

Primary care management of STIs

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Introduction

Sexually transmitted infections (STIs) are a diverse group of infections whose most common feature is sexual transmission. This group embraces the blood-borne viruses (BBVs)—hepatitis B virus (HBV), hepatitis C virus (HCV) (very rarely) and human immunodeficiency virus (HIV)—as well as other well known STIs such as gonorrhoea, syphilis, and genital chlamydia infection.

This chapter aims to provide an update on the management of STIs for primary care practitioners and other specialist clinicians who may be relatively unfamiliar with STIs, and to describe the role of the primary care clinician in the diagnosis and treatment of patients with STIs.

In the first part of the chapter the emphasis will be on general principles of management. The second part of the chapter will look at the individual management of the eight STI syndromes outlined in Chapter 8.

The challenge of managing patients with STI infection

There are many challenges in the management of patients with STIs or patients who are at risk of STIs. Misconceptions about STIs are rife in the community and patients are generally less well informed about common STIs than they are about HIV. Only a minority know how common genital chlamydia infection is in the community, how silent it can be and how it is associated with pelvic inflammatory disease (PID) and later infertility in women. Providing simple information about STIs and their potential for harm is a vital role for the primary care clinician. Management of all STIs is shaped by the stigma attached to these infections and the fear or anxiety patients may have about the necessary investigations, the treatments involved and exactly what the diagnosis means to them, their regular sexual partner and other current or future partners. Women almost inevitably think about the possible effect of the diagnosis on their fertility and their ability to give birth to healthy children.

Key points

- In their early stages, STIs are generally simple infections, capable of rapid assessment and on-the-spot single dose treatment.
- Some STIs (e.g. chlamydia, herpes simplex, human papillomavirus) are amongst the most common infections encountered in everyday practice, so clinicians need to be familiar with their management and know how to talk with and inform their patients about these conditions.
- Although single-dose treatment is favoured for STIs, there are some situations (PID, epididymo-orchitis) where more prolonged treatment is necessary. If the patient is regularly missing doses, treatment failure may result.
- STIs and fear of STIs introduce a range of psychosocial and sexuality questions in patients; the clinician has a vital role in providing an opportunity for patients to talk about and explore these uncertainties.
- Contact tracing (partner notification) is an integral part of the treatment of almost all STIs. All treating clinicians have a clear responsibility to help achieve successful outcomes in contact tracing.
- All ano-genital ulceration in Australia and New Zealand is due to genital herpes until proven otherwise, but clinicians should always ask themselves 'could this be syphilis?'
- Once the clinician has excluded pregnancy in a patient with pelvic pain, if the sexual history is suggestive, she or he should treat immediately for STI-related PID, pending results of tests and response to therapy.
- Think of primary HIV infection in any patient diagnosed with a recently acquired STI, as well as in any patient with a flu-like illness.
- Not all ano-rectal symptomatology is surgical or routinely medical. Ask yourself, and not just in gay men, 'could this be an STI?'
- Treating genital warts can be tedious and time-consuming but it is difficult to overstate the psychological impact of their presence on a patient's sense of wellbeing.

Clinicians must be sensitive to these issues and must be prepared to discuss them frankly.

The doctor-patient relationship is central to the successful management of STIs. Establishing, from the very first visit, friendly and open rapport and then nurturing this ongoing relationship is a major task for the primary care clinician. The qualities clinicians need to maintain such a relationship are demanding, but not unlike qualities needed to manage other conditions. They are empathy, honesty, sensitivity to the patient's feelings and needs, accessibility, a firm and practical commitment to confidentiality and the privacy of the patient, and medical knowledge and expertise. In addition the clinician needs to be able to show by body language, attitude and spoken word, that she or he is comfortable talking about sex without reserve or shame and is ready and able to deal helpfully with patients with possible STIs. Finally, the clinician needs to be able to set aside personal feelings, moral beliefs and any long-held attitudes towards sex and sexual diversity so that the patient does not feel judged or belittled.

Natural history

When managing and treating STIs, it's useful to understand the natural history of the specific STI you're dealing with; this is especially important where no curative treatments are available—as is the case with the viral STIs. It's also useful to know where there are gaps in medical knowledge, e.g. with genital human papillomavirus (HPV) infection.

Assessing the patient with a possible STI

The initial assessment

Patients requiring assessment are those who present with symptoms that are consistent with an STI being present, those who declare that they are concerned about STIs and that they may be at risk for an STI, as well as those who accept opportunistic STI screening at the clinician's suggestion.

There are several things the clinician will want to know about the patient:

- The nature of the symptoms: are they one of the eight STI syndromes (see Table 12.1). Could these symptoms be due to something not STI-related such as torsion of the testis or ectopic pregnancy?
- Any previous history of STIs or tests for STIs: have there been previous sexual health check-ups?
- The sexual history: what is the patient's risk? For example, numbers of partners in last three months and 12 months, gender(s) of partners, types of sex (vaginal, oral, anal), type of protection used if any (condoms, contraception), partners' sexual risks (overseas travel, injecting drug use, sex worker or client of sex worker, possible same sex contact).
- The patient's level of knowledge about STIs, including BBV

TABLE 12.1 STI syndromes

• Urethral discharge
• Vaginal discharge
• Ano-genital ulcer disease
• Ano-genital lumps and bumps
• Ano-rectal syndromes
• Pelvic pain syndrome in women
• Scrotal swelling
• Skin rash – genital and generalised

- General health and past medical history including vaccinations: hepatitis A virus (HAV), hepatitis B virus (HBV), and human papillomavirus (HPV); drug allergies
- Recent medications, both systemic and topical, prescribed or over the counter: has the patient been using any antimicrobial agents in the last few days?
- Psychosexual history: is the patient comfortable with sexuality? Is the patient able to cope well with problems of everyday life? Is there any psychiatric history?

Establishing a good rapport with your patient takes practice, but it should be possible to gain the required information within a reasonable time frame and in such a way that the patient feels involved and a contributor to the process. Assessing sexual risk requires a collaborative approach between clinician and patient. The clinician is also able to impart a lot of useful information to patients while taking a sexual history.

Co-infection with HIV

HIV infection is an STI, so almost by definition people with an STI, or at risk of STIs, are at some risk of HIV, although the precise level of risk will depend on the type of sexual activities, the gender of the patient's partner or partners and the prevalence of HIV infection in the region, city or country where the patient's sexual contact(s) took place.

The interaction between HIV and other STIs is complex and cumulative (see Chapter 1). HIV, on the one hand, interferes with the clinical manifestations and severity of some STIs and, on the other hand, some STIs increase the viral load of HIV in bodily fluids, enhance HIV viral shedding from genital sites and can alter the natural history of HIV infection.¹

People living with HIV today are generally well and continue to be sexually active. Their treating clinicians would not want them, nor advise them to become celibate, but they do exhort them to

adopt safer sex practices to avoid contracting other STIs and to prevent ongoing transmission of HIV. Standard safe sex practices which advocate condoms for all penetrative vaginal and anal sex still allow unprotected oral sexual activities to continue. Several STIs are transmitted by oral sex, so all clinicians now advise regular screening of people with HIV infection for other STIs and appropriate guidelines are available (see Chapters 4 and 9).^{2,3}

Primary HIV infection (the seroconversion illness) in Australia and New Zealand occurs most commonly after an unsafe sexual contact. Unsafe sexual contacts sometimes result in the patient contracting another STI in addition to HIV. The STI may be symptomatic or the patient may be diagnosed with an STI after undergoing a routine opportunistic screen on the clinician's recommendation (see Chapter 8). In either case, primary HIV infection can be recognised first in primary care practices (including emergency departments and sexual health clinics)⁴ as often the reason the patient attends is for intercurrent flu-like illness (see Chapter 8). The take-home message is:

- Think of primary HIV infection in any patient diagnosed with a recently acquired STI, as well as in any patient with a flu-like illness (Case Study 1).

Physical examination

When patients have symptoms consistent with a STI, clinicians should examine with a good light source the anogenital region very carefully as well as any other relevant areas (mouth and throat, lymph nodes, palpation of abdomen and pelvis) to avoid the possibility of missing pathology. The clinician should take the time to explain why a genital examination is necessary, what it involves and, most importantly, what measures she or he proposes to minimise embarrassment (a covering sheet, presence of a nurse of the same gender as the patient). If an internal vaginal or a proctoscopic examination is required, the clinician should show first time patients the equipment which will be used. It is a matter of clinician preference what position the patient should be placed in for a vaginal speculum examination or proctoscopy: the left lateral position is good for ano-rectal examination, and lithotomy is most preferred for vaginal speculum examination, but patient comfort and being able to see what is being done are the main considerations. If a Papanicolaou smear is to be done or swabs are to be taken during the course of an internal examination, the clinician should explain briefly what will be done and why, assuring the patient that such testing causes little if any discomfort. It is preferable to have everything ready (specimens labelled and swabs within easy reach) before the examination begins. The aim is to perform the anogenital examination smoothly, painlessly and with minimal psychological discomfort. It is an art, so it takes practice.

CASE STUDY 1

Barbara is a 22-year-old university student and lives in an inner city suburb of Sydney. About six months ago she formed a relationship with a 25-year-old male student from Cambodia. Barbara has had an Implanon implant in situ for one year and has been amenorrhoeic until this episode.

Barbara developed mild pelvic pain of 10 days duration three months ago and irregular vaginal bleeding over the previous month. Her clinician strongly suspected PID and commenced appropriate treatment immediately, with good initial resolution of symptoms. A cervical swab showed a positive PCR test for chlamydia and all other STI tests, including HIV antibody, were negative. Her boyfriend attended the Student Health Service (SHS) and also had a positive PCR test for chlamydia on a FCU specimen. The doctor at the SHS treated him with azithromycin. Ten days into her treatment for PID Barbara woke up one morning with nausea, vomiting, fever, headache and painful mouth ulcers. She had developed a mild macular erythematous rash on her chest and abdomen. Her boyfriend took her to the local emergency department and the doctor who assessed her admitted her to the gynaecology ward, as she still had mild tenderness in her lower abdomen.

The presumptive diagnosis was an exacerbation of PID with a possible allergic reaction to either doxycycline or metronidazole. Her treatment was changed to an intravenous regimen of clindamycin plus gentamycin. Over the course of the next two weeks she slowly improved. Now, three months later, she returns to her usual clinician for follow-up STI tests. Her clinician is concerned to see that Barbara has lost 7kg in weight since her last visit and is even more concerned when the laboratory rings to say Barbara's HIV antibody test is now positive.

Taking tests

Patients can be asked to collect tests themselves, which is ideal and the preferred method for screening, but not ideal for testing symptomatic patients: such tests are first catch urine (FCU), mid-stream urine (MSSU), high vaginal swabs (HVS) and blind anorectal swabs. Throat swabs are taken by a clinician to sample the oropharynx rather than the roof of the mouth or the tongue. In patients with symptoms, clinicians should examine and collect tests during the course of examination of the external anogenital region, the vagina and cervix or the anal canal and rectum. If on a first visit the patient is excessively shy and uncomfortable, she or he can self-collect specimens of discharge, or swab a genital lesion: the clinician might succeed in doing an examination at the next visit, but this is a second best option. Some clinicians refer all their clients to a pathology laboratory for ano-genital testing. This is acceptable if the clinician knows that the local laboratory staff are experienced in their work and sensitive in their dealings with shy and embarrassed patients with a possible STI.

Serological testing

Serological tests are available for HIV antibody (combined in Australia with a p24 antigen test which allows earlier detection of HIV infection); syphilis (specific antibody tests and a non-specific but useful test, the rapid plasmin reagin test [RPR]), herpes (type specific tests for antibody to herpes simplex virus HSV-1 and HSV-2), chlamydia (antibody: readily available but only useful for the diagnosis of lymphogranuloma venereum [LGV]), hepatitis A (IgM and IgG antibody), hepatitis B (surface antigen, surface antibody and core antibody) and hepatitis C (antibody). Syphilis and HIV are relatively rare infections in the Australian and New Zealand populations generally, but both are serious infections and early diagnosis is important for the individual patient and for the public health. For this reason, after appropriate pre-test discussion, it is good practice to encourage all patients at risk for STIs to have a serological test for HIV and syphilis. Syphilis is still endemic in Indigenous communities, in neighbouring countries in Asia and around the Pacific rim, and among men who have sex with men (MSM). HIV is a definite risk for MSM in both Australia and New Zealand, so the recommendation for HIV and syphilis testing is even stronger in MSM and Indigenous patients, as well as in travellers who have had sexual contacts in countries where syphilis and HIV are prevalent. Serological testing for herpes is only useful in certain specific clinical situations, one of which may be screening MSM and especially HIV-positive MSM³ (see Chapter 8). However, in general, screening for HSV serologically is not helpful for individual patient care at the present time.

On a first visit, testing for previous exposure to HBV (generally HBcAB, but HBsAb if the patient believes they have been vaccinated already) and, in the case of MSM, to HAV (HAV IgG) is a prelude to offering vaccination if testing shows the patient is not immune.

Making a quick psychosocial assessment

The clinician must take into account psychosocial as well as biomedical factors. This is more the case with some STIs than others. For example, the diagnosis of potentially long-term genital infections like genital herpes and genital HPV is much more likely to have a significant psychological, social and emotional impact on the patient than the diagnosis of an infection like gonorrhoea or chlamydia, which is easily cured with the correct dose of an appropriate antibiotic. While individuals vary greatly in their perception of what an STI diagnosis means for them, there is still a strong undercurrent of stigma and opprobrium in the community about STIs, and it is a rare patient who is not affected by this very negative response. Sometimes patients feel disproportionate shame and loss of self-worth even when they have a very minor STI (e.g. pubic lice). They say they feel dirty, soiled, 'used' and betrayed by their sexual partner. It is clear that the diagnosis of an STI may

bring underlying conflicts and varying degrees of guilt about sex and sexuality to the surface for the first time. In these situations the treatment of the STI may constitute only a small part of the necessary overall management of the patient. The diagnosis of genital herpes may precipitate a grief and loss reaction because the patient may believe this particular condition renders them sexually unattractive, a continual risk to any future sexual partner and that they will never be able to contemplate pregnancy and parenthood.

It's essential, therefore, that the clinician makes a quick assessment, at the time of the initial consultation, of the psychological strengths and weaknesses of the patient and their psychosocial situation. Consideration of the following issues (many of which are identical to the ones suggested in Chapter 9 in the assessment of patients with HIV) may be helpful:

- Self-esteem and self worth
- Perception of stigma associated with STIs
- Family relationships and supports for adolescents
- Past or present sexual abuse or risk
- Sexuality and patient's comfort with it
- Compulsive sexual behaviour
- Sexual relationships and related issues of disclosure and safe sex
- Depression and emotional issues (e.g. anger, denial, anxiety, obsessional ideas)
- Drug and alcohol use, especially associated with sex
- Issues concerning pregnancy and motherhood for women
- Beliefs about drugs (antibiotics in particular)
- Network of friends who may be supportive

An underlying theme likely to be uppermost in the patient's mind if they have a regular sexual partner is: how will this STI affect my relationship sexually or emotionally? Exploring and helping the patient deal with this issue is a very important part of STI management.

Making a diagnosis and giving treatment

Presumptive diagnosis

It's generally true that STIs, in their early stages, are simple infections that lend themselves to presumptive diagnosis on the basis of the history of symptoms, the sexual history, the clinician's knowledge of local STI prevalence and the examination. When patients present with symptoms consistent with one of the STI syndromes, clinicians should always do the appropriate tests, but they should aim to prescribe treatment for the patient immediately as a result of their careful clinical appraisal. The rationale for this is to relieve the patient's symptoms expeditiously and to render the patient non-infectious as soon as possible. The one disadvantage of this approach is that some patients will be over-treated, but this is a small price to pay for

benefiting the public health and gaining a relieved and grateful patient. On the return visit for results, the clinician is able to give the patient the confirmed diagnosis.

Giving treatment and considering contact tracing

Effective single-dose therapy exists for uncomplicated gonorrhoea, uncomplicated genital chlamydia infection, trichomoniasis, early syphilis, vulvovaginal candidiasis and bacterial vaginosis. Treatment for scabies and pubic lice is essentially single-dose topical treatment, although one follow-up treatment several days later may be optimal therapy. Clinicians should use single-dose therapies wherever possible, and should remember every single time they prescribe STI treatment that the task is only partially complete until the patient's sexual partner(s) is (are) also treated.

Therapy for viral STIs is much less satisfactory and providing a general standardised treatment approach for viral infections is impractical, so for more details readers should consult the management outline below for specific STI syndromes.

Contact tracing (partner notification) is part of the management of almost all STIs. It should not be left to subsequent visits but should be dealt with at the time of handing out the initial prescription for treatment. If the clinician has taken a good sexual history at the time of testing or screening, contact tracing becomes much easier, rather than attempting to raise the issue for the first time when handing out treatment. It is relatively easy to say: 'earlier you told me you had three partners in the last three months; are you able to contact them and tell them about the infection or do you need my help?' All treating clinicians have a clear responsibility to play a part in achieving successful outcomes in contact tracing. Involving patients in shared responsibility for the management of their sexual partners improves outcomes—this was the clear finding of a recent systematic review,⁵ which concluded that assisting patients in disclosing their diagnosis to partners is the biggest priority in STI management. ASHM has produced a publication on contact tracing and readers should make themselves familiar with its recommendations.⁵

Avoiding sex is obviously wise until treatment has proved effective. With infections capable of easy cure with single-dose therapy, the patient will be rendered non-infectious within 24 hours (gonorrhoea, trichomoniasis and syphilis) and 72 hours (chlamydia serovars D to K). Advising abstinence from sex for three days after treatment is good practice; longer (seven to 14 days) if the STI is complicated (PID). With viral STIs, patients need more detailed advice about reducing risk of passing on infection.

Compliance with treatment regimens

Although single-dose treatment is favoured for STIs, there are some situations (PID, epididymo-orchitis) where more prolonged treatment is necessary. Medication must be taken properly to be effective in the long term. If the patient is regularly missing doses or not following dosing recommendations, or is taking other complementary medicine which may affect the metabolism of antimicrobial drugs, treatment failure may result. If the patient reports poor adherence, the clinician might consider modifying the recommended regimen (see suggestions under sections on PID and epididymo-orchitis).

Vaccination

In non immune individuals, clinicians should offer hepatitis B vaccine to all patients at risk of STIs, and hepatitis A vaccine to all MSM. The new quadrivalent recombinant HPV vaccine (Gardasil) and the bivalent HPV vaccine (Cerverix) are now available for use in women—readers should check the 9th edition of the *Immunisation Handbook* for recommendations for their use.

Health promotion

Clinicians have a pivotal, often unrealised role in promoting sexual health. Health promotion for STIs consists of information giving about the diagnosed infection (or the likely diagnosis), tips on future prevention, education about STIs in general, including HIV/AIDS, and handing on printed resources about STIs, which in this day and age should include addresses of reliable and medically accurate websites (see Chapter 15).

Information giving

This is relatively simple if the patient understands English and medical concepts well; it may not be so simple when the patient is an adolescent, comes from a culturally or linguistically different background or when the consultation is being carried out with the help of an interpreter. In plain and simple language the clinician should tell the patient what the diagnosis most likely is, or what tests have proven it to be. She or he should briefly explain some facts about the infection, how common it is, how it is most often transmitted, what its complications may be and what the treatment options are. If it can be cured, then the clinician should stress that fact. If it can't be cured and must be managed, as in the viral infections, then the patient requires key facts about the STI on the day of diagnosis and treatment, and an appointment for a further visit(s) where she or he can learn more and receive extra support. The clinician should offer simply written brochures, if possible in the patient's most easily understood language. Brochures are always an additional resource, never a substitute for an interactive and informative conversation between clinician and patient.

Tips on prevention

It is important that people diagnosed with an STI have a clear understanding of STI transmission for two reasons: so that they know how to reduce the risk of passing their infection on to others, if their STI is not capable of rapid cure; and so that they can avoid contracting the same or another STI in future. This is easy to state in theory; it is not so easy to explain how to put theory into practice. Let's start from first principles using what we know from evidence based studies, with practical comments:

- Avoid sexual intercourse and you'll never catch an STI – true, but impractical in the long term for 99.9% of the sexually active population. In the short term it may have merit.
- Get vaccinated against hepatitis A, hepatitis B, and now if you're a woman under 27, HPV – good advice and highly protective against those hepatitis viruses and four common genital HPV types.
- Find and stick to one monogamous sexual partner after she or he has been exhaustively tested for all known STIs – true in theory; a little less reliable in practice. It still isn't possible to screen someone for every known STI, and even monogamous sexual partners may prove unreliable in the long term.
- Use a condom every time for all penetrative vaginal and anal sex – there's a good deal of evidence to support this advice.⁷ It certainly works very reliably for HIV, hepatitis B, trichomoniasis, cervical and rectal gonorrhoea and chlamydia. There's the issue of oral sexual activities where syphilis, HSV, HPV, gonorrhoea, chlamydia and, extremely rarely, hepatitis B and HIV might be transmitted. It is sensible to recommend the use of condoms and dental dams during all forms of oral sex for sex workers and others who have multiple sex partners.
- Have a regular STI check-up at least for the treatable STIs – it's good advice and overcomes the problem of oral STIs (gonorrhoea, chlamydia and syphilis), which are often asymptomatic but are amenable to simple easy treatment. There is also some evidence of benefit, at least in limiting the complications of chlamydia in women in communities where screening programs are operational.
- Talk with your partner about sex; communicate; be honest and open; look at the problem of STIs together and try to reach some risk-limiting solutions that work for you – admirable advice that takes account of more than the mechanics of sex. There are no studies yet to show the impact this has on STI prevention, though.
- Be as hygienic as you can, i.e. if male, wash under your foreskin daily with soap (or a soap substitute) and water and rinse well afterwards; for both sexes, keep your anogenital area as clean and dry as possible and always wash before sex and as soon as possible after sex (including under the foreskin if male). People need to reach a happy medium as over-enthusiastic washing of the genital

area, especially with soap, leads to itching and scratching and may increase the risk of recurrent bacterial vaginosis in women. Offer sound advice to young patients on how to steer a safe course between maintaining genital hygiene and not irritating the skin with too much soap. Recent evidence from African studies indicates that male circumcision is protective against acquisition of HIV: it reduces risk by at least 50%.⁸

Education – imparting general knowledge about STIs

The clinician will need to provide the individual patient with information about all the STIs relevant to that patient's situation. The gender of the patient's partners, the patient's pattern of sexual behaviour, her or his willingness to use protection, as well as the local prevalence of STIs, will provide some guide. Generally, in Australia and New Zealand, urban exclusively heterosexual patients need detailed information about HPV, chlamydia, genital herpes and bacterial vaginosis because they are common, and brief information about HIV, gonorrhoea and syphilis because of the real threat they pose to health. MSM need detailed information about all of these STIs (except bacterial vaginosis) as well as hepatitis A, B and the LGV strains of chlamydia. Indigenous heterosexual patients need information about HPV, chlamydia, genital herpes, gonorrhoea, syphilis, bacterial vaginosis and trichomoniasis. Women who have sex with women (WSW) need the same information as heterosexual women, with clear explanation that any sexual contact with men places them at the same risk as exclusively heterosexual women.

Resources for health care professionals and people with, or at risk of, STIs

There is a wide range of resources available to support clinicians and patients. All State and Territory health departments have printed information about all individual STIs, as do major sexual health clinics (see Chapter 15 for links to online information). ASHM distributes the *Contact Tracing Manual* which includes a good summary of all the STIs⁶ and has a website providing information for clinicians and patients which is regularly updated (<http://www.ashm.org.au>).

Management of specific STI syndromes

Table 12.1 lists the eight specific STI syndromes.

1. Urethral discharge

Description and causes

Urethral discharge denotes the existence of urethritis. A gram-stained smear of urethral discharge will show varying numbers of leucocytes on microscopy. For all practical purposes, any discharge from the urethra is abnormal and signals the presence of an STI. Thick purulent and profuse discharge with some dysuria is usually due to gonorrhoea. Thin,

scant, clear or mildly mucopurulent discharge with slight urethral irritation is often due to chlamydia. A similar discharge with marked dysuria sometimes means there's a primary herpetic urethritis, but this is rare. *Trichomonas vaginalis* mostly causes entirely asymptomatic urethritis but sometimes initiates a very slight mucopurulent discharge. Unprotected anal intercourse on occasions causes a urethritis in the insertive partner, from which enteric coliforms can be cultured, but this too is uncommon.

Some other sexually transmissible microbial agents cause urethritis (Table 12.2), of which *Mycoplasma genitalium* is probably the most significant, but there are no laboratory tests available as yet for this bacterium. Non-specific urethritis (NSU) is an unhelpful term because it is poorly defined. It means there is a urethritis present but all available tests are negative—e.g. it is a non-gonococcal, non-chlamydia, urethritis. Fortunately most urethritis seen in practice is due to chlamydia or gonococcus. If not due to either bacterium, most remaining urethritis responds to antichlamydial treatment or gets better on its own. If it fails to do so, the clinician should reassess the patient carefully.

Differential diagnosis

There is no non-STI differential diagnosis for urethral discharge, except perhaps the very rare situation where a gastro-intestinal infection triggers urethritis as part of the triad of urethritis, conjunctivitis and arthritis in Reiter's syndrome.

Diagnostic tests

Where a discharge exists, collect some on cotton tipped swabs. If there is insufficient discharge to sample, the patient should produce an FCU specimen for NAATs (nucleic acid amplification tests) for chlamydia (and for gonorrhoea in areas where it is prevalent). There is never a need to insert swabs into the urethral meatus.

The recommended tests are for gonorrhoea and chlamydia (see Table 12.3). The clinician should only consider additional tests (trichomoniasis, HSV, adenoviruses etc.) if symptoms fail to respond to initial treatment.

Initial treatment of urethral discharge

Patients with urethral discharge should be treated on the initial visit, only after tests have been taken. Azithromycin 1g orally as a single dose is the recommended initial treatment. In addition, a single dose of ceftriaxone 500mg intramuscularly should be given in the following situations:

- Where a partner is known, or likely to have a gonococcal infection
- In areas and communities where gonorrhoea is highly prevalent (e.g. remote Indigenous communities)

TABLE 12.2 STI causes of urethral discharge (in order of frequency)

• <i>Chlamydia trachomatis</i> (serovars D–K)	• Adenoviruses
• <i>Neisseria gonorrhoeae</i>	• Herpes simplex virus types 1 or 2
• <i>Mycoplasma genitalium</i>	• <i>Neisseria meningitidis</i>
• <i>Ureaplasma urealyticum</i>	• Enteric bacteria
• <i>Trichomonas vaginalis</i>	

TABLE 12.3 STI causes of vaginal discharge (in order of frequency)

• Bacterial vaginosis
• Vaginal candidiasis
• <i>Chlamydia trachomatis</i> serovars D–K, cervicitis or urethritis
• Herpes simplex virus types 1 and 2, cervicitis or vaginal ulcerations
• <i>Neisseria gonorrhoeae</i> cervicitis or urethritis
• <i>Trichomonas vaginalis</i> cervicitis and vaginitis
• <i>Mycoplasma genitalium</i> cervicitis or urethritis

- When the patient has recently had sex with a local person in an overseas country where gonorrhoea is highly prevalent (e.g. South East Asia)
- When the patient gives a history of male-to-male sex (oral or anal)
- When the discharge is purulent, profuse and accompanied by dysuria

Treat or arrange treatment with azithromycin with or without ceftriazone for male or female sexual partner(s).

Treatments for specific STIs causing urethral discharge

See Table 12.4 for treatments for specific STIs. For urethral discharge these are treatments for:

- Gonorrhoea
- Chlamydia
- Trichomoniasis
- Herpes simplex

For all other causes of urethral discharge consult a textbook of sexual health medicine¹⁰ or seek advice from a sexual health physician.

Follow-up – see Table 12.5.

2. Vaginal discharge

Description and causes

There is a normal physiological discharge from the vagina which varies in character and consistency during the course of the menstrual cycle. Some women may not notice the gradual development of a less normal discharge unless it is accompanied by itch, odour or colour change.

An abnormal vaginal discharge may come:

- From the endometrial lining associated with endometritis – this is uncommon except after childbirth or following some gynaecological procedures (insertion of an intrauterine device (IUD), dilatation and curettage (D & C), termination of pregnancy)
- From the cervical canal – herpetic and trichomonal cervicitis are possible causes but gonorrhoea and chlamydia are usually the cause; studies show that in fact chlamydia rarely causes a vaginal discharge; there has to be a profuse purulent or mucopurulent exudate from the cervix before a noticeable change is perceived in the vaginal discharge
- From the vagina itself where the three common causes are trichomoniasis, candidiasis or bacterial vaginosis; bacterial vaginosis is by far the commonest cause. Rarely, herpetic vaginal ulceration may cause a discharge
- From the female urethra – discharge from the urethra is not often detectable as an abnormal vaginal discharge

More than one condition might cause an abnormal vaginal discharge; any combination of two or more STIs may be present at one time (Table 12.5). This fact explains why the classic textbook descriptions of vaginal discharge are rarely encountered in routine practice. Discharge associated with gonococcal cervicitis may be frankly purulent; discharge caused by trichomoniasis may be heavy green and frothy; discharge due to candidiasis may be like cottage cheese accompanied by vulval erythema, oedema and itching; and discharge due to bacterial vaginosis is usually thin, white-grey and slightly frothy. If any of these STIs coexist with another condition, the actual vaginal discharge produced can look quite non specific.

Differential diagnosis

Apart from STIs and bacterial vaginosis, other causes of abnormal vaginal discharge are:

- Leucorrhoea (increase in quantity of normal vaginal discharge) – may be associated with hormonal changes, hormone replacement therapy
- Other infections – e.g. group B streptococcal infection (discharge then often resembles the discharge seen with *Trichomonas vaginalis*), *Staphylococcus aureus* (toxic shock syndrome)
- Retained foreign bodies (condoms, tampons etc) – resulting often in a foul smelling discharge

- Neoplastic disease (carcinoma of endometrium, cervix, urethra, vagina) – these usually cause a blood-stained discharge

Diagnostic tests

In the presence of an abnormal vaginal discharge, the clinician should undertake an internal examination using a vaginal speculum and take tests at the same time. If a first time patient is shy and apprehensive, put off the examination until a subsequent visit, providing the clinician duly records the fact that the examination has been postponed and needs to be followed up.

During the internal examination, the clinician should take high vaginal swabs (HVS) for bacterial vaginosis, trichomoniasis and candidiasis and swabs from the endocervical canal for gonorrhoea and chlamydia.

In cases of recurrent candidiasis, request culture on an HVS as it is useful to identify the species of *Candida* and its sensitivity to antifungal agents. A cervical test for herpes can be taken if there is a relevant history of possible exposure, evidence of herpes externally, or if the cervix looks ulcerated. On the first visit, if the clinician postpones an internal examination, the patient can self-collect HVS for bacterial vaginosis, trichomoniasis and candidiasis and provide a FCU for chlamydia and gonorrhoea (if appropriate).

The clinician should also arrange other serological tests as appropriate, after discussion with the patient, (HIV, HBV, HCV, syphilis), a throat swab for gonorrhoea (if appropriate) and a Papanicolaou smear when due. (See Table 12.5).

Initial treatment of vaginal discharge

Abnormal vaginal discharge is an uncomfortable symptom. Clinicians should treat the symptom at the initial visit, but only after they have taken the appropriate tests.

The following is a guide for an initial treatment plan:

1. If the sexual history indicates risk for a significant STI (age 15 to 25, recent partner change, multiple partners), whatever the nature of the discharge:

- Azithromycin 1g orally as a single dose (safe in pregnancy B1*)
- Ceftriaxone 500mg intramuscularly as a single dose to be added, if infection acquired in an area where gonorrhoea is prevalent (safe in pregnancy B1)

2. If the discharge has an unpleasant odour:

- Tinidazole 2g orally (B3) as a single dose or metronidazole 2g orally (B2) as a single dose (metronidazole preferred in pregnancy, rather than tinidazole)

3. If the discharge is accompanied by vulval erythema, swelling or itch:

- Fluconazole 150mg orally as a single dose (not in pregnancy D), with or without a topical vaginal anti-candidal preparation.

* Categories of drugs in pregnancy⁹

Treat or arrange treatment for male or female sexual partner(s) as appropriate.

Treatments for specific STIs (and bacterial vaginosis) causing vaginal discharge

Consult Table 12.4 for a list of treatments for specific STIs. For vaginal discharge these are treatments for:

- Gonorrhoea
- Chlamydia
- Cervical herpes
- Trichomoniasis
- Bacterial vaginosis
- Candidiasis

Follow-up – see Table 12.5

3. Ano-genital ulcer disease (GUD)

Description and causes

Ulceration in the ano-genital region, genital ulcer disease (GUD), is a less common STI presentation than urethral or vaginal discharge. Ulceration may be accompanied by inguinal lymphadenitis; palpation of both groin areas is an integral part of the examination of all GUD. Trauma is a frequent cause of short-lived genital ulceration, but a number of STIs can present as ulceration in the ano-genital region. These include genital herpes, primary and secondary syphilis, LGV (due to *Chlamydia trachomatis* serovars L1–L3), chancroid (due to *Haemophilus ducreyi*) and donovanosis (due to *Klebsiella granulomatis*). GUD can be painful (herpes and chancroid) or painless (syphilis, LGV and donovanosis). In Australia and New Zealand, LGV, chancroid and donovanosis are rare. There are two exceptions: LGV is an infection seen now in Australasia in some MSM but in this group, LGV mostly manifests as an acute proctitis rather than as GUD; donovanosis still occurs (but now rarely) in remote Indigenous communities in northern and central Australia. As a rule of thumb, all GUD in Australia and New Zealand is due to genital herpes until proven otherwise, but clinicians should always ask themselves: 'could this GUD be syphilis?'

Differential diagnosis

Other causes of ano-genital ulceration are:

- Trauma
- Scratched scabies lesions on the genitals
- Anal fissures and fistulae
- Herpes varicella zoster lesions involving the anogenital region
- Other uncommon infections, e.g. cutaneous amoebiasis, leishmaniasis, mycobacterial infections
- Neoplastic lesions: precancerous lesions (Bowen's disease), squamous cell carcinoma, basal cell carcinoma

Diagnostic tests

The recommended tests for any ulceration in the ano-genital region are swabs of the lesion for HSV (NAAT) and (if available) for syphilis. Few laboratories now perform dark field microscopy for syphilis. There are now NAATs for *Treponema pallidum* for use on swabs from ulcerative lesions and some pathology laboratories have access to them. Some are part of a 'multiplex' NAAT for GUD which tests for HSV, *Haemophilus ducreyi* and *Treponema pallidum* (and in some parts of remote Australia, for *Klebsiella granulomatis*) on the one specimen. Clinicians should use these tests if they are available and if syphilis is a reasonable possibility. If, from the history, there are grounds for believing GUD may be due to chancroid, LGV or donovanosis, the clinician should discuss the case with the local laboratory and a sexual health physician.

Serological tests for syphilis (RPR plus a specific test to improve sensitivity) should be arranged for any patient with ano-genital ulceration.

The clinician should arrange other serological tests as appropriate, after discussion with the patient (HIV, HAV, HBV, HCV), a throat swab for gonorrhoea culture and sensitivity, rectal swabs for gonorrhoea culture and sensitivity and NAAT for chlamydia (if appropriate) and a Papanicolaou smear when due (female patients). See Table 12.3.

Initial treatment of ano-genital ulcer disease

HSV-1 or HSV-2 causes most GUD either on the penis, on the vulva, around the introitus or perianally. Primary and initial outbreaks of herpes are painful as are some recurrences. Both local and systemic analgesics as well as frequent bathing with luke-warm physiological (normal) saline are helpful adjuncts to more specific treatment.

Early treatment with an antiviral agent relieves symptoms, decreases risk of transmission to sexual partners, and reduces the length of the outbreak. Clinicians should treat at once on clinical suspicion if lesions are causing the patient discomfort. Recommended initial treatment, pending results of NAAT, is:

- Valaciclovir 500–1000mg orally twice a day (B3) for 5–10 days or famciclovir 250mg orally three times a day (B1) for 5–10 days; equally effective

Add treatment for early syphilis (see Table 12.4) in the following situations:

- In communities where syphilis is highly prevalent
- Where the GUD is a single painless indurated ulcer with enlarged non-tender inguinal nodes
- In MSM who have GUD which is not typical of herpes

Treat or arrange treatment for male or female sexual partner(s) as appropriate.

TABLE 12.4 Treatments for specific STIs^{2,16}

<p>Bacterial vaginosis:</p> <ul style="list-style-type: none"> Tinidazole 2g orally (B3) as a single dose or metronidazole 2g orally as a single dose; metronidazole (B2) preferred in pregnancy (equally effective) <p>For recurrent attacks: metronidazole 400mg twice a day orally for 5 days (B2)</p>	<p>Herpes:</p> <p>Initial therapy, herpetic urethritis and cervicitis or a moderately severe outbreak:</p> <ul style="list-style-type: none"> Valaciclovir 500–1000mg twice a day orally (B3) for 5–10 days or Famciclovir 250mg three times a day orally (B1) for 5–10 days; equally effective <p>Suppressive therapy (continuous):</p> <ul style="list-style-type: none"> Valaciclovir 500mg orally daily (B3) or Famciclovir 250 twice a day orally (B1); equally effective
<p>Candidiasis:</p> <ul style="list-style-type: none"> Fluconazole 150mg orally as a single dose (don't use in pregnancy D); and/or a topical vaginal anti-candidal preparation for vulvovaginitis and a topical anti-candidal cream for balanoposthitis. Recurrent vulvovaginal candidiasis may need treatment for longer periods 	<p>LGV – <i>Chlamydia trachomatis</i> serovars L1–L3</p> <ul style="list-style-type: none"> Doxycycline 100mg twice a day orally for a minimum of 21 days (do not use in pregnancy D)
<p>Chancroid:</p> <ul style="list-style-type: none"> Ceftriaxone 500mg intramuscularly as a single dose (B1) 	<p>Pubic Lice:</p> <ul style="list-style-type: none"> Benzyl benzoate 25% lotion – apply to all affected hairy areas at bed time. Avoid direct contact with scrotum. Wash off next morning. Repeat in five days
<p>Chlamydia – <i>Chlamydia trachomatis</i> serovars D–K</p> <ul style="list-style-type: none"> Azithromycin 1g orally as a single dose; (B1) <p>Alternative:</p> <ul style="list-style-type: none"> Doxycycline 100mg twice a day orally for 7 days (don't use in pregnancy D); single dose treatment should always be used in preference to this regimen 	<p>Scabies:</p> <ul style="list-style-type: none"> Permethrin 5% cream – apply in a single application at bed time topically to whole body except head. Wash off next morning
<p>Donovanosis:</p> <ul style="list-style-type: none"> Azithromycin 1g orally as a single dose. Repeat at weekly intervals for 4–6 weeks (B1) 	<p>Syphilis (primary or secondary)</p> <ul style="list-style-type: none"> Benzathine penicillin 1.8g (2.4 million international units) intramuscularly as a single dose <p>OR</p> <ul style="list-style-type: none"> Procaine penicillin 1.5g intramuscularly daily for 10 days (both probably equally effective and safe in pregnancy [A], but the procaine penicillin course of treatment is preferred in HIV-positive patients as single dose therapy has been found to be less successful in this client group) <p>Alternative:</p> <ul style="list-style-type: none"> Doxycycline 100mg twice a day orally for 10 days (do not use in pregnancy D) <p>NB: If patient is a pregnant woman allergic to penicillin, consult a sexual health physician for advice</p>
<p>Enteritis:</p> <ul style="list-style-type: none"> Treat appropriately for the specific agent isolated i.e. for giardiasis, amoebiasis, shigellosis 	
<p>Gonorrhoea:</p> <ul style="list-style-type: none"> Ceftriaxone 500mg intramuscularly as a single dose; (B1) <p>NB: 250mg is an adequate dose for gonorrhoea but is no longer available in retail pharmacies in Australia</p> <p>Alternatives:</p> <ul style="list-style-type: none"> Ciprofloxacin 500mg orally as a single dose (don't use in pregnancy B3). Ciprofloxacin will NOT be effective if local strains of <i>Neisseria gonorrhoeae</i> are resistant, as is the case in many capital cities in Australia <p>OR</p> <ul style="list-style-type: none"> Gatifloxacin 400mg orally as a single dose (don't use in pregnancy B3). Expensive and not yet listed on the Australian PBS <p>NB: Always treat for <i>Chlamydia trachomatis</i> as well when treating for gonorrhoea</p>	<p>Trichomoniasis:</p> <ul style="list-style-type: none"> Tinidazole 2g orally (B3) as a single dose or Metronidazole 2g orally as a single dose (metronidazole preferred in pregnancy B2); equally effective <p>* Treatments are based on the Australasian Chapter of Sexual Health Medicine's <i>Clinical guidelines for the management of sexually transmissible infections among priority populations</i> and the Centres for Disease Control (USA) <i>Sexually transmitted diseases treatment guidelines 2006</i>;2:15.</p>

TABLE 12.5 Diagnostic tests for STIs

<p>Ano-rectal junction</p> <ul style="list-style-type: none"> Anal cytology for people living with HIV and MSM (if available – currently only in specialist centres) 	<p>High vaginal swab (HVS) <i>continued</i></p> <ul style="list-style-type: none"> Swab in transport medium for culture and sensitivity (for candidiasis and for bacteria; if no NAAT test for trichomoniasis, a wet preparation can be made from this swab to look for motile trichomonads)
<p>Blood culture</p> <ul style="list-style-type: none"> For culture and sensitivity for <i>Neisseria gonorrhoeae</i> 	<p>Joint aspirate</p> <ul style="list-style-type: none"> Sample of aspirate for microscopy, culture and sensitivity for <i>Neisseria gonorrhoeae</i>
<p>Cervix</p> <ul style="list-style-type: none"> Sample from ectocervix and endocervical canal for cytology (Papanicolaou smear) (in accordance with NHMRC guidelines – usually two years after sexual debut and then regularly every two years) 	<p>Rash (ano-genital)</p> <ul style="list-style-type: none"> Swab from affected area (e.g. vulva, perianal area or under the foreskin) smeared onto a slide for gram-stain microscopy for spores and hyphae (candidiasis) Swab from affected area in transport medium for culture and sensitivity (for candidiasis and for bacteria) HVS swab for NAAT for trichomoniasis if vulval rash (if no NAAT test available, send swab in transport medium; a wet preparation can be made from this swab to look for motile trichomonads and culture is also possible) Microscopy for scabies mite or pubic louse (if appropriate) Punch biopsy for histology if diagnosis is uncertain
<p>Endocervical canal</p> <ul style="list-style-type: none"> Swab smeared onto a slide for gram-stain microscopy for inflammatory cells and diplococci Swab in transport medium for culture and sensitivity for gonorrhoea Swab for NAAT for chlamydia Swab for NAAT for herpes simplex (only if there is a relevant sexual history, other evidence of herpes externally, or if cervix looks ulcerated) 	
<p>Faeces</p> <ul style="list-style-type: none"> Stool samples (X2) for microscopy for leucocytes, red cells, ova, cysts and parasites (including concentrate microscopy and permanent stains and Cryptosporidium/Giardia antigen test), plus culture and sensitivity (X1) 	<p>Rectal mucosa</p> <ul style="list-style-type: none"> Swab collected by direct vision smeared onto a slide for gram-stain microscopy for inflammatory cells and diplococci (not a useful test if swab has been taken blind) Swab for NAAT for chlamydia (preferably by direct vision, otherwise blind) – routine tests are for D–K serovars; some specialist laboratories are able to test for L1–L3 serovars
<p>High vaginal swab (HVS)</p> <ul style="list-style-type: none"> Swab smeared onto a slide for gram-stain microscopy for number of leucocytes, presence of clue cells (bacterial vaginosis), spores and hyphae (candidiasis) Swab for NAAT for trichomoniasis (if available) 	

Treatments for specific STIs causing ano-genital ulceration

See Table 12.4 for treatments for specific STIs. For ano-genital ulceration these are treatments for:

- Herpes
- Syphilis
- LGV
- Chancroid
- Donovanosis

Follow-up – see Table 12.5.

Patients treated for syphilis require a repeat RPR test at 3 months, 6 months, 12 months and 24 months to check RPR titre is falling. Patients diagnosed with ano-genital herpes may require referral for ongoing counselling.

4. Ano-genital lumps and bumps

Description and causes

There are only two STIs causing lumps and bumps in the ano-genital region (apart from the lumps or nodules characteristic of scabies when burrows occur in the soft skin of the penis or labia; itch is still the major symptom in this infestation). The two STIs are genital warts (due to HPV, usually types 6 and 11) and molluscum contagiosum (due to the Molluscipoxvirus). Molluscum contagiosum have a characteristic smooth round igloo shape often with central indentation. They have a yellowish waxy colour. They favour the skin of the supra-pubic region, the inner thighs, shaft of the penis and hair-bearing areas of the vulva. Warts can occur anywhere at all on the skin and mucous membrane of the ano-genital region, especially under the foreskin, on the

TABLE 12.5 Diagnostic tests for STIs (continued)

<p>Rectal mucosa (continued)</p> <ul style="list-style-type: none"> Swab in transport medium for culture and sensitivity for gonorrhoea (preferably by direct vision, otherwise blind) Swab for NAAT for HSV if pain is a feature (preferably by direct vision, otherwise blind) 	<p>Ulcers or lesions in ano-genital region</p> <ul style="list-style-type: none"> Swab for NAAT for HSV Swab for NAAT for <i>Treponema pallidum</i> (if available), OR Swab for multiplex test for NAAT for HSV, <i>Haemophilus ducreyi</i> and <i>Treponema pallidum</i> (if available)
<p>Serology</p> <ul style="list-style-type: none"> Hepatitis A – HAV antibody IgG (past infection), IgM (current or recent infection) Hepatitis B – HBcAb (exposure to HBV), HBsAg (recent or chronic infection), HBsAb (immune following vaccination or previous infection) Hepatitis C – HCV antibody (exposure to HCV) HIV antibody (with p24 antigen in Australia) – HIV infection LGV – microfluorescent antibody test for chlamydia serovars L1–L3 (if available) or chlamydia antibody complement fixation test (high titre consistent with LGV) Syphilis – RPR (non specific antibody test, but quantitated with a titre 1:2, 1:4 etc.), plus TPPA or EIA or FTA ABS (all specific tests) 	<p>Urethra (if discharge present and can be sampled painlessly)</p> <ul style="list-style-type: none"> Swab of discharge smeared onto a slide for gram-stain microscopy for inflammatory cells and diplococci (i.e. gonococci) Swab of discharge in transport medium for culture and sensitivity for gonorrhoea Swab of discharge for NAAT for chlamydia Swab of discharge for NAAT for HSV or NAAT for trichomoniasis (only in unresponsive urethritis) Swab of discharge for viral culture (e.g. adenoviruses), only in unresponsive urethritis Swab of discharge for NAAT for <i>Mycoplasma genitalium</i>, only in unresponsive urethritis (not yet widely available)
<p>Throat i.e. oro-pharyngeal mucosa (if patient gives a history of performing fellatio where there is a high prevalence of gonorrhoea)</p> <ul style="list-style-type: none"> Swab in transport medium for culture and sensitivity for gonorrhoea (microscopy not helpful from throat due to other resident diplococci) 	<p>Urine</p> <ul style="list-style-type: none"> First catch urine specimen (FCU) for NAAT for gonorrhoea, chlamydia and (if available) trichomoniasis (the latter only useful in areas of high prevalence for trichomoniasis, i.e. outside urban practice) Mid stream specimen of urine (MSSU) for microscopy, culture and sensitivity

inner surfaces of the labia minora, in the fourchette, and perianally. Warts vary greatly in morphology, ranging from small flat plaques to filiform lesions to large highly keratinised papules. There may be only one or two warts or large warty colonies. They are unsightly and uncomfortable psychologically, if not usually physically, for the patient.

Differential diagnosis of ano-genital lumps and bumps

Non-STI causes of lumps and bumps are usually anatomical variants such as pearly penile papules, Fordyce spots, Tysons glands, lymphocoeles and angiokeratomas. The reader should consult a good sexual health¹⁰ or dermatology text to familiarise themselves with these common lesions. Papular and nodular neoplasms also cause lumps in the ano-genital region. In the perianal area, the condylomata lata of secondary syphilis, haemorrhoids, thrombosed external piles, perianal abscesses and sentinel piles

are all part of the differential diagnosis. See Figure 12.1 (angiokeratomas) and Figure 12.2 (pearly penile papules).

Diagnostic tests

Clinicians mostly diagnose ano-genital warts and molluscum contagiosum purely on their characteristic appearance and behaviour. When lesions look atypical, behave atypically or fail to respond to usual forms of treatment, it is wise to do an excision or punch biopsy for histological diagnosis. The diagnosis of asymptomatic HPV infection is usually dependent on cytological techniques Papanicolaou smear (cervical or anal cytology).

Serology for syphilis is always important in patients with extensive molluscum or ano-genital warts to exclude condylomata lata. It's good practice on the initial visit to advise a Papanicolaou smear in women (unless it has been performed within the

recommended time period according to NHMRC guidelines) and testing for other common STIs. Recommended tests are for chlamydia by FCU, gonorrhoea (according to local prevalence), swabs from appropriate sites and other relevant serological tests (HIV, HAV, HBV and HCV) after discussion with the patient. (See Table 12.5).

Initial treatment for ano-genital lumps and bumps

Heavy growths of warts in places like the introitus or around the anus become irritated, smell offensive and can be extremely difficult to live with. Heterosexual men may feel a sense of shame if they have developed extensive perianal warts without ever having had receptive anal intercourse (Case study 2).

The aim of treatment of warts and molluscum contagiosum is to remove the unsightly and uncomfortable lesions for the patient's psychological wellbeing, as well as the possibility that treatment will stimulate local immune defences which may reduce the likelihood of recurrence and the length of time during which the patient remains infectious to sexual partners. There is no evidence for this, but there is no doubt that earlier treatment provides peace of mind for the patient. No matter what form of treatment is used, there is a recurrence rate of about 40%.¹¹ Warts tend to be less responsive to treatment in people who are immunosuppressed (e.g. in people with HIV infection). With all patients with warts, start treatment as soon as possible.

Clinicians should review male and female partners for the presence of hidden warts and to check on cervical screening history in women.

Treatments for specific STIs causing ano-genital lumps and bumps

Ano-genital warts

These are the available treatments for ano-genital warts:

- Excision: simple surgical under local or general anaesthesia; safe in pregnancy
- Ablative; using various modalities: cryotherapy using liquid nitrogen, CO2 slush, or a cryotip and nitrous oxide (usually with local anaesthetic cream such as xylocaine or emla etc); diathermy under local or general anaesthesia; laser therapy under local or general anaesthesia; and application of trichloroacetic acid (only suitable for single small warts); all safe in pregnancy
- Antimitotic agents: podophyllotoxin cream or paint (lends itself to patient application according to manufacturer's instructions); 5-fluorouracil cream (should only be applied by the clinician and should be washed off after four hours); neither treatment to be used in pregnancy



FIGURE 12.1 Angiokeratomas



FIGURE 12.2 Pearly penile papules

- Immunomodulatory agent: imiquimod cream (apply three times weekly at bed time, wash off in the morning, for a minimum of four weeks); not useful for long-standing highly keratinised warts; not to be used in pregnancy

No treatment is entirely satisfactory or completely effective; recurrences can occur after any treatment. Quitting smoking is a very important part of treatment if warts are proving recalcitrant. However, except in the severely immunosuppressed patient (HIV, and sometimes in pregnancy), with patience and persistence all warts will regress eventually.

Mollusca contagiosa

There is generally a better early success rate treating mollusca than treating warts. These are the available treatments:

- Deroofing the individual lesion accompanied by squeezing out the firm cheese-like contents (ideal if there are only a few lesions; it's easy to teach patients to do this themselves)
- Ablative therapies as for warts (all work fairly well for mollusca)

Treatment is only a problem in the severely immunosuppressed, when mollusca can sometimes grow quite large and remain fairly unresponsive to usual treatments.

Follow-up – see Table 12.5.

5. Ano-rectal syndromes

Description and causes

An ano-rectal syndrome is present when a patient reports anal symptoms (i.e. itch, pain, discomfort or irritation) or disturbed bowel function and there's a possibility the symptoms are related to anal sexual activities. Many other conditions, both medical and surgical, can also cause such symptoms.

Many STIs affecting the ano-rectum are asymptomatic, at least for the first few days or weeks of infection. Here are some possible sexually transmissible agents associated with STI-related ano-rectal syndromes, in order of their frequency in practice:

- HSV types 1 or 2 – causes ulceration and proctitis, often asymptomatic, but can cause anal pain and constipation, anal discharge and sometimes bleeding, especially in an initial outbreak
- *Chlamydia trachomatis* serovars D–K – generally asymptomatic, causes mild proctitis, so sometimes causes anal discomfort and irritation
- HPV all genital types – generally asymptomatic, types 6 and 11 may cause warts
- *Neisseria gonorrhoeae* – often asymptomatic; causes a moderate proctitis; astute patients may notice purulent discharge around their bowel motions; can cause anal discomfort or mild pain
- *Treponema pallidum* – often asymptomatic but anus may be site of a painless primary chancre (ulcer), and anorectal mucosa may be affected by snail-track ulcers in secondary syphilis. Condylomata lata (flat warty or skin tag-like moist excrescences around the anus) also occur in secondary syphilis
- *Chlamydia trachomatis* serovars L1–L3 (LGV) – usually causes a moderate to severe proctitis characterised by deep anal pain, increased frequency of bowel action and passage of mucopurulent discharge, plus systemic symptoms
- Enteric micro-organisms – there are a variety of which the commonest are *Shigella* sp, *Giardia duodenale*, *Entamoeba histolytica* and hepatitis A virus (HAV). HAV causes pale stools and hepatitis; all other enteric agents cause

diarrhoea of varying severity. The key factor is that the patient has acquired the infection by ingesting faecally contaminated material during sex, either on fingers, from a condom, from handling a sex toy or by direct oro-anal contact. In immunosuppressed patients with HIV, a number of other enteric infections may occur (cryptosporidiosis, microsporidiosis, MAC complex), not usually sexually acquired (Chapter 10)

Differential diagnosis

Here is a list of some non-STI causes of symptoms which mimic the STI ano-rectal syndrome:

Medical

- Enteric infections acquired in conventional rather than sexual modes
- Crohn's disease
- Ulcerative colitis

Surgical

- Traumatic lesions of anus and rectum
- Retained foreign bodies (dildoes)
- Ano-rectal benign and malignant neoplasms
- Fissures, fistulae, thrombosed external piles and haemorrhoids

The take-home message is that not all ano-rectal symptomatology is surgical or routinely medical. Ask yourself, and not just in gay men: 'could this be an STI?'

Diagnostic tests

The patient with the ano-rectal syndrome needs a careful examination of the anal and perianal area. Ideally tests can be taken at the same time.

If the clinician suspects an enteric infection because the predominant symptom is diarrhoea or loose bowel actions, then the patient should collect the usual stool specimens for microscopy for ova, cysts and parasites (OCP) and faecal culture. Medicare pays for two samples for OCP examination and one sample for culture within a seven-day period; current guidelines recommend two stool OCP exams (including concentrate microscopy and permanent stains and *Cryptosporidium* and *Giardia* antigen test) plus one faecal culture. If results are negative, it is recommended to test again over one week later.

If proctitis is suspected, the rectal mucosa should be viewed directly through an anoscope or proctoscope; sometimes this is not possible because of anal pain. The clinician should examine for traumatic lesions and the possibility of a retained foreign body. The recommended tests are swabs from lesions or ulcers for HSV NAAT and (if available) for syphilis; swabs from the rectal mucosa (preferably collected through a proctoscope by direct vision unless too painful) for gonococcal culture, HSV NAAT and chlamydia NAAT. If LGV is suspected, the clinician should discuss the possibility of testing for LGV serovars with the local laboratory; in addition she or he should request a

serological test for LGV. Anyone with an STI-related ano-rectal syndrome may be at risk for syphilis and hepatitis A; serology for HAV will determine the patient's HAV immune status and the presence of HAV IgM will indicate recent infection. Serology for syphilis should include both RPR and a specific test.

Finally the clinician should arrange other serological tests as appropriate after discussion with the patient (HIV, HBV, HCV), a Papanicolaou smear, if not already screened appropriately, for women and (if available) an anal cytology test for MSM. The clinician should take a throat swab if the patient has a history of performing fellatio and there is a high local prevalence of gonorrhoea (see Table 12.5).

Initial treatment of ano-rectal syndromes

After tests have been taken, the clinician must provide treatment to relieve the patient's symptoms. If pain is the overriding symptom, with or without peri-anal ulceration, and both trauma and a retained foreign body have been eliminated as causes:

- The diagnosis is ano-rectal herpes until proven otherwise. Treat for an initial outbreak of genital herpes

If there is a mild proctitis (as demonstrated by mild pain or discomfort) and only mildly inflamed mucosa seen on proctoscopy:

- Treat for chlamydia (D–K serovars)

If there is a proctitis (with mild to moderate pain) but a more inflamed looking mucosa with obvious purulent material lying on the mucosal surface (as seen by proctoscopy):

- Treat for gonorrhoea and chlamydia (D–K serovars)

If there is severe proctitis (considerable pain) and very inflamed mucosa with systemic symptoms:

- Treat for gonorrhoea
- Treat for an initial outbreak of herpes
- Treat for LGV

If there is an enteritis (diarrhoea):

- Treat symptomatically as for any other enteric infection with fluid replacement and loperamide pending results of tests
- Treat or arrange treatment for male or female sexual partner(s) as appropriate

Treatments for specific STIs causing ano-rectal syndromes

See Table 12.4 for a list of treatments for specific STIs. For ano-rectal syndromes these are treatments for:

- Herpes proctitis and perianal herpes
- Chlamydia proctitis (serovars D–K)
- Gonococcal proctitis
- Early syphilis (primary or secondary) including condylomata lata:
- LGV chlamydia proctitis (serovars L1–L3)
- Enteritis

Follow-up (see Table 12.5)

TABLE 12.6 Follow-up after treatment

Clinicians should always ask patients to return for follow-up in 7–14 days so she or he can:

- Give the results of tests, so that the patient knows what STIs are present
- Check the response to initial treatment has been successful; in the case of ano-genital warts, mostly further treatments will be necessary
- Check adherence to medication (if necessary)
- Check whether sexual contacts have been contacted and treated appropriately
- Provide further information and education; essential in the case of both ano-genital herpes and syphilis and often with HPV infection
- Arrange further visits to check progress (LGV proctitis, enteritis) or to arrange further serology, e.g. syphilis (if necessary)
- Arrange for a further STI screen in three months

Clinicians should ask patients who are unwell, as may be the case with gonococcal, herpetic and LGV proctitis, to return in three days for review.

6. Pelvic pain syndrome in women

Description and causes

Pelvic pain in women is a common presenting symptom. Urinary tract infections, gastro-intestinal conditions, as well as a variety of gynaecological conditions can present with either acute or chronic pelvic pain. A number of sexually transmissible agents (*Chlamydia trachomatis* serovars D–K and *Neisseria gonorrhoeae* mostly, but probably also ureaplasmas and mycoplasmas) may be responsible. After a period of silent cervical infection, these STIs can ascend, often around the time of menstruation, through the endometrium causing infection initially in the mucosa of the fallopian tubes (salpingitis), with subsequent spread through the wall of the tube causing infection in surrounding structures—ligaments, serosa and ovaries (PID). Pelvic pain due to PID varies greatly in severity, ranging from asymptomatic to extremely mild (chlamydial PID) to quite severe, accompanied by systemic symptoms (gonococcal PID). Initially, STI-related salpingitis and PID is an infection caused by one or two STIs; however, once the cervical barrier has been breached, very quickly other micro-organisms ascend from the vagina in the wake of the STIs, causing a mixed aerobic and anaerobic infection.

Differential diagnosis

The differential diagnosis of female pelvic pain is too wide for this monograph. The main diagnosis not to miss is an ectopic pregnancy. For this purpose, the menstrual history is vital, including the date of onset of the last normal period, plus details of any intermenstrual bleeding or spotting or post-coital bleeding. A good sexual history is also essential, including the precise date of the last unprotected sex

with a male partner. It is relatively simple to diagnose non-STI causes of PID, e.g. history of recent delivery and post-partum endometritis, gynaecological procedures or surgery, and PID secondary to an acute appendicitis. To assist accurate diagnosis, here are some common characteristics of STI-related PID, and some common clinical features which would suggest another diagnosis:

Common characteristics of STI-related PID¹²:

- Recent risk factors for contracting an STI
- Patient under 35 years of age
- Past history of STIs
- Gradual onset of pain
- Ill defined pain: few or no systemic symptoms
- Deep dyspareunia
- Abnormal vaginal discharge, irregular menstrual bleeding
- No associated gastrointestinal tract symptoms
- No urinary tract symptoms or only very mild ones (slight dysuria)
- Tender lower abdomen on palpation with adnexal or cervical motion tenderness on bimanual examination

Clinical features suggesting another diagnosis:

- Sexual history non-contributory, or indicates little or no risk
- History of recent child-birth or gynaecological procedure
- Pregnancy
- Sudden onset of pain – (ruptured ectopic pregnancy or torsion of an ovarian cyst)
- Recent missed period – (ectopic pregnancy)
- No indication of cervical infection – no discharge
- No dyspareunia
- Possible GIT symptoms (anorexia, constipation, diarrhoea, flatulence, nausea, vomiting etc.)
- Possible urinary tract symptoms (marked dysuria and frequency)
- Lower abdomen tender or non-tender on palpation, but bimanual pelvic examination non-contributory and no cervical motion or adnexal tenderness elicited

The take-home message is:

- Once the clinician has excluded pregnancy, if the sexual history is suggestive, treat as STI-related PID pending results of tests and response to therapy

Diagnostic tests

The clinician should organise the following tests before and during the course of the examination:

- Pregnancy test (a urine pregnancy test may remain negative for up to 21 days after an episode of unprotected sexual intercourse)
- FCU for gonorrhoea and chlamydia
- MSSU
- HVS – microscopy on HVS is sometimes useful if it shows a greater than normal number of leucocytes (indicating a cervicitis) or the presence of many clue cells (bacterial vaginosis) as PID is more likely in the presence of cervicitis or bacterial vaginosis

CASE STUDY 2

Andrew is a 27-year-old trawler fisherman who lives in Weipa on the Gulf. He presents to the local GP with extensive perianal warts, but is otherwise asymptomatic. He is highly embarrassed and stresses to the doctor that he has never engaged in any anal sexual activities. He believes he noticed a wart on the shaft of his penis about a year ago which he succeeded in scratching off over the space of a few days. It never re-appeared but about a month later he began to notice small lumps around his anus. They have continued to grow and now he constantly feels uncomfortable especially after sweating at work, or after going to the toilet.

Recently he has noticed some blood on the toilet paper when he wipes himself. He had a steady girlfriend up to eighteen months ago and when she broke it off he felt very upset for some time. He has had sex with about eight different girls since that time, all very casual, usually on a Saturday night after a few drinks at the local pub. He admits he is a bit of a binge drinker. He says he uses condoms about 60% of the time. In the last two months, however, the anal problem has put him off sex. His general health is good although he smokes 20 cigarettes a day which he has done since age 15. He says he does not use drugs other than 'a few bongos' when out on the fishing trawler. He thinks he has been vaccinated against hepatitis B.

Physical examination confirms large cauliflower-like growths of warts completely surrounding his anal opening, but is otherwise unremarkable. He agrees readily to an STI screen. The clinician finds that Andrew has a positive PCR test for chlamydia and a positive NAAT test for trichomoniasis on an FCU. He has good levels of HBsAb, a negative syphilis EIA, a negative HIV antibody test but his hepatitis C serology is positive. The clinician treats his chlamydia and trichomoniasis but is unsure how best to manage Andrew's extensive perianal warts and hepatitis C, so he consults the regional Sexual Health Clinic in Cairns.

If there is a clear view of the cervix during examination, the clinician can take:

- Direct swab for microscopy
- Direct swabs for gonorrhoea (culture and sensitivity) and chlamydia (NAAT)

Recommended blood tests are:

- A baseline full blood examination especially for the white cell count
- HCG if urine test is negative or equivocal and within three weeks of the last unprotected sexual intercourse

At the same time the clinician should arrange serological tests as appropriate after discussion with the patient (HIV, HBV, HCV, syphilis), a Papanicolaou smear if due, and should take throat and rectal swabs if necessary (see Table 12.3).

Other test:

- Pelvic ultrasound examination, if any question remains of possible ectopic pregnancy

Initial treatment of STI-related pelvic pain syndrome in women

All health practitioners encountering patients with possible STI-related PID should have a low threshold for treatment. Once the clinician is satisfied that she or he has excluded life-endangering causes of acute pelvic pain and that arrangements for follow-up are in place (see below), initiating treatment for PID will not have adverse consequences even if PID is not the cause of the pain. Trial of treatment is a reasonable course of action, as non-STI causes for pelvic pain will fail to respond, while STI-related PID will respond quickly and well to the following suggested regimen:

- Azithromycin 1g orally as a single dose immediately (B1)
- Doxycycline 100mg orally twice daily until review (not to be used in pregnancy D)
- Metronidazole 400mg orally twice daily until review (B2)

If gonorrhoea is even a small possibility, add to the above:

- Ceftriaxone 500mg intramuscularly as a single dose (safe in pregnancy B1). This dose can be repeated daily for three days if the patient has moderate to severe systemic symptoms, fever, rigors, malaise, headache or myalgia etc.

Treat or arrange treatment for male sexual partner(s) with azithromycin with or without ceftriaxone.

Review in three days to observe effect of treatment and to ensure male sexual partner(s) has (have) been seen and treated. If treatment is proving ineffective and tests fail to confirm an STI, antibiotic therapy can be stopped and the clinician should initiate further tests to establish the diagnosis (e.g. ultra-sound scan, CT scan, laparoscopy).

Ongoing treatment for specific STIs causing pelvic pain syndrome in women

On the third day if the patient has improved, continue doxycycline and metronidazole (as above) to a total of 14 days.

Review test results:

If tests show gonorrhoea and there are systemic symptoms, give ceftriaxone 500–1000mg intramuscularly daily until systemic symptoms settle. If tests confirm chlamydia, continue doxycycline. When the patient is having difficulty adhering to the treatment, or if patient is pregnant (a rare event as PID is uncommon in pregnancy) a suggested alternative (with a limited evidence base) is: repeat 1g azithromycin at review visit on day 3, then on day 7 and day 14 preferably by directly observed therapy. If tests confirm the presence of anaerobic micro-organisms, continue metronidazole. When the patient is having difficulty adhering to the treatment, two single-dose treatments with metronidazole might be preferable, e.g. 2g on review visit day 3, then on day 7 and day 14, although this suggested alternative is without an evidence base.

If other possible causative STI micro-organisms are isolated on laboratory tests (e.g. *Ureaplasma urealyticum*, *Mycoplasma hominis* or *genitalium*) and the patient is failing to respond to the standard regimen, clinicians should consult a sexual health physician for further advice (see Table 12.4). Follow-up (see Table 12.5)

Clinicians should ask patients to return for follow-up in three days. The clinician should see the patient again on day 7 and day 14 for further review.

7. Scrotal swelling

Description and causes

There are many abnormal swellings boys and men discover in the scrotum over the course of a lifetime. They are a source of much anxiety but most are totally benign (varicoceles, epididymal cysts). Generally, worried patients can be reassured about their scrotal swellings. There are three main situations where this is not the case:

- Torsion of the testis (sudden onset, acutely painful)
- Testicular cancer (gradual onset, usually not painful; rock hard on palpation)
- Epididymo-orchitis (gradual onset, slowly increasing pain)

Epididymo-orchitis is an STI-related scrotal swelling in young men.¹³ In older men who have varying degrees of prostatomegaly, epididymo-orchitis may occur secondary to a low grade bladder infection. However, STI-related epididymo-orchitis can occur in men of all ages. STI-related epididymo-orchitis follows urethritis whether symptomatic, or more commonly asymptomatic, and in theory any of the STI causes of urethritis can also cause epididymo-orchitis (see Table 12.2). In practice, gonorrhoea and chlamydia (serovars D–K) are the most common aetiologies. Epididymo-orchitis is an infection in the epididymis which spreads, if untreated, to involve the testis itself. The epididymis is tender, enlarged and firm or hard on palpation. In later disease, the epididymis and testis may become difficult to define from each other, the whole becoming a knobbly tender mass.

Differential diagnosis

Scrotal swellings may be:

- Infective
 - STI-related (*Neisseria gonorrhoeae*, *Chlamydia trachomatis* D–K, other STIs)
 - secondary to bladder neck infections (*Pseudomonas* sp, coliforms)
 - secondary to a sexually acquired coliform urinary tract infection due to unprotected insertive anal intercourse
 - tuberculosis (relatively common in countries where TB is endemic)
 - brucellosis
 - syphilitic gumma (very rare nowadays)
- Neoplastic
- Developmental (cysts, hydroceles, varicoceles),
- Traumatic
- Due to torsion (itself really due to a developmental abnormality)

Diagnostic tests

In any patient under 35 years old with a significant scrotal swelling, clinicians must first exclude torsion (unlikely past 25 years of age), and testicular cancer. If the swelling is of sudden onset, is very painful and very tender on palpation, the clinician must arrange, as a matter of urgency, a Doppler ultrasound scan and/or a surgical opinion. If the swelling is firm and hard on the surface or in the body of the testis and is clearly differentiated from the epididymis, which feels normal on palpation, a cancer is likely and again an ultrasound scan should be done as soon as possible.

In all other situations and with a suggestive sexual history, look for the presence of urethral discharge. If a urethral discharge is present the clinician should collect swabs of the discharge. If not, as is the more common scenario in epididymo-orchitis, FCU can be used instead. The recommended tests are for gonorrhoea, trichomoniasis (if NAAT available), chlamydia, MSSU, serological tests as appropriate after discussion with the patient (HIV, HAV, HBV, HCV, syphilis) and rectal swabs (culture and sensitivity for gonorrhoea and NAAT for chlamydia) if appropriate, as well as throat swab for culture and sensitivity for gonorrhoea if relevant (see Table 12.5 for details of recommended tests).

In men who have engaged in unprotected insertive anal intercourse, a sexually acquired coliform urinary tract infection (UTI) can lead to epididymo-orchitis, so MSSU for microscopy, culture and sensitivity is an essential investigation to ensure this possibility is not overlooked.

Initial treatment of STI-related scrotal swelling

All health practitioners encountering patients with possible STI-related scrotal swelling should have a low threshold for treatment. Once the clinician is satisfied that she or he has excluded other significant causes of scrotal swelling (torsion and tumour) and is satisfied arrangements for follow-up are in place (see below), initiating treatment for epididymo-orchitis will not have adverse consequences even if STI-related epididymo-orchitis eventually proves not the cause of the painful swelling. STI-related epididymo-orchitis will respond quickly and well to the following suggested regimen:

- Azithromycin 1g orally as a single dose immediately
- Doxycycline 100mg orally twice daily until review.

Remember, strains of gonorrhoea which have a predilection for the epididymis rarely cause symptomatic urethritis. Gonococcal epididymo-orchitis is still possible in the absence of a profuse purulent urethral discharge. If gonorrhoea is even a small possibility, add to the above:

- Ceftriaxone 500mg intramuscularly as a single dose. This dose can be repeated daily for three days if the patient has moderate to severe systemic symptoms, fever, rigors, malaise, headache, myalgia etc.

If a clinician suspects an underlying sexually acquired urinary tract infection because of a history of unprotected insertive anal intercourse, the initial treatment regimen should be:

- Ciprofloxacin 500mg orally twice daily for 10 days.

Treat male and female sexual partners with azithromycin with or without ceftriaxone. Clinicians should first check female sexual partners for the possible presence of PID.

Review in three days to observe the effect of treatment and to ensure sexual partner(s) has (have) been seen and treated. If treatment is proving ineffective and tests fail to confirm an STI, antibiotic therapy can be changed in the light of MSSU results and/or the clinician can initiate further tests to establish the diagnosis (e.g. blood cultures, MSSU for mycobacteria).

Ongoing treatment for specific STIs causing scrotal swelling

On the third day if the patient has improved, continue doxycycline to a total of 14 days.

Review test results:

If tests show gonorrhoea and there are still systemic symptoms, give ceftriaxone 500–1000mg intramuscularly daily until systemic symptoms settle. If tests confirm chlamydia, continue doxycycline. When the patient is having difficulty adhering to the treatment, a suggested alternative (with a limited evidence base) is: repeat 1g azithromycin at review visit on day 3, then on day 7 and day 14 preferably by directly observed therapy.

If tests show trichomoniasis, a very uncommon contributor to epididymo-orchitis, add metronidazole 400mg orally twice daily for 14 days (see Table 12.4).

If other possible causative STI micro-organisms are isolated on laboratory tests (e.g. *Ureaplasma urealyticum*, *Mycoplasma hominis* or *M. genitalium*) and the patient is failing to respond to the above regimen, clinicians should consult a sexual health physician for further advice.

Follow-up: (see Table 12.5)

Clinicians should ask patients to return for follow-up in three days as outlined above. The clinician should also see the patient again on day 7 and day 14 to review progress.

8. STI-related skin rashes: genital

Description and causes

Most skin rashes affecting the genitals are not STI-related. Readers should consult dermatology or sexual health texts. There is a discussion of HIV-related skin rashes in Chapter 6. Specific STIs may cause the following genital skin rashes:

- Candidiasis – vulvitis with erythema and oedema accompanied by itch. Usually associated with vaginitis and cottage-cheese like discharge; and balanoposthitis – inflammation of the glans penis and undersurface of foreskin (if present)
- Trichomoniasis – vulvitis due to the irritation caused by a profuse frothy offensive discharge
- Recurrent outbreak of genital herpes – recurrent attacks of herpes are often very atypical and may masquerade as a non specific genital rash or fissuring
- Scabies – burrows and nodules on the soft genital skin of penile shaft, glans penis, and vulva. Buttocks and natal cleft are often involved. Rash is intensely itchy, so often accompanied by excoriation. There is accompanying generalised skin irritation and itching with further burrows around wrist area and between fingers
- Pubic lice – itchy rash and excoriation in pubic region accompanied by obvious pubic lice clinging to coarse body and pubic hair. There are frequently tell-tale small dots of blood seen on underclothing when many lice are present.
- Fixed drug eruption – included because often indirectly STI-related. This is a sharply demarcated erythematous circular lesion, sometimes weeping, classically on the glans penis due to a localised hypersensitivity reaction to a drug such as doxycycline.

Differential diagnosis

There is a wide differential diagnosis of genital rashes but all the above STI-related skin rashes are fairly easily recognised clinically or can easily be confirmed by performing appropriate tests. Common non-STI causes for genital skin rashes are:

- Psoriasis
- Lichen planus
- Lichen sclerosus (including balanitis xerotica obliterans on the penis)
- Eczema
- Contact dermatitis

Diagnostic tests

Patients who present with STI-related genital skin rashes may have been at risk for other more significant STIs. Clinicians should consider doing screening for other STIs as appropriate. To make the diagnosis of the specific rash, take swabs from affected areas for tests for candidiasis and herpes. To check for trichomoniasis, an HVS is best. To confirm scabies, look for a clear burrow, lay it open and extract mite on the tip of a fine needle and examine under low power microscopy. To confirm pubic lice, remove one from a hair with a pair of

forceps and examine under a magnifying lens or low power microscopy. A fixed drug eruption has a characteristic appearance and history of drug exposure, but if uncertain do a punch biopsy and send for histology.

Initial and specific treatment for STI-related skin rashes: genital

Specific treatment can be prescribed immediately on recognition of the aetiology of the rash. See Table 12.4 for treatments for specific STIs. For genital skin rashes these are treatments for:

- Vulvo-vaginal candidiasis
- Trichomoniasis
- Recurrent herpes
- Scabies
- Pubic lice

For fixed drug eruption, stop the offending drug (e.g. doxycycline) and the rash will subside over three or four days.

Treat or arrange treatment for male or female sexual partner(s) as appropriate.

Follow-up: (see Table 12.5)

STI-related skin rashes: generalised

Description and causes

Generalised skin rashes have too many causes to discuss in this monograph. The decline in immune function associated with HIV infection leads to well characterised skin conditions and infections (see Chapter 6). In primary care practice, there are three significant generalised skin rashes of relevance to STIs which an astute clinician should try to exclude. These are:

- The rash of secondary syphilis: a generalised mainly macular erythematous rash, seen well on the trunk, but may also involve the palms and the soles. It too is non-itchy. It is usually accompanied by fever, malaise, headache and lymphadenopathy or may have little or no systemic symptoms.
- The rash of primary HIV infection (Chapter 4): a generalised mainly macular erythematous rash, seen well on the trunk, but may also involve the palms and the soles. It too is non-itchy. It is usually accompanied by fever, malaise, headache and lymphadenopathy. Primary HIV infection is very frequently mistaken for infectious mononucleosis.¹⁴
- The rash of disseminated gonococcal infection: seen on distal portions of the extremities as macules, papules, pustules, petechiae or ecchymoses, usually less than 30 in number. They are usually accompanied by joint involvement with arthralgias, tenosynovitis and sometimes frank arthritis. There is often accompanying fever and malaise, although this may be quite mild.¹⁴

Differential diagnosis

The differential diagnoses are many and require a thorough knowledge of dermatology.

Diagnostic tests

Testing for secondary syphilis requires an RPR and a specific treponemal test (TPPA, EIA or FTA ABS). In almost all cases the RPR will be 1/16 or greater.

In primary HIV infection, current tests in Australia will almost always be positive. There remains a short window period in very early infection where HIV tests may be negative and the diagnosis may be missed. A negative HIV antibody test does NOT exclude the diagnosis (for further discussion of this issue, see Chapter 4).

Accurate diagnosis of disseminated gonococcal infection (DGI) is not so easy. The mainstay of testing is to send swabs for culture and sensitivity from all possible sites of exposure (as judged by the sexual history)—a FCU for NAAT is quite adequate for urethral gonorrhoea if there is no urethral discharge. Gonococcal strains causing disseminated gonococcal infection are often asymptomatic at mucosal sites of infection. In addition, sending blood cultures for *Neisseria gonorrhoeae*, although they are only positive in about 40% of cases, and an aspirate for microscopy, and culture and sensitivity, from any joint effusion (if possible) will assist in confirming the diagnosis.

In addition to tests outlined above, in all three situations, clinicians should screen for other STIs in accordance with the sexual history. (See Table 12.3).

Initial treatment of STI-related skin rashes: generalised

In these three conditions, thinking of the diagnosis and initiating the appropriate tests is a major contribution to patient management and public health. In the case of syphilis and disseminated gonococcal infection, once tests have been taken, no harm is done in initiating treatment immediately on suspicion to render the patient asymptomatic and non-infectious as rapidly as possible.

In all three situations, clinicians must initiate discussions with patients about contact tracing in order to ensure that their sexual partner(s) are also seen, checked and treated as well.

Specific treatment for STI-related skin rashes

Secondary syphilis

(See Table 12.4)

Treat or arrange treatment for male or female sexual partner(s) as soon as possible.

Disseminated gonococcal infection

- Ceftriaxone 1g intramuscularly or intravenously (B1) daily for 7 days

Alternatively, if sensitivity tests show that the gonococcus is sensitive to ciprofloxacin and clinical response is good after 24–48 hours, regimen can be switched to:

- Ciprofloxacin 500mg orally twice daily (B3) until the end of day 7 of treatment AND
- Azithromycin 1g po (B1) as a single dose for possible accompanying chlamydial infection

If the patient is allergic to cephalosporins and the gonococcus is resistant to ciprofloxacin, the clinician should seek the advice of a sexual health or infectious diseases physician.

Test and treat, or arrange treatment, for male or female sexual partner(s) with single dose ceftriaxone and azithromycin.

Primary HIV infection

- See Chapter 4

Contact tracing of all sexual contacts over the past six months.

Follow-up: (see Table 12.5)

Summary

STIs have a wide variety of clinical manifestations, as well as none at all, and thinking about them in terms of the eight most commonly encountered syndromes may help clinicians achieve better management. Management of STIs in primary care is highly appropriate. It is vital that it be done well.

When the STI is unusual or complicated, fails to respond to recommended treatment, when there are difficult sexuality or other sexual health issues involved or where contact tracing is beyond the capacity of the primary care clinician, she or he should refer the patient to a specialist sexual health physician or clinic. In addition to specific therapy, psychosocial management, safe sex education, provision of information and referral when necessary are key features of the primary care of STIs, and are well within the capability of any competent clinician.

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