

Testing for STIs and STI signs, symptoms and syndromes



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Introduction

It is always easier to talk about something rather than nothing. This fact accounts for the emphasis that is always placed on the symptoms and signs of sexually transmitted infections (STIs) rather than on the much more common situation—infectiousness without symptoms or signs. Sexual health physicians of the old school always possessed their mandatory box of battered old slides (scanned more recently into much smarter power point presentations) depicting the ravages wrought by venereal infection. It was believed that the shock and horror value of photographs of the more alarming manifestations of STIs must surely have a salutary effect—to modify risky sexual behaviour and, in our general practice population, to jolt our professional audiences out of complacency. Our faith was misplaced for, in our endeavours, we failed dismally. In fact, we were more than likely counter-productive. We might just as well have filed our depressing old slides in the waste paper basket for all the practical good they did. Our clientele decided the lecture didn't apply to them as they had never observed any of those awful discharges or ulcers on themselves or their sexual partners; our professional audiences at drug company dinners felt cheated that their appetites were temporarily disturbed by the pictures, but breathed a sigh of relief that none of their patients were the sort of people who developed such gross pathology. Meanwhile our patients continued to acquire and transmit asymptomatic STIs and health professionals continued to fail to diagnose them.

This chapter will place due emphasis on testing for asymptomatic STIs and its importance both for good patient management and good public health. It will also briefly mention the common presenting symptoms and signs of STIs and the specific infections likely to cause such clinical presentations.

Testing

STIs are usually asymptomatic for a variable period of time before they declare themselves clinically and during that time people with infection are infectious to their sexual partners. These people with infection, with ongoing sexual exposures, are unwittingly promoting transmission. At the time they are least aware of their own infection, they are most infectious

to their partners. Thus, testing for infection in those at risk, and rapid treatment of those found to have an infection are the only practical ways to have any significant impact on preventing significant morbidity developing in the patient with the infection and interrupting ongoing transmission to others.

For these general statements of principle to be achievable in practice two key things are necessary: suitable tests for use with asymptomatic people; and effective treatments. There are well accepted criteria determining the suitability of testing for diseases. They require knowledge of: the disease (or infection); the performance of the test; and the patient population (Table 8.1).

Key points

- Testing for STIs in those at risk and rapid treatment of those found with infection are practical ways to have a significant impact on the prevalence of both STIs and HIV in communities.
- In practice two key elements are necessary: suitable screening tests and effective treatments (or clear management plans) for the individual STI.
- Opportunistic screening means a clinician takes any opportunity which presents itself to screen patients for STIs.
- No laboratory test is perfect: in low-prevalence populations for any infection, false positives can occur with any test no matter how good its overall performance.
- Appropriate information sharing about STIs must always precede screening tests and patients must be helped to understand the associated risks they have run, why testing for a particular STI is relevant for their situation and how the clinician proposes to manage a positive result in their case.
- The presence of HSV infection can increase the transmission and acquisition of HIV, so it may be useful to test for HSV type specific antibodies in MSM and especially HIV-positive MSM.
- Testing patients for the presence of common STIs and perhaps less common but significant STIs like syphilis and HIV is now best practice.

It is known that no test is perfect, and that clinicians often accept pathology results uncritically. But even a cursory glance at Table 8.1 will indicate that these are ideal criteria: very few of the tests currently available, the STIs of interest, and the affected populations meet the standards. Genital chlamydia infections perhaps come closest to the ideal situation but even here there are difficulties. Chlamydia poses a threat to public health and causes significant and expensive morbidity in women (pelvic inflammatory disease [PID], infertility, enhanced risk of ectopic pregnancy, chronic pelvic pain). If the target population is those 15 to 25 years old, the prevalence of infection in most countries (including Australia and New Zealand) is sufficiently high to justify testing and the risk of false positives (always a concern when screening very low prevalence populations) is minimised. Both males and females are often asymptomatic for reasonably extended periods of time before complications develop, and uncomplicated chlamydia is readily amenable to treatment.

A highly effective single dose treatment with very few side effects is available, and in Australia and New Zealand there are ample facilities to deliver treatment. The drawback is that azithromycin is a relatively expensive drug which the public health systems of some countries can't afford. Nucleic acid amplification tests (NAATs) are highly sensitive and specific for *Chlamydia trachomatis* and can be performed with reliable and reproducible results on a range of specimens such as first catch urine (FCU), self-collected urethral or vaginal swab and clinician-collected endocervical swab. The ability to perform non-invasive tests, the simplicity of the test for the clinician and the easy interpretation of results all make it an outstanding test. However, it is an expensive test and although shown to be cost effective for genital chlamydia infection in resource-rich countries, its cost means it is out of reach for most resource-poor countries where the burden of disease due to chlamydia is greatest.

Despite the cost, genital chlamydia infection does approach the ideal criteria for testing. Similarly, in populations with a known moderate to high prevalence for gonorrhoea and trichomonal infection (e.g. some Indigenous Australian and New Zealand communities), testing individuals for these infections is clinically justified. NAATs for *N. gonorrhoeae* and *T. vaginalis* on FCU specimens in males or females, or self collected vaginal swabs in women are non-invasive tests, acceptable to most individuals.^{1,2}

TABLE 8.1 Criteria for suitable testing for STIs (adapted from WHO Guidelines¹)
The infection
<ul style="list-style-type: none"> • Poses a threat to public health • Has significant sequelae (morbidity or mortality) for the individual • Is present in the population screened with reasonable probability • Can be detected while patient is still asymptomatic with a reasonable chance that significant damage has not occurred • Is amenable to treatment
The test
<ul style="list-style-type: none"> • Good sensitivity allowing detection of asymptomatic disease • Good specificity reducing false positives to a minimum • Well accepted by the patient population • Simple to perform and simple to interpret result • Cost effective
The patient population
<ul style="list-style-type: none"> • Infection sufficiently prevalent to reduce false positive rate • Effective treatment available and appropriate facilities and personnel to administer it • Patients willing to accept treatment, follow-up and further assessment if necessary

Unfortunately a NAAT for *T. vaginalis* is not yet commercially available, although some laboratories have their own in-house polymerase chain reaction (PCR) test. Of course, microscopy and culture for *T. vaginalis* can be used instead, but FCU is not an appropriate test for this purpose and sensitivity and specificity on vaginal swabs subjected to microscopy and culture is inferior to NAA testing.

HIV testing and testing for syphilis fulfil many of the criteria for testing in asymptomatic individuals; excellent serological tests are available for both infections. The HIV antibody test, now accompanied in Australia by a test for HIV p24 antigen, is perhaps the most ideal test ever available to clinicians with its extremely high sensitivity and specificity. False positives can still occur in very low-prevalence populations but these can soon be detected by further Western blot testing. The sensitivity of the rapid plasma regain (RPR) test is poor in very early and late syphilis; however, the sensitivity can be improved by using both the RPR and a specific test (enzyme immunoassay [EIA] or *Treponema pallidum* particle agglutination [TPPA]) for testing asymptomatic people.

TABLE 8.2 Suggested sexual health check in asymptomatic patients*(This check list presupposes adequate information sharing and patient consent before testing)***Heterosexual women (in all major cities in Australia and New Zealand i.e. low prevalence areas for gonorrhoea and syphilis)**

- First catch urine (FCU) or self-collected high vaginal swab (HVS) for NAAT (usually PCR or LCR) for chlamydia
- Serology for hepatitis B (HBcAb) if not previously vaccinated; on first visit
- Papanicolaou smear if not done in the previous two years
- Optional extras (determined by sexual history): FCU or self-collected HVS for NAAT for gonorrhoea; throat swab for gonorrhoea (culture and sensitivity); rectal swab for gonorrhoea (culture and sensitivity); rectal swab for chlamydia (NAAT); HVS for trichomoniasis (NAAT, if available, or swab in transport medium); Serology for HIV and syphilis (EIA or RPR and TPPA); serology for HCV if any risk; serology for rubella in nulliparous women

Heterosexual men (in all major cities in Australia and New Zealand i.e. low prevalence areas for gonorrhoea and syphilis)

- FCU for NAAT (usually PCR or LCR) for chlamydia
- Serology for hepatitis B (HBcAb) if not previously vaccinated; on first visit
- Optional extras (determined by sexual history, local prevalence and especially overseas travel): FCU for NAAT for gonorrhoea; FCU for trichomoniasis (only possible with NAAT, if available); serology for HIV and syphilis (EIA or RPR and TPPA); serology for HCV if any risk

Heterosexual women (in areas where prevalence for gonorrhoea and syphilis is higher, i.e. in Indigenous communities and in some regional cities, rural and remote communities in Australia and New Zealand)

- FCU or self-collected HVS for NAAT (usually PCR or LCR) for gonorrhoea and chlamydia
- Serology for syphilis (EIA or RPR and TPPA)
- Serology for hepatitis B (HBcAb) if not previously vaccinated; on first visit
- Papanicolaou smear if not done in the previous two years
- Optional extras (determined by sexual history): throat swab for gonorrhoea (culture and sensitivity); rectal swab for gonorrhoea (culture and sensitivity); rectal swab for chlamydia (NAAT); HVS for trichomoniasis (PCR, if available, or swab in transport medium); serology for HIV; serology for HCV if any risk; serology for rubella in nulliparous women

Heterosexual men (in areas where prevalence for gonorrhoea and syphilis is higher, i.e. in Indigenous communities and in some regional cities, rural and remote communities in Australia and New Zealand)

- FCU for NAAT test (usually PCR or LCR) for gonorrhoea and chlamydia
- Serology for syphilis (EIA or RPR and TPPA)
- Serology for hepatitis B (HBcAb) if not previously vaccinated; on first visit
- Optional extras (determined by sexual history): throat swab for gonorrhoea (culture and sensitivity); FCU for trichomoniasis (only possible with NAAT, if available); serology for HIV; serology for HCV if any risk

continued >

TABLE 8.2 Suggested sexual health check in asymptomatic patients (continued)**Women who have sex with women (WSW)**

- FCU test or self-collected HVS for NAAT (usually PCR or LCR) for gonorrhoea and chlamydia
- Serology for syphilis (EIA or RPR and TPPA)
- Serology for hepatitis B (HBcAb) if not previously vaccinated; on first visit
- Papanicolaou smear if not done in the previous two years
- HVS for bacterial vaginosis (microscopy)
- Optional extras (determined by sexual history and local prevalence): throat swab for gonorrhoea (culture and sensitivity); rectal swab for gonorrhoea (culture and sensitivity); rectal swab for chlamydia (NAAT); HVS for trichomoniasis (NAAT, if available, or swab in transport medium); serology for HIV; serology for HCV if any risk; serology for rubella in nulliparous women

Men who have sex with men (MSM)

- FCU for NAAT for gonorrhoea and chlamydia
- Serology for HIV and syphilis (RPR and TPPA or EIA)
- Serology for hepatitis B (HBcAb) and hepatitis A (IgG), if not previously vaccinated; on first visit
- Serology for HSV type specific antibody test*
- Throat swab for gonorrhoea (culture and sensitivity)
- Rectal swab for gonorrhoea (culture and sensitivity)
- Rectal swab for chlamydia (NAAT)
- Optional extras (determined by sexual history and availability): ano-rectal Papanicolaou smear if available (usually only in specialist centres); serology for HCV if any risk

* see text for rationale

NAAT = nucleic acid amplification test, PCR = polymerase chain reaction, LCR = ligase chain reaction, HBcAb = hepatitis B core antibody, EIA = enzyme immunoassay, RPR = rapid plasma reagin, TPPA = treponema pallidum particle agglutination, HVS = high vaginal swab, FCU = first catch specimen of urine

In general terms, testing asymptomatic people for the viral infections human papillomavirus (HPV) and herpes simplex virus (HSV) is impractical at the present time, because so few of the ideal criteria are met, although, of course, the Papanicolaou smear cytology program is actually an indirect screening method for high-risk types of HPV.

Testing for STIs in primary care

STI testing in asymptomatic individuals happens in two situations. One is termed population testing and occurs where testing takes place in a given population with a known high STI prevalence (e.g. an Indigenous community or a specific community of men who have sex with men [MSM]) as part of a public health strategy. Population testing is not our concern in this monograph. The other type of testing is relevant to primary care practice. It is termed opportunistic testing, which implies the clinician takes any opportunity which presents itself to test asymptomatic high risk patients for STIs.^{3,4}

It is relatively easy to set out the tests that should constitute a standard sexual health check in an asymptomatic person. Table 8.2 details a suitable check list as a guideline. It is not so easy in the primary care clinic to decide who should be screened; people commonly front up to sexual health clinics asking for a sexual health check, but they do this much less commonly in other branches of primary care.

So who to test?

Who not to test is probably the better question. In the present context perhaps a handy aphorism for a clinician could be: get into the habit of asking yourself in any consultation, for any reason with any pubertal or post-pubertal patient, 'why should I not suggest an STI check-up for this patient?' Obviously there will be clinical situations where STI testing is inadvisable and particular people whom you will immediately deem inappropriate for testing, but beware of making assumptions. The real hurdle is broaching the subject. STI testing should be so normalised in primary care

practice that no one will think it strange if their doctor suggests an STI check. Normalising STI testing in our own everyday practice is an essential start. Practical tips on who to consider for testing are listed in Table 8.3.

It goes without saying that good information sharing about HIV infection must precede testing for HIV and must include the implications, for that individual patient, of a positive or negative result. The same is true of testing for hepatitis C infection. It is less widely accepted, but none the less essential in good primary care practice, that appropriate information sharing about STIs always precedes testing and that patients are helped to understand risks they may have run, why testing for a particular STI is relevant for their situation and how the clinician proposes to manage a positive result in their case.

Tests to use and the rationale for using them

The tests suggested for asymptomatic testing are set out in Table 8.2 in six broad categories based on sexual behaviour and local prevalence. They are only guidelines and clinicians must decide on specific tests needed for their individual patients given their sexual histories and the local known prevalence of specific STIs. Testing for chlamydia is a must in almost everybody with any STI risk at all. In general terms, all the NAATs are equally good whether LCR, PCR, strand displacement amplification (SDA) or transcription mediated assay (TMA). It depends on what your local laboratory uses. NAAT tests are validated for chlamydia and gonorrhoea on FCUs, urethral swabs, cervical swabs and self-collected vaginal swabs.

In low-prevalence populations for any infection, false positives can occur with any test no matter how good its overall performance. To avoid false positives entirely, test specificity must be 100% which is seldom, if ever, attainable.⁵ NAATs have good specificity for chlamydia but slightly lower specificity for gonorrhoea; however, their specificity is not 100% for either infection. This fact is of great practical importance, especially when testing for gonorrhoea in most big cities in Australia and New Zealand where the prevalence of gonorrhoea is extremely low at the time of writing. When the prevalence of gonorrhoea is low in the local population and a NAAT for gonorrhoea shows an unexpected positive in a patient at low risk for STIs, the clinician should regard the result with some suspicion; it may prove to be a false positive. Many laboratories automatically run a further confirmatory test (e.g. a different NAAT) when the initial test gives a positive result, but it is good practice for clinicians to adopt a policy of sending off a further gonorrhoea culture themselves on unexpected positive NAAT results.

TABLE 8.3 Patients to consider for STI testing in primary care

• 15–25 year old men and women
• Individuals who have more than one partner, have recently changed partners, ended a long-term relationship or started a new relationship
• People living with HIV, injecting drug users (IDUs) and those with a previous history of STIs
• Women and men who are concerned about their partner's behaviour and fidelity
• Indigenous patients
• Antenatal women
• Older patients who have lost a partner through death or divorce and have resumed sexual activity
• Male and female sex workers; whether working in the sex industry or opportunistically, and their regular partners
• Men who travel a lot on business and their regular partners
• Men who are clients of sex workers and their regular partners
• Men who have sex with men (MSM) and their female partners (if any)
• Women who have sex with women (WSW) and their male partners (if any)
• Overseas travellers who have had sex overseas

NAATs for gonorrhoea are unvalidated for throat and rectal swabs and at this time shouldn't be used; at these sites, swabs for gonococcal culture are the appropriate tests. Although NAATs for chlamydia still remain unvalidated for rectal swabs, their widespread and increasing use in this situation indicates general acceptance.⁵ In clinical practice their performance is good in rectal swabs. Take rectal swabs blind in asymptomatic patients (i.e. without use of an anoscope or proctoscope) or allow the patient to take their own swab—the swab can be moistened with tap water first then gently inserted past the anal sphincter and angled laterally so that the cotton tip touches the side wall of the rectum, then withdrawn. Routine testing for pharyngeal chlamydia infections is not thought to be cost effective at this time because even in high-risk populations (highly sexually active MSM) the yield is very low.

In low-prevalence populations, the EIA test is a good test for syphilis as it is highly sensitive; however, in moderate-to-high prevalence populations, many EIA positives will indicate old, previously treated disease. It is more useful to use the RPR test combined with a specific test (EIATPHATPPA) in those populations as the titre will give some indication of recent infection (RPR 1/16 or greater). When a genital lesion(s) is present,

PCR testing is now replacing darkfield microscopy examination and may have a place in the diagnosis of extremely early infections, especially when clinical suspicion is high and initial serology is negative (see Chapter 12: Primary Care Management of STIs). The treponemal PCR test is not useful, however, in testing completely asymptomatic people.

There's debate about the best screening test for hepatitis B. The purpose of testing for hepatitis B virus (HBV) is twofold; to diagnose chronic HBV infection, and to offer vaccination for those not previously exposed to HBV. A positive HBcAb is sensitive and specific and will indicate any exposure for HBV. To differentiate chronic HBV infection in those who are HBcAb positive, a further HBsAg test can then be requested. Most laboratories will automatically do surface antigen and antibody testing anyway if the core antibody is positive. Presence of HBsAb will indicate successful vaccination in those unsure of their vaccination history (as is often the case). In general terms, people who are HBcAb positive do not require HBV vaccination. Testing for hepatitis A virus (HAV) antibodies in MSM is a sensible measure so that those who are not immune can be offered vaccination. HAV is transmitted by the faecal-oral route and there have been a couple of mini-epidemics of hepatitis A in communities of urban gay men over the past two decades.

HIV testing is listed in the Table as an optional extra for all except MSM. Although the prevalence of HIV is low in Australasia in all groups except MSM, it is the STI with the most serious consequences for the person with HIV infection. Most patients who are being tested for other STIs will accept HIV testing, but clinicians should concentrate on ensuring that all patients who are actually diagnosed with an STI are offered HIV testing in line with national HIV testing guidelines (see Case study 1).

HIV testing in pregnant women (see Table 8.3) is obviously an important issue because if the clinician is aware that an antenatal patient is HIV infected, appropriate management and antiretroviral therapy can substantially reduce the risk of the baby becoming infected. On a global level, a small but significant number of HIV positive diagnoses have been missed during the antenatal period because HIV testing has been offered only to those with a clear history of HIV risk behaviour. Even in Australasia, the potential for missing HIV infections in the antenatal period does exist, so pregnant women should always be offered HIV testing, irrespective of their risk, provided good pre-test information sharing and discussion takes place.

CASE STUDY 1

A patient decides on HIV testing along with other STI testing

Bronnie was an 18 year old young woman living in a regional city in Northern Australia when she presented to her general practitioner with mild tonsillitis. In general discussion the clinician established that Bronnie was sexually active—in fact she had had sex with three different young men over the past four months and had only used condoms with one of them ('because he was a one night stand'). Until four months ago, she had been in a regular relationship for three years with her first sexual partner (a school boy sweetheart) before he had to leave for study in Sydney. She had never had a Pap smear, nor been vaccinated for hepatitis B. On examination, she had mildly inflamed tonsils which the clinician thought was probably viral; however, she arranged for a throat swab for culture and sensitivity and a first catch urine specimen (FCU) for NAAT for chlamydia as Bronnie agreed an STI screen was a good idea. She gave Bronnie some literature about STIs and the HIV test and arranged for her to return in a week for a Pap smear. Bronnie promised she would think about a blood test for further STI screening before that time.

Bronnie returned next week to discover that she had a positive chlamydia test on her FCU and, surprisingly, her throat swab had grown *Neisseria gonorrhoeae* which was sensitive to ciprofloxacin. The clinician prescribed azithromycin and ciprofloxacin for Bronnie and the two had quite a long chat about HIV and STIs while vaginal examination and the Pap smear was proceeding. In view of the presence of two other STIs, the clinician sent an HVS for microscopy and a NAAT for trichomoniasis. Bronnie had decided to have a blood test, so the two agreed together that serology for syphilis, hepatitis B and HIV was appropriate.

All tests were negative except for Bronnie's HIV test which proved positive both on EIA and Western blot testing. Subsequently, through contact tracing in collaboration with the local Sexual Health Clinic, one of Bronnie's recent partners also proved to be HIV positive, probably because he had lived for a year in Thailand and had unprotected sex with several Thai women during his time there. The other recent partner with whom she had unprotected sex had been treated for gonorrhoea by his GP two months before but was HIV negative.

Suggesting testing for bacterial vaginosis in asymptomatic WSW is perhaps unjustified but as symptomatic bacterial vaginosis is a significant concern in this patient group, most WSW will want to know the state of their vaginal ecosystem and if abnormal, will want to discuss possible ways of returning it to normal acidic levels.

The place of the ano-rectal Papanicolaou smear ('CHAP' smear) is unclear at present. Some centres in Melbourne and Sydney are offering this test for MSM and especially MSM with HIV infection. To take a smear from the ano-rectal junction is simple and well within the capacity of any primary care clinician;

the difficulty lies in finding a cytologist with the necessary expertise, the interpretation of the result and most importantly, knowing what are the most appropriate interventions for high grade-squamous intraepithelial lesions (HSIL).

Serological testing for genital HSV infection

Type specific HSV antibody tests are now available to differentiate between HSV-1 and HSV-2 antibodies. They are highly sensitive EIA tests but are not quite so highly specific; false positives can only be excluded by doing further, much more expensive, Western blot testing. They give no indication of the anatomical site of infection; while one can make a reasonably accurate assumption that most HSV-2 antibody-positive people will have genital infection, the same does not apply to HSV-1 antibody-positive people—they may have either genital or oral infection. There are some clinical situations where HSV serology might guide management (e.g. in a pregnant woman whose partner has a known history of herpes), but in a testing situation it has little place at the present time, except in MSM⁶ (see Table 8.2). There is good evidence that the presence of HSV infection can increase the transmission and acquisition of HIV so it may be useful to test for HSV type specific antibodies in MSM, with a view to informing those with positive HSV-2 antibodies (who are also HIV negative) of their possible HSV diagnosis combined with advice on how best to reduce risks of acquiring HIV in the presence of genital HSV infection. This will obviously involve reinforcing the importance of condom use with anal sex. Clinicians should inform those men living with HIV, who have HSV-2 infection as well (as demonstrated by a positive type specific antibody test) that their risk of transmitting HIV is much greater when they are shedding HSV from genital sites.⁷ Condom use will reduce the risk but it is also likely that taking suppressive antiviral therapy (e.g. with valaciclovir or famciclovir) for HSV will further reduce their risk of transmitting HIV (as well as HSV); in patients with symptomatic recurrences of HSV, clinicians have a clear indication already for prescription of suppressive antiviral therapy; in patients who never suffer symptomatic attacks, the public health value of suppressive antiviral therapy has not yet been proven, so use of suppressive antiviral therapy is problematic. Ongoing clinical trials in MSM should give an answer to this question fairly soon.

How often to test?

Patients who have had their first sexual health screening often ask when they should have their next check-up and how often should they have them. The answer is that it all depends. Certainly there is no clear evidence base to guide clinicians on this question. The patient's pattern of sexual behaviour and the incidence of any unprotected sexual exposures are important factors to take into account. Where people have regular casual contacts, or fairly regular partner

change (e.g. some MSM), establishing a regular three-monthly or six-monthly attendance for a sexual health check-up seems sensible and justified. In the more common situation where people tend to stay with one partner for variable periods of time, a sexual health check when a relationship ends, or just before a new one starts is a safe option. Some people attend as a couple soon after commencing a new relationship so they are both tested for STIs at the same time before deciding to abandon condom use. If couples do attend together the clinician should try to clarify what their expectations are regarding access to each other's test results and to document this in the clinical file for future reference. For medico-legal purposes it is preferable to suggest written (signed) permission if a patient is happy for their sexual partner to have access to their test results. Unfortunately, most people find that contemplating this pragmatic approach seems too calculated and unromantic. Clinicians just have to tailor their advice about frequency of testing to accommodate the patient's needs.

Symptoms and signs of STIs

Although mostly asymptomatic, STIs can eventually cause symptoms and signs. There are several classical syndromes which group together the main symptoms and signs of STIs. When considering diagnosis and management of STIs in primary care it is more helpful to think in terms of these syndromes rather than about each individual STI because patients tend to present with a syndrome rather than with one STI—this is called syndromic management. In resource-poor settings there are various algorithms developed for the management of each syndrome which have proved extremely useful in the provision of rapid, mostly effective treatment even when exact diagnosis of the individual STI (or STIs) responsible for the syndrome is impossible. The major drawback of the syndromic approach is that over-treatment for infections that are not in fact present often occurs. In resource-rich nations like Australia and New Zealand, a syndromic approach combined with appropriate judicious testing will combine the best of both worlds—rapid effective treatment of the presenting syndrome accompanied by exact diagnosis of the precise STI (see Chapter 12 for the management of syndromes). Refer to Table 8.4 for a brief description of STI syndromes.

Urethral discharge

A discharge from the urethra is almost always abnormal even if clear, mucoid or intermittent. The only exceptions are the scant discharge resulting from frequent 'milking' or squeezing the urethra to check if a discharge is present in the overanxious patient, and the typical mucoid discharge which can occur while on the toilet as a result of straining to open the bowels in a constipated patient. Urethral discharge can occur in females but is hardly ever going to be noticeable.

Vaginal discharge

There are two main problems in trying to interpret vaginal discharge. Is the discharge of which the patient complains physiological or pathological? If the discharge is deemed to be abnormal, it is important to know where it is coming from—the urethra, the vagina, the cervical canal or the endometrial lining of the uterus. Even with excellent history-taking and scrupulously careful examination, the answers to these questions is often not readily apparent. This fact explains why the algorithm for syndromic management of vaginal discharge in resource-poor settings is the least helpful of all the algorithms for genital syndromes. In Australia and New Zealand we have easily accessible and reliable tests to help us sort out vaginal discharge, but sometimes the true cause of the patient's complaint still proves elusive.

Ano-genital ulcer disease (GUD)

Traumatic abrasions and erosions are the most common cause of ano-genital ulcers, but these generally heal very quickly without treatment—in fact, attempts to self-treat by patients using antiseptics, insecticides, detergents and over soaping often result in more persistent ulceration which may perplex the unwary clinician. STIs associated with genital ulceration are HSV, syphilis (the primary chancre and the mucous membrane lesions seen in secondary disease), chancroid, lymphogranuloma venereum (LGV) and donovanosis. Chancroid, LGV and donovanosis are virtually never seen in primary care in Australia and New Zealand so these possible diagnoses can be disregarded, with the following provisos: chancroid has been diagnosed in Australia and New Zealand in recently returned (i.e. in the past week) travellers from endemic areas (South East Asia); there is a current outbreak of LGV in some highly sexually active groups of MSM, but it has been as proctitis rather than as genital ulceration that LGV has revealed itself in this highly specific situation; donovanosis still occurs (but extremely rarely now) in remote Indigenous communities in northern and central Australia and in Papua New Guinea. Where patients have scratched their scabietic genital lesions excessively, traumatic ulceration sometimes results but the complaint of overwhelming local itching makes the diagnosis easy. In primary care practice in Australia and New Zealand genital herpes is far and away the major cause of genital ulceration, with syphilis being a rare cause except in populations with a higher than average prevalence for syphilis (Indigenous communities and MSM).

Ano-genital warts

The warty lumps and bumps characteristic of HPV infection (usually associated with types 6 and 11) and molluscum contagiosum are the major infectious causes of lumps and bumps in the ano-genital region. Lumps and nodules due to sexually transmitted scabies also occur and are traps for the unwary clinician; the

TABLE 8.4 STI syndromes

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|--------------------------------------|
| • 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 or generalised |

characteristic itching gives the clue. Other lumps and bumps are almost invariably non-infectious and are not due to an STI. Many are normal variants (such as pearly penile papules, Fordyce spots and sebaceous glands); some represent minor skin pathology (such as sebaceous cysts and seborrhoeic keratoses). Rarely, neoplastic lesions may present initially as nodules or papules. Clinicians should consult larger sexual health or dermatology texts to familiarise themselves with these genital lesions which can cause enormous concern, especially in young patients.

Ano-rectal syndromes

Ano-rectal syndromes are a rather heterogeneous and somewhat artificial group of symptoms and signs of STIs which predominantly affect the peri-anal area, the anus, the ano-rectal junction, the rectal mucosa and more rarely the gastro-intestinal tract. It's an anatomical syndrome more than anything else. As such, virtually all the STIs and some enteric infections not usually regarded as sexually transmitted (such as shigellosis, salmonellosis, hepatitis A and amoebiasis etc.) can be included. Most ano-rectal syndromes result from infections transmitted during various anal sexual activities (peno-anal, oro-anal, fingers, toys, fists in the anus etc.) and are therefore seen most often in MSM, but any patients, men or women, engaging in receptive anal sexual practices can of course have an infection, and oro-anal insertive patients may acquire gastro-intestinal (GIT) infections from the anal area of a sexual partner. Predominant symptoms of ano-rectal syndromes are perianal itch, anal or more deep-seated rectal pain, anal discharge (often noted as mucopurulent material on the surface of bowel motions), diarrhoea and, rarely, rectal bleeding. The key to diagnosing ano-rectal STI syndromes is to recognise their sexual connection and to appreciate that all ano-rectal pathology is not surgical. In acute primary herpes infections the anal canal and rectal mucosa may be grossly inflamed, ulcerated and may even bleed. A relevant sexual history will allow the clinician to determine the correct diagnosis and to review the person in 2–4 weeks before deciding to refer for colonoscopy.

Pelvic pain syndromes

Pelvic pain in women can be acute or chronic. Acute (i.e. recent onset) pelvic pain has a variety of different causes such as PID, ectopic pregnancy, endometriosis, ovarian cyst, urinary tract infection, appendicitis and lower bowel disorders. Both PID and ectopic pregnancy require early diagnosis and appropriate intervention, vital for prevention of further morbidity and even mortality. A high index of suspicion for PID in any sexually active woman, and the ability to eliminate ectopic pregnancy as a cause of symptoms before anything else in any woman of child bearing age are prerequisite skills for primary care clinicians. It's important to appreciate how subtle chlamydia PID can be in its early stages—almost asymptomatic infection may be the rule rather than the exception, yet irreversible damage to fallopian tubes may result.

Scrotal swelling

Scrotal swelling may be painless or painful. Any scrotal swelling in young men (under 35 years of age) must be taken seriously because of the greater risk of testicular neoplasms in this age group. Acute onset painful swelling in young men may be due to torsion or epididymo-orchitis or, much more rarely, a tumour. Differentiation between torsion and epididymo-orchitis is sometimes extremely difficult. The key point is not to miss a torsion. Missing a diagnosis of epididymo-orchitis with resultant delay in treatment is not the disaster that missing the diagnosis of testicular torsion becomes. Taking a good history (including a sexual history), being familiar with the rudiments of scrotal anatomy, performing a careful examination and arranging a quick ultrasound scan will save most potential disasters from happening.

Rash: genital and more generalised

Genital rashes are mostly not the result of a genital STI. The exceptions are:

- The rash due to scratching because of pubic lice (crabs) or scabies
- The rash due to local candidal infection (balanitis or vulvo-vaginitis)
- The more severe vulval and intertriginous rash sometimes associated with profuse discharge in severe vaginal trichomonal infection
- The episodic non-specific rash that occurs with atypical recurrent genital herpes

Other genital rashes and skin conditions are associated with dermatological conditions like lichen sclerosus, lichen planus and genital psoriasis and are beyond the scope of this monograph.

There are only three generalised skin rashes associated with STIs which a clinician should be aware of:

- The rash of secondary syphilis
- The rash of primary HIV infection
- The rash of disseminated gonococcal infection

The first two rashes share some characteristics: they both tend to be non-itchy; both may involve the palms and soles; both may be accompanied by systemic symptoms (fever and malaise); and both tend to be erythematous maculo-papular rashes. The rash of primary HIV is of shorter duration and likely to be less clinically obvious than the rash of secondary syphilis, but is often accompanied by acute aphthous type ulcers in the mouth and sometimes on genital mucosa. Secondary syphilitic rashes are more variable and can mimic other skin conditions—psoriasis, pustular acne etc. These rashes are markers for the most highly infectious periods of HIV and syphilitic infection and so thinking of and making the diagnosis is extremely useful for public health, as well as the patient.

The rash of disseminated gonococcal infection is a little different to the first two generalised skin rashes, although accompanying systemic symptoms also commonly occur. It is seen on distal portions of the extremities as macules, papules, pustules, petechiae or ecchymoses, usually less than 30 in number. There is usually joint involvement with polyarthralgia and tenosynovitis as well. Sometimes there is frank arthritis. Accompanying fever and malaise is often quite mild.

Conclusion

The ideal time to diagnose an STI is before it manifests itself clinically. Testing patients for the presence of common STIs and perhaps less common but significant STIs like syphilis and HIV is now best practice. Every clinician in primary care should be opportunistic about STI testing, as well as optimistic about outcomes for patients and the public health when she or he embraces STI testing of asymptomatic but at-risk patients wholeheartedly. It is one area of primary care medicine which can make a real difference.

References:

- 1 Holland WW, Stewart S, Massera C. Policy brief – Screening in Europe. WHO European Centre for Health Policy 2006. [Online] [access April 2007]. Available from <http://www.euro.who.int/Document/E88698.pdf>
- 2 Garrow SC, Smith DW, Harnett GB. The diagnosis of Chlamydia, gonorrhoea, and trichomonas infections by self obtained low vaginal swabs, in remote northern Australian clinical practice. *Sex Transm Infect* 2002;78:278–81.
- 3 Ward B, Rodger AJ, Jackson TJ. Modelling the impact of opportunistic screening on the sequelae and public health care costs of infection with *Chlamydia trachomatis* in Australian women. *Public Health* 2006;120:42–9.

- 4 Walleser S, Salkeld G, Donovan B. The cost effectiveness of screening for genital Chlamydia trachomatis infection in Australia. *Sexual Health* 2006; 3:225–34.
- 5 Zenilman JM, Miller WC, Gaydos C, Rogers SM, Turner CF. LCR testing for gonorrhoea and Chlamydia in population surveys and other screenings of low prevalence populations: coping with decreased positive predictive value. *Sex Transm Infect* 2003; 79: 94–7.
- 6 Kent CK, Chaw JK, Wong W, Liska S, Gibson S, Hubbard G, Klausner JD. Prevalence of rectal, urethral and pharyngeal Chlamydia and gonorrhoea detected in 2 clinical settings among men who have sex with men: San Francisco, California, 2003. *Clin Infect Dis* 2005; 41: 67–74.
- 7 Corey L, Wald A, Celum CL, Quinn TC. The effects of herpes simplex virus-2 on HIV-1 acquisition and transmission: a review of two overlapping epidemics. *J Acquir Immune Defic Syndr* 2004; 35 (5): 435–45.