagnosis will only be known at the second visit. Males may have been counselled for NSU or gonorrhoea.

Explain the nature of the infection: it is sexually transmitted, and very common. Infection is asymptomatic in 50% of men and up to 90% of women. Reinfection may occur during or after treatment, hence a follow-up visit is essential. The patient should not have sex until one week after medication has been completed.

- Provide literature on chlamydia.
- Advise that the disease is notifiable. Refer all patients for contact tracing.
- Advise about the side effects and potential interactions of any medication given.

Follow-Up

- Test of cure at one week is not recommended with PCR or LCR assays
- Check on medication compliance if single dose therapy not used, reaction to medication
- Evaluate symptoms and signs
- Enquire about further sexual activity since diagnosis, reinforce prevention and safe sex practices
- Recommend serology for HIV, hepatitis B and syphilis in 3 months

7

Non-Specific Urethritis and Urethral Irritation

Diagnosis

Non-Specific Urethritis (NSU) is diagnosed in males only, from microscopic examination of a smear made from a urethral swab. The diagnosis requires

- evidence of urethritis (5 or more polymorphs per high power field)
- and
- absence of gonococci or *chlamydia trachomatis*

Passage of urine may flush out urethral polymorphs, thus yielding a false negative result. Microscopy should preferably be performed at least 4 hours after the man last voided.

NSU may be diagnosed in the absence of symptoms such as urethral discharge or dysuria if there is no other obvious cause for inflammation such as herpes, balanitis or dermatitis.

Management

Treatment

In settings where microscopic examination of a urethral smear is unavailable on site, treatment of presumptive NSU is justified in symptomatic men.

Antibiotic treatment should never be commenced until after urethral swabs have been taken.

First line

doxycycline 200 mg orally daily for 10 days

OR
azithromycin 1 g orally as a single dose

OR
tetracycline HCl 500 mg orally 4 times daily for 10 days

Patients allergic to or intolerant of doxycycline

erythromycin 500 mg orally 4 times daily for 10 days

OR
roxithromycin 150 mg orally twice daily for 10 days

Health Advice

Diagnosis of NSU cannot be confirmed until both chlamydia and gonorrhoea have been excluded, and therefore will not be known until several days after the patient's initial presentation. At the first consultation, the patient should be advised not to have further sex until there is proof that he does not have chlamydia or gonorrhoea.

Explain the nature of the infection. The condition is benign and there is no equivalent condition in females. Symptoms may be slow to resolve or may recur despite treatment.

Note: The significance of ureaplasma is uncertain and its detection does not alter management. *Neisseria meningitidis* is occasionally identified on urethral culture in asymptomatic men. Its finding is usually incidental and does not require treatment. However, in the presence of symptoms *N. meningitidis* is assumed to be the cause of urethritis. In these cases it is a notifiable infection.

Follow-Up

The patient should be clinically reviewed 5 to 10 days after the completion of medication.

- Review results of gonococcal culture and chlamydia tests.
- Check on medication compliance.
- Evaluate symptoms and signs.
- Check reaction to medication.
- Enquire about sexual activity since treatment.
- If symptoms persist, repeat urethral smear for polymorphs, at least 4 hours after voiding.

Persistent NSU

In some men, the symptoms of urethritis do not resolve despite compliance with antibiotic therapy and abstinence from sexual activity. In these men, where the urethral smear still shows >4 polymorphs/HPF the following treatment regimen is recommended:

If a tetracycline was the first line therapy

roxithromycin 150 mg orally twice daily for 10 days

plus

metronidazole 400 mg orally twice daily for 5 days

If a macrolide was first line therapy

doxycycline 200 mg orally for 10 days

plus

metronidazole 400 mg orally twice daily for 5 days

Urethral Irritation

The diagnosis is made in men with dysuria and/or urethral discharge but no microscopic evidence of urethritis. (In settings where microscopy of a urethral smear is not available, this diagnosis cannot be reliably made.)

Management

The patient should be reassured that the symptoms are due to a mild irritation and not infection. Possible causes may include trauma, eg vigorous sexual activity or masturbation, or irritants such as alcohol. No antibiotic treatment is required. The symptoms subside in one to two weeks.

The patient should be advised to avoid manipulation of the penis (no squeezing or milking of the urethra) and he should abstain from sexual activity and masturbation.

Ensure that tests for gonorrhoea and chlamydia (and urinary tract infection if clinically indicated) have been done to exclude these infections. The patient should return for these results in 1 week, and should not have sex until negative gonorrhoea and chlamydia are confirmed.

8

Genital Warts

Diagnosis

Diagnosis is made on clinical grounds. Biopsy is rarely required for unusual presentations.

Management

Treatment

The aim of treatment is to remove clinically evident warts. No treatment has been demonstrated to eradicate HPV. All treatment modalities are associated with high recurrence rates.

In some cases, genital warts may regress spontaneously.

Cryotherapy

Liquid nitrogen is applied to visible warts at weekly intervals until resolution.

Podophyllotoxin

Podophyllotoxin 0.5% solution may be applied and provided for self-treatment. It is associated with a far lower rate of adverse reactions than treatment with podophyllin. The patient applies podophyllotoxin with a special applicator (included in packaging) twice daily for 3 days followed by 4 days of no therapy. This cycle may be repeated as necessary for a total of 4 cycles.

The doctor should demonstrate the proper application technique and identify which warts should be treated.

Podophyllotoxin should never be used in pregnancy.

Notes on Podophyllotoxin Therapy:

- *Do not use in pregnancy*
- *Do not use on cervical, rectal or urethral warts* (because of difficulty in preventing damage to adjacent moist tissues and the potential for systemic absorption).
- *Treat warts in the outer vagina or vestibular area with extreme caution.* Only treat small isolated warts and allow to dry, to minimise contact with normal mucosa.
- *Never use large volumes by treating extensive or very large warts.* When large numbers of warts are present, discuss management with a consultant.

Imiquimod

Imiquimod 5% cream (*Aldara*) may be prescribed for self-application. It is more effective for women than men.

Referral and Investigation

Surgical removal, electrosurgery or laser therapy are used for warts resistant to the foregoing methods, for extensive warts or warts in certain locations, eg rectal warts.

Women with genital warts should have a Pap smear taken at the initial consultation. Patients with cervical or extensive intravaginal warts should be referred for colposcopy.

Urethroscopy is indicated before treating recurrent meatal warts, and proctoscopy before treatment of perianal warts.

Health Advice

- Provide or recommend literature on warts and HPV.
- HPV infection is often present in the absence of genital warts and is only of clinical significance if present on the cervix. It is impossible to diagnose subclinical HPV infection clinically, and it is uncertain whether treatment would be of any benefit if such diagnosis were possible.

- Advise the patient regarding possible side effects from treatment and their management. If podophyllotoxin has been used, stress the need to return immediately if a severe reaction results from treatment.
- HPV transmission is thought to be more likely in individuals with clinical warts. Condom use may be recommended until resolution of warts.

Follow-Up

Clinical assessment at one week, to assess response to therapy, and retreatment as required.

Women with genital warts, or female partners of patients with genital warts should be encouraged to have regular Pap smears.

9

Trichomoniasis

Diagnosis

Detection of trichomonads in a wet preparation or smear. In males, microscopic examination of centrifuged urine may reveal trichomonads, but this test lacks sensitivity.

Management

Treatment

metronidazole 400 mg orally twice daily for 5 days

or

tinidazole 2 g orally as a single dose

or

metronidazole 2 g orally as a single dose

In pregnancy

**metronidazole 400 mg orally twice daily for 5 days
(ADEC B2)**

or

metronidazole 2 g orally as a single dose (ADEC B2)

or

**econazole 150 mg pessaries intravaginally at night for
3 nights**

Health Advice

Explain the nature of the infection and provide literature on trichomoniasis.

Counsel about the side effects and potential interactions of any medication given. The patient should not consume alcohol until 3 days after completion of metronidazole or tinidazole therapy.

Regular sex partners need to be examined and treated even if trichomonads are not detected. Men are usually asymptomatic and it is rare for trichomonads to be observed. (Males should not void for 4 hours before examination.)

The patient should not have further sex until the regular partner is treated and cured. In the absence of microbiologic test of cure, this means when therapy has been completed and both the patient and partner are without symptoms.

Follow-Up

One week after completion of therapy

- check that regular sex partner has been treated (if applicable)
- check on compliance for multi-dose regimen
- evaluate symptoms and signs
- check reaction to medication
- enquire about sexual activity since treatment
- perform test of cure

10

Vulvovaginal Candidiasis

Diagnosis

Budding cells or hyphae detected on a KOH preparation or Gram stain. Culture on Sabouraud's medium is much more sensitive than smear.

and

Symptoms and/or signs of vaginitis, eg discharge, vaginal itch or discomfort, dysuria, vulvovaginal erythema.

Management

Treatment is provided only for symptomatic women.

Treatment

Seven day regimens are preferred.

**miconazole 100 mg pessaries or cream 2%
intravaginally at night for 7 nights**

or

**clotrimazole 100 mg pessaries or cream 1%
intravaginally at night for 7 nights**

Health Advice

- Explain the nature of the infection and provide literature on candidiasis.
- Ensure that the patient is aware of the need for adequate hygiene and avoidance of potential irritants.
- Sexual transmission has negligible significance in the aetiology of vulvovaginal candidiasis. Sex partners do not need to be examined and treated.

Follow-Up

Nil. The patient should return for any other laboratory results.

Recurrent Candidiasis

Diagnosis

The occurrence of at least four mycologically proven symptomatic episodes of candidal vaginitis within 12 months, with the exclusion of other common vaginal pathogens.

Clinical Features

Identical to acute vulvovaginal candidiasis.

Management

Exclude associated factors such as pregnancy, uncontrolled diabetes mellitus, hormone therapy (including oestrogens or corticosteroids), HIV infection and repeated courses of broad-spectrum antibiotics.

Most sufferers of recurrent candida will already know about avoiding tight-fitting or synthetic underwear, and not using douches or vaginal deodorants.

Treatment

Suppressive prophylaxis using a long term maintenance regimen is needed. One of the following regimens is suggested:

clotrimazole 500 mg pessaries intravaginally at night, once weekly for six months

OR

ketoconazole 400 mg orally daily for 5 days after the onset of menses, over a six month period

OR

fluconazole 150 mg orally once monthly for six months

OR

ketoconazole 100 mg orally daily for six months

Routine treatment of partners is unlikely to reduce recurrence rates.

Candidal Balanitis

This topic is covered in Chapter 18.

11

Pediculosis Pubis

Diagnosis

Observation of pubic lice or nits attached to the hair. The diagnosis is suggested by a history of itching and exposure to lice or observation of crabs by the patient. Pubic lice can also involve eyelashes, eyebrows, beard and body hair. These areas should be examined.

Management

Treatment

permethrin 1% creme rinse

Permethrin should be applied to clean and cool skin. The patient should not take a hot bath or shower prior to treatment.

Apply to infected and adjacent hairy areas (application from chest to knees is usually recommended). The treatment should be washed off after 20 minutes.

Nits should be removed with a fine toothed comb.

Repeat the treatment in 7 to 10 days.

Sex partners should be treated concurrently.

Clothing and bed linen contaminated by the patient within the past 2 days should be washed and dried by machine (hot cycle) or dry cleaned.

If the eyelashes are infested, white soft paraffin (*Lacri-Lube*) can be applied to the lashes, and then the eggs removed, twice a day. This treatment should be continued for 7 to 10 days.

Health Advice

- Provide literature on pediculosis.
- Stress all the therapeutic features, and the need for concurrent treatment of regular sex partners.
- Non-sexual transmission of crabs is possible, but in almost all instances transmission is the result of prolonged close physical contact.
- Advise that the itch can last for a few days following treatment.

Follow-up

Nil. Patient should attend for results of any investigations performed.

12

Scabies

Diagnosis

Definitive diagnosis requires identification of the mite, eggs, larvae or faeces. Microscopic evidence of scabies should be obtained prior to initiating treatment.

Clinical diagnosis is made by observing typical lesions of wrists, fingers, axillae, penis or thighs or on eliciting the classic pattern of pruritus (at night; after hot shower/bath). If associated with exposure to an infected person, the index of suspicion should be high even if they have non-specific symptoms.

Immunosuppressed patients may present with Norwegian scabies. Large numbers of mites are present. The condition may not be pruritic. Extensive crusting may be seen.

Management

Treatment

permethrin 5% cream

- Permethrin should be applied to clean and cool skin. The patient should not take a hot bath or shower prior to treatment. 1% creams and lotions are ineffective against scabies.
- Apply thinly to all areas of the body from the neck down and wash off thoroughly after at least 8, but not more than 24 hours.

Pay particular attention to the areas between the fingers and toes, under finger and toenails, wrists, armpits, genitals, buttocks and perianal area. It is usually helpful for a second person to assist with the application of cream to areas that are not easily accessible.

- Reapply cream to the hands if they are washed within 8 hours of treatment.

Pregnant and lactating patients

permethrin 5% cream

Although classified as B2, permethrin has been used in pregnancy and lactation.

An alternative although much less effective treatment is

sulfur 10% in sorbolene cream

or

crotamiton 10% lotion or cream

Apply to entire body from the neck down, at night for 2 consecutive nights. Wash off 24 hours after the second application.

Immunosuppressed and HIV positive patients

These patients may prove resistant to topical therapy. Referral to a Dermatology or Infectious Diseases specialist may be necessary for treatment with systemic **ivermectin**. Norwegian scabies may also need **ivermectin** treatment.

Health Advice

- Provide literature on scabies. Stress need for concurrent treatment of sex partners and household contacts.
- Non-sexual transmission of scabies is possible, but requires direct and prolonged body contact.
- Clothing and bed linen which may have been contaminated by the patient within the past 2 days should be machine washed and dried (hot cycle) or dry cleaned.
- Pruritus may persist for several weeks after adequate therapy. A single retreatment after 1 week may be appropriate if there is no clinical improvement. In severe cases, systemic antipruritics or topical steroids may be required for alleviation of symptoms.
- Additional weekly treatments are warranted only if live mites can be demonstrated.
- Treatment failure is almost invariably due to inadequate application of cream or lotion.

Follow-up

Nil. Patients should attend for results of any investigations performed.

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Molluscum Contagiosum

Diagnosis

Clinical diagnosis is made on the basis of typical hemispherical, umbilicated, pearly lesions. Lesions are frequently present on the pubis or inner thighs; the genitals are often spared.

In HIV infection, lesions may be extensive, and atypical in appearance.

Molluscum inclusion bodies may be identified by microscopic examination of the stained crushed core of a lesion.

Management

Treatment

Lesions can be treated with cryotherapy. The lesions should resolve after a single treatment but it is not unusual for new lesions to appear in the following days or weeks. If the lesions fail to resolve, treatment can be repeated on a weekly basis.

Alternatively, the core of medium or large lesions may be removed by slitting the capsule with the edge of a 19 gauge needle. To prevent spread and secondary infection, povidone-iodine (*Betadine*) can be applied following this treatment.

Health Advice

- Provide literature on molluscum contagiosum.
- Explain the benign nature of the disease.
- The infection is spread by close physical contact. In adults with lesions on or near the genitals it is usually sexually transmitted.
- Advise the patient against scratching which may spread the lesions.
- Patients should be warned about the possibility of scarring and permanent hypo- or hyperpigmentation of the skin following the use of cryotherapy

Follow-up

Review clinical outcome 5-10 days after completion of treatment. Patients should attend for results of any investigations performed.

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Bacterial Vaginosis

Diagnosis

Diagnosis requires all the following criteria

- homogeneous white vaginal discharge
- "clue" cells on wet smear or Gram stain
- vaginal fluid pH ≥ 4.5

Management

If candida or trichomonas are present, treat for these conditions and reassess. Treatment is only offered to patients with clinical symptoms or signs, or if intrauterine instrumentation, eg termination of pregnancy is anticipated.

Treatment

metronidazole 400 mg orally twice daily for 5 days
(ADEC B2)

For patients intolerant of metronidazole

clindamycin cream 2%, 5 g intravaginally at night for 7 days or

econazole 150 mg pessaries intravaginally at night for 3 days or

***Aci-Jel* cream intravaginally at night for 7 days**

Health Advice

Provide literature on bacterial vaginosis. Explain the need to avoid alcohol until 3 days after metronidazole treatment is completed.

Follow-up

None. Sex partner evaluation is not indicated, unless the patient has symptomatic recurrences.

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Hepatitis B

Diagnosis

Active infection is indicated by the presence of hepatitis B surface antigen (HBsAg) in serum.

A diagnosis of acute hepatitis B is recorded for those patients who also have evidence of disturbed liver function, symptoms and a risk history suggesting recent infection. Repeatedly positive HBsAg over a 6 month period in the absence of acute symptoms or risk history to suggest recent infection indicates a chronic carrier state.

A person who has positive hepatitis B antibody (HBsAb) and negative HBsAg is immune and should not be further tested for hepatitis B. Positive HBsAb with negative core antibody is usually indicative of vaccination.

Management

Individuals with active disease, ie HBsAg positive and abnormal liver function tests should be referred to an appropriate specialist.

Non-immune sexual and household contacts of hepatitis B infection are candidates for hepatitis B vaccination.

The STD clinic offers vaccination to

- all employees of the STD clinic who are exposed to blood and body fluids
- non-immune regular sex partners of patients who have positive HBsAg or HBDNA
- sex workers
- men who have sex with men (past or current)
- injecting drug users (past or current)
- Aborigines
- Asians
- non-immune regular sex partners of the above groups
- hepatitis C positive people

Vaccination doses are given at 0, 1 and 6 months. This regimen indicates the minimum time between vaccination doses. There is no need to recommence vaccination if there is a delay between doses. Evidence of seroconversion is not sought. Vaccination should confer immunity for 5 to 10 years.

Health Advice

Discuss the mechanisms of transmission and preventive measures required (taking into account the infective and immune status of the individuals involved).

Follow-up

A person with positive HBsAg should be retested in 6 months. A positive test on follow-up indicates a chronic carrier state. If the patient has abnormal liver function tests, refer to an appropriate specialist.

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Hepatitis C

Diagnosis

Diagnosis is indicated by the presence of anti-HCV antibody in serum. Current tests usually become positive 2-3 months after infection but occasionally remain negative for a much longer period. Current antibody tests do not distinguish chronic HCV carriers from individuals who are immune from past exposure to the virus. Liver function tests are used as one indicator of active disease.

Indeterminate results may indicate seroconversion in individuals with recent risk activity, but usually are not a reflection of hepatitis C infection. To clarify the situation, a careful history for potential risk factors needs to be elicited, as well as any history of hepatitic illness or jaundice. Liver function tests should be performed. If the liver function tests demonstrate no abnormality and there is no history suggestive of hepatitic illness or hepatitis C risk factors, the client may be reassured that hepatitis C infection is unlikely. Repeat hepatitis C serology may be offered in 6 months to exclude recent seroconversion. In most cases this result will again be indeterminate.

Further testing for hepatitis C RNA by polymerase chain reaction may be justified to clarify infection status. RNA can be detected within one to two weeks of exposure. Such testing should not be performed without prior discussion with a consultant, and care must be taken with the interpretation of results.

Management

Treatment

If the test is positive order LFTs including ALT and α -fetoprotein and monitor the ALT levels three monthly for six months. Patients with elevated ALT values over a period of six months or more should be referred to an appropriate specialist. Referral should also be considered if the client has symptoms or signs suggestive of chronic hepatitis or liver failure. Patients with elevated α -fetoprotein should be retested in one month to exclude hepatocellular carcinoma.

If LFTs are normal, regular 12 monthly testing and clinical assessment for symptoms or signs of liver disease is recommended.

The risk of chronic active hepatitis and cirrhosis is thought to be greater in individuals who are positive for both hepatitis B and C. There are case reports of fulminant hepatitis A infection in individuals with chronic hepatitis C. Hence, hepatitis A and hepatitis B vaccinations are recommended for individuals who are hepatitis C positive.

If there is a history of continuing injecting drug use a referral to drug and alcohol services for substance abuse management should be discussed with the patient.

Health Advice

The patient should be provided with written information and counselled in relation to

- potential sequelae of hepatitis C infection
- treatments and follow-up
- maintenance of health
- transmission issues
- support resources

The patient should be made aware of the potential for the development of chronic hepatitis, cirrhosis and hepatocellular carcinoma, but reassured that these sequelae usually take many years to develop and do not occur in all individuals.

Treatment (**interferon**) is available for individuals with evidence of liver damage and other eligibility criteria, and is provided on the basis of disordered liver function tests over a period of at least 6 months. The patient should therefore have regular liver function assessment to determine eligibility for treatment and allow the early detection of complications.

The patient should be advised to avoid further damage to the liver wherever possible. Alcohol consumption should be limited to a maximum of 50 g per week, but preferably discontinued altogether. Hepatotoxic drugs should be avoided and vaccination for hepatitis A and B should be considered if there is no evidence of pre-existing immunity.

To reduce the likelihood of transmission, the patient should not

- donate blood, semen or other body tissues or organs
- share toothbrushes, razor blades, drug injecting equipment or any other objects likely to be contaminated with their blood

The risk of sexual transmission cannot be dismissed but the efficiency of sexual transmission is considered to be very low. The transmission rate is probably greater during acute hepatic illness and with anal rather than vaginal intercourse. Regular sex partners should be offered testing.

Health care workers involved with the management of the patient should be informed of their hepatitis C antibody status.

The risk of perinatal transmission is directly related to the level of maternal HCV RNA with a reported overall risk of transmission of about 6%.

The patient should be advised of the community support groups and resources available.

Follow-up

Patients who are Hepatitis C positive and who were not referred to a specialist after the initial assessment should be advised to have LFTs and clinical assessment for symptoms or signs of liver disease performed annually.

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Pelvic Inflammatory Disease (Acute Salpingitis)

Risk Factors

There is no single or combination diagnostic indicator that reliably predicts pelvic inflammatory disease (PID). However general predictors of disease include

- young age (<24)
- multiple sex partners
- high frequency of sex
- new partner within previous 30 days
- contraceptive use:
 - barrier methods (condoms, diaphragms, vaginal spermicides) are associated with a decreased risk.
 - Oral contraceptive pill (OCP) - increased risk of chlamydia, but a decreased risk of PID and no significant effect on the risk of tubal infertility.
 - Intrauterine contraceptive device (IUCD) - relative risk of PID associated with IUCDs (excluding Dalkon Shield) appears to be highest in the first four months after insertion of the IUCD.

Diagnosis

A combination of clinical and laboratory information is required. Symptoms alone are not a good predictor of PID, and clinical diagnosis alone is difficult.

On examination *all* of the following should be present

- lower abdominal tenderness
- cervical and uterine motion tenderness, and
- adnexal tenderness

These findings may be sufficient for a diagnosis of PID in a woman with a mild presentation, at risk of STDs and in the absence of strong evidence for a competing diagnosis.

There should also be *one* of the following criteria suggesting genital tract infection or an inflammatory process. When symptoms are severe, other diagnoses should be considered, and more than one of the following criteria should be present to make a diagnosis of PID.

- temperature > 38° C
- abnormal vaginal or cervical discharge
- pelvic abscess or inflammatory complex on bimanual examination
- Gram stain of the endocervix showing gram negative intracellular diplococci
- positive chlamydia test
- leucocytosis > 10 x 10⁹ WBC/L
- elevated ESR
- elevated C-reactive protein

The definitive criteria for diagnosing PID include the following:

- histopathologic evidence of endometritis on endometrial biopsy
- transvaginal sonography or other imaging techniques showing thickened fluid-filled tubes with or without free pelvic fluid or tubo-ovarian complex
- laparoscopic abnormalities consistent with PID.

Management

Treatment

Two objectives of antimicrobial therapy:

- short term: elimination of symptoms and signs of infection and eradication of pathogens
- long term: reduction of tubal damage (impossible to evaluate using current data)

There is consensus that PID is polymicrobial. *Neisseria gonorrhoeae* and *Chlamydia trachomatis* are implicated most often. In addition, a variety of endogenous anaerobic and aerobic bacteria have been isolated from women with PID and may also be causative agents of disease. Treatment is usually initiated empirically before a microbial cause is established.

Outpatient therapy

The following combination regimen should be used. If ongoing parenteral treatment is required, the woman should be hospitalised (see following section)

cefoxitin 2 g im as a single dose

plus

probenecid 1 g orally as a single dose

plus

doxycycline 100 mg orally twice daily for 14 days

plus

metronidazole 400 mg orally twice daily for 14 days

Indications for hospitalisation

CDC guidelines (MMWR 1998; 47 [No. RR-1] pp79-86) recommend hospitalisation when

- surgical emergencies such as appendicitis and ectopic pregnancy cannot be excluded.
- the woman is pregnant
- the woman has failed to respond clinically to outpatient oral therapy
- the woman is unable to follow or tolerate an outpatient oral regimen

- the woman has severe illness, nausea and vomiting, or high fever
- the woman has a tubo-ovarian abscess
- the woman is immunodeficient, eg HIV infection with low CD4 counts, on immunosuppressive medication, or with another disease

Other criteria for hospitalisation which have been considered include

- all women with PID
- all teenagers because of unpredictable compliance with therapy
- all women desiring more children
- all prepubertal patients
- when clinical follow-up within 72 hours of starting antibiotic treatment cannot be arranged
- the diagnosis is uncertain
- pelvic abscess is suspected

Removal of IUCD

It is common practice to remove an IUCD once PID has been diagnosed, but the effect on the acute infection by doing so is unclear.

Since women with PID are at high risk of a further episode of PID, the IUCD is probably not an appropriate contraceptive.

When a tubo-ovarian abscess is present therapeutic levels of appropriate parenteral antibiotics should be achieved before the IUCD is removed.

Against this background Clinic 275 policy is to remove the IUCD 48 hours after commencement of therapy for gonorrhoea or chlamydial infection, unless there are mitigating circumstances which pose a greater risk than that of PID, eg a likely absconder with a high risk of having an unwanted pregnancy before adequate contraception can be arranged.

Treatment of partners

Regular sex partners of all women with PID should be evaluated for STD and treated empirically for chlamydia and/or gonorrhoea even when there are no symptoms of disease.

Sequelae

Complications may occur in spite of adequate treatment. There are uncertainties regarding the effectiveness of antimicrobial therapy in totally eradicating tubal infection, even where cervical infection has been eliminated. Delay in diagnosis and treatment, or inadequate treatment may also increase the rate of complications. Complications include

- infertility
- chronic persistent pain
- increased incidence of ectopic pregnancy
- increased risk of further episodes of PID
- tubo-ovarian abscess

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Balanitis (and Balano-posthitis)

Diagnosis

Diagnosis is made on clinical grounds. Diagnosis may be difficult for the inexperienced because of the diversity of clinical features, which may mimic a variety of conditions.

Management

Treatment

Medication has a very limited role (and is best avoided in most cases) even though candida and many bacteria may be isolated from the inflamed area. The basis of treatment is to keep the foreskin clean and dry. If the foreskin is easily retractable, the patient should clean the glans with water only, 2-3 times a day, dry with tissues and retract the foreskin to expose the glans to the air, a fan or a reading light for 15 minutes. Individuals prone to balanitis should routinely perform this procedure nightly or at least several times a week. The patient should not retract a tight foreskin as paraphimosis is likely to occur.

If this procedure is not effective or if the foreskin is tight, circumcision should be recommended.

Health Advice

The patient should be counselled about the importance of keeping the glans clean and dry, rather than applying medication. Intercourse should be avoided in acute attacks because moisture and trauma exacerbate the condition. Sexual transmission of candida is not relevant.

Some men find that the morning after sex, the glans is inflamed. This probably occurs due to the overnight persistence of moisture under the foreskin following sexual activity rather than transmission of pathogenic organisms. The man should be advised to wash and dry the glans after intercourse or insertive oral sex.

The foreskin should always be retracted during urination.

Follow-up

Routine follow-up is not required.

Foreskin Hygiene

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Other STDs

Chancroid

Diagnosis

A cotton or calcium alginate swab taken from the ulcer base should be plated directly onto chocolate agar enriched with 1% isovitalex and containing vancomycin. After incubation in an atmosphere containing 5-10% CO₂, colonies appear in 2-4 days (sometimes as late as 7 days).

Treatment

ceftriaxone 250 mg im as a single dose

or

erythromycin 500 mg orally 4 times daily for 7 days

or

azithromycin 1 g orally as a single dose

Donovanosis

Diagnosis

Clinical

Infection occurs predominantly in Aborigines and occasionally in non-Aborigines who have had sex with Aborigines. Typical granulomatous lesions are beefy red and painless.

Laboratory

A biopsy specimen is crushed against a slide which is air-dried and stained with Wright's or Giemsa's stain.

Treatment

All antibiotics should be taken until lesions heal

doxycycline 100 mg orally twice daily

or

azithromycin 1 gm orally weekly

after failed therapy, or for immunosuppressed patients

azithromycin 500 mg orally daily

Lymphogranuloma Venereum

Diagnosis

The disease is rare in South Australia and diagnosis is difficult. A complement fixation test is sensitive but cross reacts with other chlamydial infections and titres below 1:64 should be interpreted with caution.

Treatment

doxycycline 100 mg orally twice daily for 21 days

For pregnant or lactating women

erythromycin 500 mg orally 4 times daily for 21 days.

Guidelines for STD/HIV Specimen Collection

Males

Urethral specimens

Men should be advised not to pass urine for at least four hours prior to specimen collection. Clinicians should consider recent voiding (within 30 minutes before specimen collection) in interpreting test results.

The first urethral swab is used to diagnose gonorrhoea, non-specific urethritis and other non-chlamydial causes of urethritis.

For gonorrhoea or non-specific urethritis

The urethra should be stripped several times so that any discharge can be collected on the swab. An air-dried smear should be made before the specimen is placed into an appropriate transport medium (either charcoal or Stuarts). In the absence of discharge a thin dacron-tipped swab is moistened with sterile saline and inserted 2-3 cm into the urethra and gently rotated before removal. Air-dried smears are prepared by rolling the swab on to a glass slide which is then allowed to dry before being placed into a transport container. This air-dried smear is then Gram stained in the laboratory. If an air-dried smear is not prepared by the practitioner then the laboratory staff will prepare one from the swab placed in the transport medium. A smear made at the time of specimen collection is of superior quality for Gram stain assessment.

For chlamydial tests (PCR, immunofluorescence, culture)

A laboratory-supplied swabstick is moistened with sterile saline and inserted 2-3 cm into the urethra. On removal the swab is placed in the provided transport container.

Rectal specimens

Proctoscopy should be performed and after inspection of the rectal mucosa swabs should be taken for gonorrhoea or viruses such as herpes. Rectal swabs without proctoscopy are of little value in the detection of gonorrhoea.

Pharyngeal specimens

After inspection of the oropharyngeal mucosa a throat swab is taken from the posterior aspect of the pharynx from one tonsillar region to the other. A gag reflex is usually encountered. The swab is then placed in the appropriate transport medium.

Urine specimens for PCR

The first 10 ml of voided urine are collected and sent to the laboratory. Men should not pass urine for at least 3 hours before testing and voiding within 30 minutes of specimen collection must be considered in interpreting test results.

Females

A speculum examination is performed and the cervix is adequately viewed.

Cervical specimens

If required a Pap smear is taken first.

After removing excess discharge from the cervix, a gonococcal detection swab is performed by inserting a cotton-tipped wooden swab into the endocervical canal. An air-dried smear is then prepared before placing the swab into an appropriate medium or plating out.

Cervical chlamydia swabs are cotton-tipped/dacron, non-wooden (plastic) swabs in the chlamydial collection kits provided by laboratories. This swab should be inserted into the cervical os and rotated.

A few seconds should be allowed for adequate cellular absorption on the swab, which after withdrawal should be placed into the chlamydial transport container.

Endocervical swabs can be taken during menstruation or if there is some bleeding after collection of the Pap smear. If the os is very tight and will not admit the usual swab, the male urethral collection swab should be used.

Vagina

A vaginal specimen should be collected from the lateral vaginal wall. The swab should be firmly rubbed against the vagina. An air-dried smear should be prepared and the swab should be placed in an appropriate transport container. This swab is usually used for diagnosis of candidal vaginitis or bacterial vaginosis. A wet preparation for trichomonas should be collected by sampling the secretions which have pooled in the posterior fornix and placing in 1ml of normal saline for rapid microscopic examination in the laboratory.

Women who have had a hysterectomy/without a cervix

If an STD is suspected in these women the STD collection swabs should be taken by insertion of saline-moistened thin swabs into the urethra. Alternatively, PCR testing for chlamydia may be performed on a urine specimen.

If indicated on history pharyngeal and rectal specimens should be collected as described.

Serology

Routine serological specimens for an STD screen include

- syphilis
- hepatitis B
- hepatitis C
- HIV

Serologic tests are not helpful for diagnosing clinical herpetic, gonococcal or chlamydial infections.

In certain circumstances the following tests should be performed:

- Immune function assessment/serology
- Liver function tests and α -fetoprotein

**Algorithms for urethral discharge
vaginal discharge, penile
or vulval lesions, and screening
asymptomatic patients for syphilis**

Notification of syphilis, gonorrhoea, chlamydia, HIV infection and hepatitis B and hepatitis C infection

Notification System

In South Australia there is a dual notification system which involves information from both laboratories and medical practitioners.

Medical Notification

There is a legal requirement for the attending clinician to notify all cases of syphilis, gonorrhoea, chlamydia, HIV, hepatitis B and hepatitis C infection.

Laboratory Notification

There is a legal requirement for laboratories to notify positive laboratory tests for syphilis, gonorrhoea, chlamydia, HIV, hepatitis B and hepatitis C. STD Services is notified of the patient's name, doctor's name and phone number.

The purpose of this system is to monitor medical notification and to contact the attending doctor rapidly when such notification is not forthcoming. The objectives of notification cannot be achieved by laboratory notification alone.

Notification of Gonorrhoea, Syphilis and/or Chlamydia

Purpose of notification is twofold

- to enable epidemiologic analysis for control activities, and
- to facilitate contact tracing which reduces spread of disease in the community and probability of reinfection in the treated patient. Clinicians indicate on notification forms whether they wish STD Services to undertake contact tracing or whether they would prefer to investigate the case themselves.

Notification forms and reply paid envelopes are sent out from STD Services.

Syphilis Case Definitions

Terminology

Syphilis may be **congenital** (acquired in utero) or **acquired** (acquired by sexual or other physical contact with an infected individual).

Acquired syphilis may be **primary** (chancre at site of inoculation), **secondary** (classical features include fever, lymphadenopathy, symmetrical maculo-papular rash, patchy alopecia, condylomata lata), **latent** (a quiescent stage with no signs of disease) or **tertiary** (comprising **benign, cardiovascular, neurosyphilis**).

Syphilis may be **symptomatic** or **asymptomatic**. Primary and secondary syphilis are symptomatic. Latent syphilis is asymptomatic. Congenital and tertiary syphilis may be symptomatic or asymptomatic.

Syphilis may be described as **early** or **late**, which are synonymous with **infectious** and **non-infectious**, respectively. Although secondary relapses may occur up to 4 years after infection, most occur within the first year of infection and are rare after the second year. Consequently early syphilis is defined as the first 2 years of infection (and includes primary, secondary and early latent infection).

NOTE: Congenital syphilis may be transmitted up to 8 years after a woman becomes infected.

Tertiary syphilis usually manifests decades after infection, but neurosyphilis may occur much sooner after infection.

Case definitions

Congenital syphilis

Proven: Requires identification of *T. pallidum* by dark field microscopy, fluorescent antibody, or other specific stains in specimens from lesions, autopsy material, placenta or umbilical cord.

Other indicators (some or all of which might be used for epidemiological purposes):

- a reactive serological test for syphilis in a stillborn
- a reactive VDRL test in CSF of the infant

- a reactive serological test for syphilis in an infant with any of the following signs: snuffles, condylomata lata, osteitis, periostitis or osteochondritis, ascites, skin and mucous membrane lesions, hepatitis, hepatomegaly, haemolytic anemia, splenomegaly, nephrosis, nephritis.
- fourfold or greater rise in titre of a nontreponemal test (VDRL/RPR) over a 3-month period
- a reactive treponemal test or non-treponemal test that does not revert to non-reactive within 6 months.

Primary syphilis

A chancre (typically solitary, indurated and painless)

plus

demonstration of *T. pallidum* by darkfield microscopy or fluorescent antibody techniques (**not** valid for oral lesions as commensal spirochaetes may be indistinguishable from *T. pallidum*)

or

serological criteria , such as:

seroconversion or increasing titre associated with the lesion

or

a fourfold rise in reagin titre before therapy

or

fourfold decline or return to seronegativity within three months of treatment.

Secondary syphilis

Typical lesions of secondary syphilis

plus

demonstration of *T. pallidum* in lesions

or

reagin titre of 1:16 or greater

Early latent syphilis

Absence of signs or symptoms

plus

a positive treponemal test (TPHA/FTA-ABS)

plus

documented seroconversion within the previous 2 years or a fourfold rise in reagin titre in the absence of treatment or a fourfold decline in reagin titre following treatment (within 6 months)

Late latent syphilis

Absence of signs or symptoms

plus

a positive treponemal test

plus

lack of a fourfold reagin titre change either before or after treatment.

NOTE: In the absence of supporting historical information it is rarely possible to distinguish late latent syphilis from adequately treated syphilis.

Asymptomatic neurosyphilis

Cerebrospinal fluid findings of a positive VDRL

plus

A white cell count exceeding $5/\text{mm}^3$

or

total protein exceeding 40 mg/100 ml indicates active neurosyphilis.

A negative FTA-ABS in the CSF excludes neurosyphilis. There are many cases where neurosyphilis can be neither confirmed nor excluded.

*NOTE: The foregoing criteria are **not valid during secondary syphilis** as 30% of such patients have indicators of neurosyphilis but do not have an outcome differing from those lacking the indicators.*

Notification of HIV Infection

Purpose of HIV notification:

- to enable surveillance of HIV infection in SA
- to facilitate contact tracing/partner notification; medical officers notifying the infection can either initiate contact tracing and send relevant information to the HIV epidemiologist or, after consultation with the client, request the HIV epidemiologist to investigate the case.

Notification forms and reply paid envelopes are sent out from STD Services.

Notification of Hepatitis B Infection

Purpose of HBV notification:

- to define HBV infection (both acute cases and chronic carriers) in South Australia for epidemiologic analysis
- to follow up individuals with acute infection

Notification forms and reply paid envelopes are sent out from STD Services.

Notification of Hepatitis C Infection

Purpose of HCV notification:

- to define HCV infection in South Australia for epidemiologic analysis
- to follow up individuals with recently acquired infection and those whose risk factor was not stated.

Notification forms and reply paid envelopes are sent out from STD Services.

STD Services

STD Services (Royal Adelaide Hospital) aims to reduce the impact of STDs in the community by

- reducing the incidence of disease
- reducing the duration of infection
- reducing the complications or anxiety associated with infection
- decreasing the nett cost of managing individual cases.

To facilitate these goals, the service operates a walk-in clinic (no appointment is necessary) at Clinic 275 (275 North Terrace) which is open from:

10.00 am to 4.30 pm Monday, Thursday and Friday,
12.00 noon to 7.00 pm Tuesday and Wednesday.

A full consultation service is available to all clinicians by contacting the Director, Dr Gavin Hart, on 8226 6559.

Role of General Practitioners

Important requirements for providing adequate investigation and management of patients who may have STD include

- access to laboratory testing for the most common STDs - gonorrhoea, chlamydia, NSU, genital herpes, syphilis, trichomoniasis and bacterial vaginosis
- an interest in STDs and a sensitivity to the psycho-social needs of patients with STDs and
- familiarity with appropriate systematic approaches to investigating patients for STDs.

Consultation is always available to assist clinicians with investigation and management. Alternatively, clinicians may wish to refer some or all patients to Clinic 275 for investigation and management.

Case definition of AIDS-defining illnesses used in Australia and USA

The AIDS case definition in Australia includes a confirmed diagnosis of HIV-1 infection and one or more of the following AIDS-defining illnesses, diagnosed presumptively or definitively according to the criteria listed below.

- ***Candidiasis of the bronchi, trachea or lungs***
Gross inspection by endoscopy or at autopsy or by microscopy (histology or cytology) on a specimen obtained directly from the tissues affected (including scrapings from the mucosal surface) not from a culture.
- ***Candidiasis, oesophageal***
Definitive diagnosis: As for candidiasis of the bronchi, trachea or lungs.
Presumptive diagnosis:
 1. recent onset of retrosternal pain on swallowing;
and
 2. oral candidiasis diagnosed by the gross appearance of white patches or plaques on an erythematous base or by the microscopic appearance of fungal mycelial filaments in an uncultured specimen scraped from the oral mucosa.
- ***Cervical cancer, invasive***
Histological evidence of cancer.
- ***Coccidiomycosis, disseminated or extrapulmonary***
Microscopy (histology or cytology), culture or detection of antigen in a specimen obtained directly from the affected tissues or a fluid from those tissues.

- ***Cryptococcosis, extrapulmonary***
Microscopy (histology or cytology), culture or detection of antigen in a specimen obtained directly from the affected tissues or a fluid from those tissues.
- ***Cryptosporidiosis, of more than one month's duration***
Microscopy (histology or cytology), culture or detection of antigen in a specimen obtained directly from the affected tissues or a fluid from those tissues.
- ***Cytomegalovirus disease, other than liver, spleen or nodes***
Microscopy (histology or cytology), culture or detection of antigen in a specimen obtained directly from the affected tissues or a fluid from those tissues.
- ***Cytomegalovirus retinitis, with loss of vision***
Definitive diagnosis: As for cytomegalovirus disease, other than liver, spleen or lymph nodes.
Presumptive diagnosis: A characteristic appearance on serial ophthalmoscopic examinations, for example discrete patches of retinal whitening with distinct borders, spreading in a centrifugal manner along the paths of blood vessels, progressing over several months, and frequently associated with retinal vasculitis, haemorrhage, and necrosis. Resolution of active disease leaves retinal scarring and atrophy with retinal pigment epithelial mottling.
- ***Encephalopathy, HIV related***
Clinical findings of disabling cognitive or motor dysfunction interfering with occupation or activities of daily living, progressing over weeks to months, in the absence of a concurrent illness or condition other than HIV infection that could explain the findings. Methods to rule out such concurrent illness and conditions must include cerebrospinal fluid examination and either brain imaging (computed tomography or magnetic resonance) or autopsy.

- ***Herpes simplex: chronic ulcer(s) of more than one month's duration, bronchitis, pneumonitis or oesophagitis***
Microscopy (histology or cytology), culture or detection of antigen in a specimen obtained directly from the affected tissues or a fluid from those tissues.
- ***Histoplasmosis, disseminated or extrapulmonary***
Microscopy (histology or cytology), culture or detection of antigen in a specimen obtained directly from the affected tissues or a fluid from those tissues.
- ***Isosporiasis, chronic intestinal, of more than one month's duration***
Microscopy (histology or cytology), culture or detection of antigen in a specimen obtained directly from the affected tissues or a fluid from those tissues.
- ***Kaposi's sarcoma***
Definitive diagnosis: Microscopy (histology or cytology).
Presumptive diagnosis: A characteristic gross appearance of an erythematous or violaceous plaque-like lesion on skin or mucous membrane. (Note: A presumptive diagnosis of Kaposi's sarcoma should not be made by clinicians who have only seen few cases).
- ***Lymphoma, Burkitt's***
Microscopy (histology or cytology).
- ***Lymphoma, immunoblastic***
Microscopy (histology or cytology).
- ***Lymphoma, primary, of brain***
Microscopy (histology or cytology).
- ***Mycobacterium tuberculosis, any site, pulmonary or extrapulmonary***
Definitive diagnosis: Isolation of *Mycobacterium tuberculosis*, *M. bovis* or *M. africanum* from a clinical specimen

Presumptive diagnosis: Demonstration of acid-fast bacilli in a clinical specimen or, when a culture is not available, in a histopathological lesion in a person with signs or symptoms compatible with tuberculosis; or evidence of resolution of disease where treatment with two or more antituberculosis medications have been prescribed and follow-up has been instigated.

- ***Mycobacterial disease (other or unidentified species), disseminated or extrapulmonary***

Definitive diagnosis: Culture.

Presumptive diagnosis: Microscopy of a specimen from stool or normally sterile body fluids, or tissue from a site other than lungs, skin or cervical or hilar lymph nodes that shows acid-fast bacilli of a species not identified by culture.

- ***Pneumocystis carinii pneumonia***

Definitive diagnosis: Microscopy (histology or culture).

Presumptive diagnosis:

1. a history of dyspnoea on exertion or non-productive cough of recent onset (within the past three months); *and*
2. chest X-ray evidence of diffuse bilateral interstitial infiltrates or evidence by gallium scan of diffuse bilateral pulmonary disease; *and*
3. arterial blood gas analysis showing arterial pO₂ less than 70 mm Hg, or low respiratory diffusing capacity (less than 80 per cent of predicted values), or an increase in the alveolar-arterial oxygen tension gradient; *and*
4. no evidence of bacterial pneumonia.

- ***Pneumonia, recurrent bacterial***

Definitive diagnosis: Two or more episodes of acute pneumonia occurring within twelve months. Both episodes must have infection with a pathogen that typically causes pneumonia (other than *P. carinii* or *M. tuberculosis*) proven by culture or some other organism-specific diagnostic method and new (not present earlier) radiological evidence of pneumonia.

Presumptive diagnosis: Two or more episodes occurring within twelve months of acute pneumonia (new symptoms, signs or X-ray evidence not present earlier), based on clinical or radiological evidence.

- ***Progressive multifocal leukoencephalopathy***

Microscopy (histology or cytology).

- ***Salmonella septicaemia, recurrent***

Culture-proven infection with *Salmonella* species.

- ***Toxoplasmosis***

Definitive diagnosis: Microscopy (histology or cytology).

Presumptive diagnosis: Toxoplasmosis of the brain, based on observation of:

1. recent onset of a focal neurological abnormality consistent with intracranial disease or a reduced level of consciousness; *and*
2. evidence by brain imaging (computed tomography or magnetic resonance imaging) of a lesion having a mass effect or the radiographical appearance of which is enhanced by injection of contrast medium; *and*
3. serum antibody to *Toxoplasma* or successful response to therapy for toxoplasmosis.

- ***Wasting syndrome due to HIV infection***

1. profound involuntary weight loss of more than 10 per cent of baseline body weight *and*
2. chronic diarrhoea (at least two loose stools per day for thirty days) *or* chronic weakness and documented fever (for at least thirty days, intermittent or constant) in the absence of a concurrent illness or condition other than HIV infection, such as tuberculosis, cancer, cryptosporidiosis, or other specific enteritis, that could explain the findings.

- **Bacterial infection affecting a child less than 13 years of age**

Laboratory diagnosis of multiple or recurrent bacterial infections (any combination of at least two within two years) of the following types:

septicaemia, pneumonia, meningitis, bone or joint infection, abscess of an internal organ or body cavity (excluding otitis media or superficial skin or mucosal abscesses) caused by *Haemophilus* spp., *Streptococcus pneumoniae* or other pyogenic bacteria.

- **Lymphoid interstitial pneumonia and/or pulmonary lymphoid hyperplasia affecting a child less than 13 years of age**

Definitive diagnosis: Microscopy (histology or cytology).

Presumptive diagnosis: Lymphoid interstitial pneumonia - bilateral, reticulonodular, interstitial pulmonary infiltrates present on chest X-ray for two months or more, with no pathogen identified and no response to antibiotic treatment. Other causes of interstitial infiltrates should be excluded, such as tuberculosis, *Pneumocystis carinii* pneumonia, cytomegalovirus infection and other viral or parasitic infections.

US Centers for Disease Control (CDC) 1993 classification

Category	CD4 Count		
	>500	200 - 500	<200
(A) Asymptomatic, primary HIV, PGL	A1	A2	A3
(B) Symptomatic, not (A) or (C)	B1	B2	B3
(C) AIDS-defining conditions	C1	C2	C3

Patient Information on the HIV antibody test

Clinic 275 offers an HIV test as part of a sexual health check-up. A blood test is used to check for HIV infection.

Before the test is performed you should be aware of the following issues. If you have any questions please ask your doctor or health adviser.

What are HIV and AIDS?

- HIV means Human Immunodeficiency Virus
- AIDS means Acquired Immune Deficiency Syndrome.

HIV is present in the blood, semen and vaginal fluids of people who are infected. Any person who has the virus can pass it on by these fluids. A person who does not have the virus can become infected by contact with these fluids.

People infected with HIV look and feel healthy most of the time. However, the virus slowly damages the person's immune system. This means they are less able to resist and recover from infections. Eventually the person will get infections or illnesses that usually do not affect people with healthy immune systems. When a person has one of these illnesses, they then have AIDS.

The HIV Test

Before the HIV test you should talk to a doctor or health adviser to ask any questions you may have, and again after you get the results. Blood is taken from a vein in your arm for the test and you will be asked to return to the clinic in 7 days for the results.

The test detects HIV antibodies (these are proteins made by the immune system after infection by HIV). Once a person has been infected with HIV, the antibodies can be found in their blood for the rest of their life.

It may take 3 months for antibodies to develop after HIV first enters the body. Before 3 months, the test may give a negative result, even though HIV is present.

This means that if you want to know if you were infected from a particular incident, you should have a test at least 3 months later.

If the test result is negative

This means HIV antibodies were not detected in your blood because:

- you have not been infected with HIV
- or
- you have been infected recently and have not yet made antibodies to HIV.

You should discuss the result with your doctor or health adviser to work out which possibility applies to you. The test may need to be repeated.

If the test result is positive

This means you have been infected with HIV and the virus will probably remain in your system for life.

People who are HIV positive can infect others:

- during unsafe sex
- when sharing needles and syringes
- by blood transfusion (in Australia, blood has been tested for HIV since 1985)
- infected women can pass the virus to their babies around birth and by breast milk.

HIV is not spread by coughing, sneezing, sharing eating utensils, shaking hands, hugging or kissing.

People with HIV can stay healthy for many years and infected individuals can help delay the onset of AIDS. Some lifestyle changes can reduce the chance of getting other infections. Medical checks, drug treatments and antibiotics will delay the onset of AIDS and prolong life for HIV positive people.

Most people do not develop AIDS until many years after infection with HIV.

Issues to consider when having a test

If the test is negative, you are unlikely to be infected unless infection occurred within the past 3 months. This reassurance is of little value if you have unsafe sex or share needles after taking the test.

If the test is positive, you have acquired the infection, are infectious to others and may get AIDS. You should take action to prevent infecting others and delay the onset of AIDS by maintaining your health.

Choosing to have a test with an experienced and supportive doctor or health worker will be less stressful than if infection is found following an accident, or after admission to hospital with an advanced HIV related illness.

The test result may encourage you to make changes that will reduce your risk of infection in the future.

You may be concerned about confidentiality; be careful who you tell about having the test, or the test results. Staff will not tell your results to anyone outside the clinic.

You may be concerned that the test will affect your chances of overseas travel or life insurance. Some insurance companies require an HIV test or disclosure of risk factors before accepting a policy. Some overseas embassies require an HIV test or declaration of any infectious diseases before issuing a visa. The test result may affect immigration procedures for those seeking permanent residency in Australia.

Safe Sex: Preventing HIV Transmission

Whether you decide to have the test or not, practising safe sex will help prevent the spread of HIV.

Practise safe sex if there is any chance either you or your partner could have HIV. It only takes one unsafe sexual contact to pass on the virus.

Safe sex means being careful not to share semen, blood or vaginal fluids. Whenever you have intercourse (vaginal or anal), use a condom. Use it with a water-based lubricant (*KY, Wet Stuff*); saliva is not a good lubricant.

If vaginal or anal intercourse is not important explore other sexual activities. Oral sex is usually a low risk for transmitting HIV. More information about the safety of sex practices can be obtained from the doctor or health adviser.

Despite the best intentions, many unsafe contacts happen when people's judgements are affected by drugs or alcohol. If you inject drugs – use sterile equipment, don't share, and practise safe sex.

Publications of STD Services

- Bulletin No. 1** **Diagnosis and Management of STDs (including HIV infection)**
First printed May 1988
Revised May 1990
Revised June 1993
Revised August 1996
- Bulletin No. 2** **Reducing the Impact of Sexually Transmitted Diseases including HIV Infection**
First printed 1988
(Revised 1991)
- Bulletin No. 3** **STD Training for Doctors and Medical Students**
- Bulletin No. 4** **Information Systems for STD Control Programmes**
- Bulletin No. 5** **Clinic 275 Operations Manual**
- Bulletin No. 6** **The Epidemiology of Chlamydia and Gonorrhoea**
- Bulletin No. 7** **Service Evaluation and Staff Management in an STD Clinic.**

Venereologica: facts and figures from an STD clinic

From night clinics to the internet. A History of Sexually Transmitted Diseases in South Australia, 1916-1996

Epidemiologic Reports

Sexually Transmitted Diseases in South Australia, Epidemiologic Report No.1 - 1987

Sexually Transmitted Diseases in South Australia, Epidemiologic Report No.2 - 1988

Sexually Transmitted Diseases in South Australia, Epidemiologic Report No.3 - 1989

Sexually Transmitted Diseases in South Australia, Epidemiologic Report No.4 - 1990

Sexually Transmitted Diseases in South Australia, Epidemiologic Report No.5 - 1991

Sexually Transmitted Diseases in South Australia, Epidemiologic Report No.6 - 1992

Sexually Transmitted Diseases in South Australia, Epidemiologic Report No.7 - 1993

Sexually Transmitted Diseases in South Australia, Epidemiologic Report No.8 - 1994

Sexually Transmitted Diseases in South Australia, Epidemiologic Report No.9 - 1995

Sexually Transmitted Diseases in South Australia, Epidemiologic Report No.10 – 1996

Sexually Transmitted Diseases in South Australia, Epidemiologic Report No.11 – 1997

Sexually Transmitted Diseases in South Australia, Epidemiologic Report No.12 – 1998

Quarterly Surveillance Reports

STD Control Branch, Quarterly Surveillance Report
No. 1 July – September 1996

STD Control Branch, Quarterly Surveillance Report
No. 2 October – December 1997

STD Control Branch, Quarterly Surveillance Report
No. 3 January – March 1997

STD Control Branch, Quarterly Surveillance Report
No. 4 April – June 1997

STD Control Branch, Quarterly Surveillance Report
No. 5 July – September 1997

STD Control Branch, Quarterly Surveillance Report
No. 6 October – December 1997

STD Control Branch, Quarterly Surveillance Report
No. 7 January – March 1998

STD Control Branch, Quarterly Surveillance Report
No. 8 April – June 1998

STD Control Branch, Quarterly Surveillance Report
No. 9 July – September 1998

STD Control Branch, Quarterly Surveillance Report
No. 10 October – December 1998

STD Control Branch, Quarterly Surveillance Report
No. 11 January – March 1999

STD Control Branch, Quarterly Surveillance Report
No. 12 April – June 1999

STD Services, Quarterly Surveillance Report
No. 13 July - September 1999

STD Services, Quarterly Surveillance Report
No. 14 October – December 1999