Recommendations in Case Management of Sexually Transmitted Infections (STIs) in Hong Kong 2004

Background

Collection of epidemiological data on sexually transmitted infections (STIs) is important for monitoring of disease incidence, trend and pattern. These data are useful in the identification of factors attributing to such changes and evaluation of STI (in fact also for HIV) prevention/intervention programme. As STIs are not notifiable diseases in HK, there are difficulties in collecting these data. Although data collected by the Government Social Hygiene Service (SHS) are not representative enough to show the full portfolio within the territory, she is the only organisation collecting these important data. The case definitions adopted in this 'Recommendations' are pragmatic, taking into account the limitation of the local laboratories in isolation of some of the more exotic organisms (not only because the techniques may not always be available, but the quality control of the culture and identification technique could be difficult even for the local reference laboratories). The definitions laid down are the requirements for statistic entry. Clinicians must exercise their own judgments in making diagnosis and tailor management for the individual patient and these are not to be bound by the criteria in these Recommendations. The recommendations on case management of the STIs are adopted and modified from the latest international guidelines (these are UK, USCDC, European and WHO) and the current practice in the Government Social Hygiene Service.

Objective

These guidelines summarise the current local practice in STIs management. The objectives are: 1) to standardise the criteria for case entry and hence epidemiological surveillance and reporting, so that the data collected is more reliable, 2) to help physicians keep abreast of the current trends in STI case management. Therefore all involved medical personnel can contribute to containment of STI and HIV epidemic in Hong Kong.

Disclaimer

These recommendations contain information relating to the general principles of medical management which should not be constructed as specific instructions for individual patients or physicians. Recommendations for STI care change frequently, so the care providers should make their own judgement in providing treatment to their patients.

Recommendations on STI Case Management

Genital Chlamydia Trachomatis (CT) Infections

Genital *Chlamydia trachomatis* (CT) infection is the commonest bacterial sexually transmitted disease in many developed countries. Genital (CT) infections in female patient can result in mucopurulent cervicitis, urethritis, pelvic inflammatory disease, ectopic pregnancy and infertility. *Chlamydia trachomatis* in male can result in urethritis (NGU), epididymitis and proctitis. Asymptomatic infection is common in men and women.

All women suspected of having CT infections according to signs, symptoms or exposure history should be tested for CT. Universal screening of all women attending our clinic the first time is also recommended.

All men suspected of having CT infections according to signs, symptoms or exposure history should be tested for CT.

Case definition and diagnosis:

Nucleic acid amplification test (NAAT) positive for *C. trachomatis* specific DNA or RNA. Currently Social Hygiene Service employs PCR test on specimens.

OR

Culture positive for *C trachomatis* on specimen taken from patients.

Genital Chlamydial Infection	Clinical	Laboratory		
		Site of specimen	Microscopy	Other techni
		Urethra (F & M) Cervix (F)		NAAT positive for *C trachomatis* OR Culture positive for *C trachomatis*

N.B.:

- Profile of PCR test for CT: sensitivity 80-90%, specificity 94-100%.
- In women screening for CT, specimens are taken from the endocervix.
- In women investigating for Acute Urethral Syndrome (AUS), specimens for PCR could be taken from urethra if indicated. The Centers For Disease Control and Prevention of US recommended using urine NAAT to investigate female urethral CT instead of urethral swab for NAAT. The application of urine NAAT test in the local setting however should further be studied before it can be widely applied in routine clinical management.
- Nuclei acid amplification tests (NAAT) are only applicable for specimens from male urethra, endocervix and female urethra, male and female urine. It is not appropriate for specimens from other sites such as rectum, oropharynx, vaginal and conjunctival. For these sites, if indicated, specimens should be sent for Chlamydia culture.
- Repeat screening of women for CT is unnecessary if risk factors are absent. There is no consensus on the frequency of repeating CT screening for women at high risk for CT. The interval will depend on factors such as changes on sexual partners, age, and other CT risk factors.
- As there are stringent quality assurance requirements for the application of molecular technique in a laboratory, the knowledge of the standard of the laboratory which makes reports based on molecular biological methodology is crucial for establishment of the diagnosis of chlamydial/ureaplasmal infection.
- Enzyme linked immunoassay for chlamydial antigen is still used in services other than SHS in HK. The positive predictive value of true chlamydial infection of the chlamydial antigen test is dependent on the disease prevalence of the tested population. In general, it is only reliable when the disease prevalence in the tested population is high enough. Either positive or negative result should therefore be interpreted in the appropriate context.

Management:

General advice

- Health education on their conditions and safer sex: monogamous relationship, proper and consistent condom use, prompt and routine medical consultation after unsafe exposure; distribution of relevant printed material is desirable.
- Routine screening and counseling, even in asymptomatic patients (in particularly female patients or contacts), are necessary.
- Contact tracing by patient referral.
- Patient should be advised to avoid unprotected sexual intercourse until 7 days after they and their partner(s) have completed treatment.

Further investigations

Screen for other coincident STIs should routinely be performed. Relevant investigations to exclude gonococcal infection, syphilis and HIV are performed by the Government Social Hygiene Clinics. High vaginal swab for *Trichomonas vaginalis* infection is also performed in female patients.

Treatment

Recommended treatments:

Doxycycline 100 mg orally twice daily for 7 days

Alternatives:

Azithromycin 1 gm orally in a single dose

Erythromycin base 500 mg orally four times daily for 7 days OR

Erythromycin ethylsuccinate 800mg orally four times daily for 7 days OR

Ofloxacin 300mg orally twice daily for 7 days OR

Levofloxacin 500 mg orally once daily for 7 days OR

Tetracycline 500 mg orally four times daily for 7 days OR

Clarithromycin 250 mg orally twice daily for 7 days

Follow up

Routine test for cure after completing treatment for CT is not required. Patients are advised to return if symptoms do not improve or symptoms recur after treatment.

Test of cure is indicated for all pregnant women. Nucleic acid amplification test (NAAT) could be falsely positive if performed <3 weeks after completion of treatment.

A second visit after 3 months of the last casual sexual intercourse is generally recommended for testing VDRL and HIV antibody.

Sexual partner

Contact tracing should be pursued in all patients infected with *C. trachomatis.* Empirical epidemiological treatment is generally delivered to the contacts. Health education and counselling on the disease and safer sex should also be offered to the contacts. With the exception of those sex worker contacts, contact tracing by partner referral is the approach adopted by the Government Social Hygiene Service.

N.B. The term *"Chlamydia trachomatis* (CT)" is used throughout this Guideline, it refers to serovars D to K, if not otherwise specified.

Gonorrhoea

Gonorrhoea is caused by *Neisseria gonorrhoeae* which is gram negative diplococci. In men, it usually gives rise to acute urethritis (dysuria and purulent discharge), proctitis and pharyngitis. In women, up to 50% are asymptomatic and the rest may present with vaginal discharge or pelvic pain. Untreated gonorrhoeae may result in ascending genital tract infections like epididymitis and pelvic inflammatory disease. Infected pregnant women may give birth to baby with ophthalmia neonatorum. Disseminated gonococcal infection may occasionally be seen.

Case definition and diagnosis:

Demonstration of intracellular Gram negative diplococci by Gram stain of urethral smear for male or cervical / urethral smear for female patient.

OR

Culture positive for *Neisseria Gonorrhoeae* by modified Thayer Martin Medium (or other equivalent media) of specimen from anterior urethra of male, or anterior urethra / cervix / vagina of female, or throat / pharynx / rectal area of male or female.

Gonorrhoea	**Clinical**	**Laboratory**		
		Site of specimen	**Microscopy**	**Culture**
		Urethra (F & M) Cervix (F) Vagina (F)	Intracellular Gram negative diplococci	Culture positive for *N. Gonorrhoeae*
		OR Throat, pharynx, rectum		Culture positive for *N. Gonorrhoeae*

N.B.:

Specimens from other uncommon sites like eye from neonates, joint fluid, laparoscopic / surgical specimen from upper genital tract of female may also be counted as a case of gonorrhoea.

Management:

General advice

- Health education on their conditions and safer sex: monogamous relationship, proper and consistent condom use, prompt and routine medical consultation after unsafe exposure; distribution of relevant printed material is desirable.
- Routine screening and counseling, even in asymptomatic female patients or contact, are necessary.
- Contact tracing by patient referral.
- Patient should be advised to avoid unprotected sexual intercourse until they and their partner(s) have completed treatment and follow up.

Further investigations

Screening for other coincident STIs should routinely be performed. Relevant investigations to exclude chlamydial infection, syphilis and HIV are performed by the Government Social Hygiene Clinics. High vaginal swab for *Trichomonas vaginalis* infection is also performed in female patients.

Treatment

Uncomplicated gonococcal urethritis

Ceftibuten 400 mg orally in a single dose OR
Spectinomycin 2-4 gm single i.m.i. dose OR
Ceftriaxone 250 mg single i.m.i. dose
(Azithromycin 2 gm orally may also be used and it has the additional advantage of treating concomitant chlamydial infection.)

Co-infection with *Chlamydia trachomatis*

Co-infection with *Chlamydia trachomatis* is common in both men and women infected with *N. gonorrhoea* (up to 20% and 40% in men and women respectively). Unless chlamydial infection is actively and reliably excluded, and with follow up visit secured, empirical treatment of *Chlamydia trachomatis* is recommended.

Follow up

Two follow up visits are generally recommended. A test of cure is recommended at least 3-7 days after completion of antimicrobial therapy. A second visit after 3 months of the last casual sexual intercourse is generally recommended for testing syphilitic serology and HIV antibody.

Sexual partner

Contact tracing should be pursued in all patients infected with *N. gonorrhoea*. Empirical epidemiological treatment is generally delivered to the contacts. Health education and counselling on the disease and safer sex should also be offered to the contacts. With the exception of those sex worker contacts, contact tracing by partner referral is the approach adopted by the Government Social Hygiene Service.

Non-gonococcal Urethritis (NGU)

Non-gonococcal urethritis is defined as the inflammation of the anterior urethra in male patient not caused by *Neisseria Gonorrhoeae*. The implicated sexually transmitted organisms are *Chlamydia trachomatis* (Group D to K), *Ureaplasma urealyticum*, *Mycoplasma genitalium*, *Trichomonas vaginalis*, Candida and rarely Herpes simplex virus. It usually presents as muco-purulent urethral discharge and dysuria, but it is not uncommonly asymptomatic.

Case definition and diagnosis:

Demonstration of 5 or more polymorphonuclear cells (PMN) per hpf (x1000) by Gram stain in the urethral smear from a man in the absence of Gram negative intracellular diplococci. At least 5 representative fields are screened and cell counts averaged.

OR

In male patient, when there are 1 to 4 PMN in the urethral smear but the patient has dysuria with a history of practising high risk sexual behaviour or contact with a proven case of NGU or NSGI or *Chlamydia trachomatis* (CT) infection, the patient can be regarded as a true case of NGU.

NGU	Clinical	Laboratory		
		Site of specimen	**Microscopy**	**Other technique**
		Anterior urethra	5 or more PMN/hpf and absence of intracellular Gram negative diplococci	Nucleic acid amplification test (NAAT) positive for *Ureaplasma urealyticum*

N.B.:

- Patients are advised not to void at least 4 hours before the urethral smear. Early morning smear is advised and taken if patients have symptom but inconclusive smear.
- All urethral specimens must be studied for GC and CT. Gonorrhoea is investigated with Gram stain for intracellular diplococci and culture of appropriate specimen samples. Chlamydia is investigated with NAAT.
- *Chlamydia trachomatis* infection is separately reported for surveillance purpose.
- Although facility for culture for mycoplasma (ureaplasma) is available, routine testing is not conducted for the clients attending the Government Social Hygiene Clinics. Culture or NAAT positive for *Ureaplasma urealyticum* is regarded as a positive case.

Management:

General advice

- Health education on their conditions and safer sex: monogamous relationship, proper and consistent condom use, prompt and routine medical consultation after unsafe exposure; distribution of relevant printed material is desirable.
- Routine screening and counseling, even in asymptomatic patients (contacts), are necessary.
- Contact tracing by patient referral.
- Patient should be advised to avoid unprotected sexual intercourse until 7 days after the patients and their partners have completed their treatment.

Further investigations

Screen for other coincident STIs should routinely be performed. Relevant investigations to exclude gonococcal and chlamydial infection, syphilis and HIV are performed by the Government Social Hygiene Clinics.

Treatment

Recommended treatments:
Doxycycline 100 mg orally twice daily for 7 days

Alternatives:
Azithromycin 1 gm orally in a single dose
Erythromycin base 500 mg orally four times daily for 7 days OR
Erythromycin ethylsuccinate 800mg orally four times daily for 7 days OR
Ofloxacin 300mg orally twice daily for 7 days OR
Levofloxacin 500 mg orally once daily for 7 days OR
Tetracycline 500 mg orally four times daily for 7 days OR
Clarithromycin 250 mg orally twice daily for 7 days

Follow up

Routine test for cure after completing treatment for NGU is not generally required. Patients are advised to return if symptoms do not improve, or recur after treatment. A second visit after 3 months of the last casual sexual intercourse is generally recommended for testing VDRL and HIV antibody.

Sexual partner

Contact tracing should be pursued in all patients diagnosed to have non-gonococcal urethritis. Empirical epidemiological treatment is generally delivered to the contacts. Health education and counseling on the disease and safer sex should also be offered to the contacts. With the exception of those sex worker contacts, contact tracing by partner referral is the approach adopted by the Government Social Hygiene Service.

Non-Specific Genital Tract Infection (NSGI):

NSGI is a diagnosis in female which comprises of inflammation of the endocervix or anterior urethra not caused by *Neisseria Gonorrhoeae.* The implicated sexually transmitted organisms are *Chlamydia trachomatis* (Group D to K), *Ureaplasma urealyticum*, *Trichomonas vaginalis* and rarely Herpes simplex virus. The role of *Mycoplasma genitalium* has yet to be defined. It usually causes a muco-purulent cervical discharge and dysuria. Untreated NSGI may cause ascending genital tract infections like pelvic inflammatory disease and result in infertility, ectopic pregnancy and chronic pelvic pain.

Case definition and diagnosis:

Demonstration of 30 or more polymorphonuclear cells (PMN) per hpf (x1000) by Gram stain in the endocervical smear. Specimen must be collected after firstly removing ectocervical vaginal cells with a large swab. Count the PMN within the faintly pink strands of endocervical mucous. Average the count in 5 hpf. Gram negative intracelluar diplococci are absent.

OR

In a case where there are 15 - 29 PMN in the cervical smear and the patient has symptom of abnormal discharge and risk factors such as practising high risk sexual behaviour, history of contact with a proven case of non-gonococcal urethritis, chlamydial infection or gonorrhoea, the patient can be counted as a true case of NSGI.

OR

The presence of symptoms of internal dysuria and frequency plus specimen from female urethra demonstrates PMN 10 or more/hpf.

NGU	Clinical	Laboratory		
		Site of specimen	**Microscopy**	**Other technique**
		Cervix OR Anterior urethra	30 or more PMN/hpf & absence of intracellular Gram negative diplococci 10 or more PMN/hpf & absence of intracellular Gram negative diplococci	Nucleic acid amplification test (NAAT) positive for *Ureaplasma urealyticum*

N.B.:

- Polymorphonuclear cells count in endocervical smear is affected by the following factors: menstrual cycle, contraceptive practices, salpingitis, endometritis, etc.
- All endocervical and urethral specimen must be studied for GC and CT. Gonorrhoea is investigated with Gram stain for intracellular diplococci and culture of appropriate specimen samples. Chlamydia is investigated with NAAT. *Chlamydia trachomatis* infection is separately reported for surveillance purpose.
- In the presence of dysuria, patient should be examined for symptoms and signs of acute bacterial cystitis and mid-stream urine should be sent for urinalysis, microscopy and bacterial study.
- The case definition of mucopurulent cervicitis as stipulated by USCDC is nevertheless not exactly the same as NSGI defined in this Guideline.

Management:

General advice

- Health education on their conditions and safer sex: monogamous relationship, proper and consistent condom use, prompt and routine medical consultation after unsafe exposure; distribution of relevant printed material is desirable.
- Routine screening and counselling, even in asymptomatic patients (and male contacts), are necessary.
- Contact tracing by patient referral.
- Patient should be advised to avoid unprotected sexual intercourse until they and their partners have completed treatment and follow up.

Further investigations

Screen for other coincident STIs should routinely be performed. Relevant investigations to exclude gonococcal and chlamydial infection, syphilis and HIV are performed by the Government Social Hygiene Clinics. High vaginal swab for *Trichomonas vaginalis* infection is also performed.

Treatment

Recommended treatments:

Doxycycline 100 mg orally twice daily for 7 days

Alternatives:

Azithromycin 1 gm orally in a single dose

Erythromycin base 500 mg orally four times daily for 7 days OR

Erythromycin ethylsuccinate 800mg orally four times daily for 7 days OR

Ofloxacin 300mg orally twice daily for 7 days OR

Levofloxacin 500 mg orally once daily for 7 days OR

Tetracycline 500 mg orally four times daily for 7 days OR

Clarithromycin 250 mg orally twice daily for 7 days

Follow up

Routine test for cure after completing treatment for NSGI is not generally required. Patients should be instructed to return for evaluation if symptom persists, or recurs after completion of therapy. Resolution of clinical symptoms and signs of urethritis can be regarded as cure for practical purpose. For women who have persistent increase in pus cell in their cervical smears, the following should be observed: if appropriate antibiotics is given in adequate dose and duration, if the client complies with the treatment [including drug-food, drug-drug interaction, etc], if other causes of cervicitis have been overlooked, if all the partners are referred and treated appropriately and if the client continues to practise risk behaviour. Repeated courses of antibiotics are not to replace appropriate clinical reassessment, and moreover, not required for the abnormal smear finding alone. A second visit after 3 months of the last casual sexual intercourse is generally recommended for testing VDRL and HIV antibody.

Sexual partner

Contact tracing should be pursued in all patients diagnosed to have NSGI. Empirical epidemiological treatment is generally delivered to the contacts. Health education and counselling on the disease and safer sex should also be offered to the contacts. With the exception of those sex worker contacts, contact tracing by partner referral is the approach adopted by the Government Social Hygiene Service.

Syphilis

Syphilis is caused by the spirochaete *Treponema pallidum*. It is a sexually transmitted infection having characteristics according to various stages of disease course. Primary syphilis (PS) is characterised by a single, indurated, painless, clean based ulcer called chancre. This is usually associated with regional lympadenopathy. Atypical presentation is not uncommon. Genital ulceration related to PS is an important co-factor of HIV infection. The primary stage of syphilis progresses to secondary syphilis (SS) with systemic manifestations. Secondary syphilis is characterised by mucocutaneous and multi-system involvement like a generalised non-itchy skin rash affecting the body, palm and sole, condylomata lata and patchy alopecia, fever, general malaise and lymphadenopathy. It may then progress to a period of latency. Early latent syphilis (ELS) is characterised by a positive syphilitic serology with no apparent clinical sign of syphilis within the first year of infection. Primary syphilis (PS), SS and ELS are all classified as early syphilis. Early syphilis is regarded as highly infectious.

The latency may last for life with only serological evidence of past infection. The infection may progress to involve other organ systems. Late syphilis is defined as syphilis that persists for a duration of more than one year. Untreated late syphilis may remain asymptomatic or progress to involve other viscerae and hence result in significant morbidity and mortality. Late syphilis consists of 4 major clinical categories: late latent syphilis (LLS), neurosyphilis (NS), cardiovascular syphilis and gummatous syphilis.

Case definition and diagnosis:

Primary syphilis

Demonstration of typical spirochaetes in serous discharge from chancriform ulcer in any part of body, commonly, genital tract and perineal area, with the exception of intra-oral ulcers.

OR

Presence of typical chancriform ulcer together with reactive serological test.

Primary syphilis	Clinical	Laboratory	
		Site of specimen	
	Typical chancriform ulcer	Any part of body except intra-oral ulcer	Spirochaetes by dark ground microscopy OR Positive serology: Syphilis EIA, TPPA, FTA-Abs

N.B.:

- Dark ground microscopy is usually performed for three consecutive days for spirochaetes.
- Although oral commensal fusobacteria can be differentiated from *Treponema pallidum* morphologically, there is still reservation in making the diagnosis of PS by demonstrating spirochaetes from intra-oral ulcers.
- FTA-Abs test is the first serological test (compared with VDRL, TPPA, Syphilis EIA) to become reactive in PS and is more specific than VDRL. Nevertheless, because of the difficulties involved in test interpretation, there are problems in the reproducibility (and hence validity) of FTA-Abs. As a result, FTA-ABS has been phasing out nowadays in SHS.
- For settings in which EIA Syphilis is not available, the previous standard practice of using VDRL as the screening test followed by confirmation with treponemal antibody tests is still applicable. Any two positive out of either VDRL, TPPA (TPHA) or FTA-Abs can be regarded as case defining.
- Quantitative VDRL test reflects disease activity and is the base of serological follow-up.

Secondary syphilis

Typical clinical features of secondary syphilis (condylomata lata, mucous patches, papulosquamous skin eruption with involvement of palms & soles, moth eaten alopecia, generalised lymphadenopathy, fever, malaise, joint pain, periostitis, hepatitis, meningitis, uveitis, etc).

WITH EITHER

Demonstration of typical spirochaetes by dark ground microscopy for serous discharge from condylomata lata or skin lesions, or by Warthin Starry stain of biopsy specimen.

OR

Reactive EIA serology together with either positive TPPA (TPHA) or FTA-Abs.

Secondary syphilis	Clinical	Laboratory	
		Site of specimen	
	-- Typical mucocutaneous manifestations -- General lymphadenopathy	-- Anogenital area -- Skin	-- Dark ground microscopy positive for typical spirochaetes -- Warthin Starry stain positive for spirochaetes in biopsy specimen
			OR -- EIA plus either TPPA (TPHA) or FTA-Abs serology positive

N.B.:

Quantitative VDRL test reflects disease activity and is the base of serological follow-up. Prozone phenomenon is not uncommon in secondary syphilis and we should alert our laboratory of this possibility.

Early latent syphilis

- No clinical symptom and sign.
- Positive EIA test plus reactive VDRL or positive TPPA (TPHA) or FTA-Abs.
- Absence of history of treated syphilis in the past, nor historical or clinical features suggestive of congenital syphilis.

Diagnosis of Early Latent Syphilis need all the above three plus one of the three below:

- History suggestive of primary or secondary syphilis that was not treated or treated adequately, or treatment regime is not clear, within one year.
- Documented seroconversion or fourfold or greater increase in titer of VDRL during the previous 12 months.
- A history of sexual exposure to a partner who has confirmed or probable early syphilis (PS, SS, ELS) within one year.

ELS	Clinical	Laboratory
	-- No clinical symptom & sign -- History suggestive of PS or SS within past one year -- No history of treated syphilis or congenital syphilis -- Seroconversion or fourfold increase in VDRL titer within 1 year -- Exposure to key case of early syphilis (PS, SS, ELS) within 1 year	EIA positive plus either positive TPPA (TPHA) or FTA-Abs

N.B.:

- The diagnosis of early latent syphilis (ELS) instead of late latent syphilis (LLS) may be somewhat arbitrary because historical data in many cases are not clear or sure and objective evidence is unavailable. Two years are adopted in UK for delineation of early or late latent syphilis.
- Quantitative VDRL test reflects disease activity and is the base of serological follow-up.

Late latent syphilis

- No clinical symptom and sign.
- Positive EIA test plus reactive VDRL or positive TPPA (TPHA) or FTA-Abs.
- Absence of history of treated syphilis in the past, nor historical or clinical features suggestive of congenital syphilis.

Diagnosis of Late Latent Syphilis need all the above three plus the absence of all the three below:

- History suggestive of primary or secondary syphilis that was not treated or treated adequately, or treatment regime is not clear, within one year.
- Documented seroconversion or fourfold or greater increase in titer of VDRL during the previous 12 months.
- A history of sexual exposure to a partner who has confirmed or probable early syphilis (PS, SS, ELS) within one year.

-

LLS	Clinical	Laboratory
	-- No clinical symptom & sign -- No history suggestive of PS or SS within past 1 year -- No history of treated syphilis or congenital syphilis --No documented seroconversion or fourfold or greater increase in titer of VDRL during the previous 1 year -- No history of sexual exposure to a partner who had confirmed or probable early syphilis (PS, SS, ELS) within 1 year	EIA positive plus either positive TPPA (TPHA) or FTA-Abs

N.B.:

- Lumber puncture (LP) and cerebrospinal fluid (CSF) analysis are recommended in these cases. However, in real practice, many of our clients refuse LP and data on CSF analysis to exclude central nervous system disease is not available.
- Apart from history and physical examination, X-ray chest is commonly performed in these cases to exclude cardiovascular syphilis.
- Quantitative VDRL test reflects disease activity and is the base of serological follow-up.
- The diagnosis of LLS instead of ELS or other form of tertiary syphilis or serological scar may be somewhat arbitrary because historical data in many cases are not clear or sure and objective evidence (e.g. past treatment regimen for syphilis, LP and CSF analysis, echocardiogram) is unavailable.

Neurosyphilis

Clinical features of neurosyphilis (NS) such as Argyll Robertson pupil, tabes dorsalis, feature of general paralysis of insane (GPI), etc.

AND

Reactive EIA, plus positive TPPA (TPHA) or FTA-Abs

(Demonstration of CSF lymphocyte pleocytosis or increase in protein level, or reactive test for FTA-Abs or TPPA, or VDRL titre higher than serum VDRL titre is required for definitive diagnosis).

NS	Clinical	Laboratory	
	Argyll Robertson pupil, tabes dorsalis feature of GPI, etc	CSF analysis: -- Lymphocyte pleocytosis or increase in protein level -- Reactive TPPA, FTA-Abs -- VDRL titre higher than serum titre	Serological: Reactive EIA plus either positive TPPA or FTA-Abs

N.B.:

- Many of the clinical features of NS can be found in the standard textbook of internal or genito-urinary medicine.
- Quantitative VDRL test reflects disease activity and is the base of serological follow-up. Serum QVDRL is also the reference for CSF VDRL comparison.
- As asymptomatic CSF changes are not uncommon in people infected with HIV, increase of protein and white cells in these settings may not necessarily be the same as those non-infected.
- In cases of posterior uveitis or sensorineural deafness without other alternative explanations and reactive syphilitic serology, LP and CSF analysis have to be performed. If the CSF analysis demonstrates the relevant change, the diagnosis can be categorised as NS. If the client declines LP, he/she may be treated as for NS for practical purpose up to the clinical judgement of the attending physician, but recorded as LLS for the purpose of case definition and statistical record.
- A team approach involving doctors of the relevant specialties may be required in full assessment of patients presenting with symptoms and signs of neurosyphilis.

Cardiovascular syphilis

Clinical features (including radiological/echocardiological features in appropriate cases) of cardiovascular syphilis such as aneurysm of ascending aorta, aortic incompetence, atypical angina etc.

AND

Positive EIA plus positive TPPA or FTA-Abs.

N.B.:

Although the morbid anatomy of syphilitic aortitis is different from atherosclerotic aortic disease that is much more common nowadays, differentiation between the two relies on sophisticated modern radiological / ultrasonic investigations. Cardiological consultation may be invaluable in the management and case definition in these patients. A team approach involving doctors of the relevant specialties may be required in full assessment of patients. However, for practical purpose, patients can be treated as for cardiovascular syphilis according to the judgement of the attending doctor on individual basis without the label (for case definition or statistical record) of cardiovascular syphilis. Full neurological examination should be performed to exclude concomitant neurosyphilis.

Management:

General advice

- Health education on their conditions and safer sex: monogamous relationship, proper and consistent condom use, prompt and routine medical consultation after unsafe exposure; distribution of relevant printed material is desirable.
- Routine screening and counseling, even in asymptomatic patients and contacts, are necessary.
- Contact tracing by patient referral.
- Patient should be advised to avoid unprotected sexual intercourse until they and their partner(s) have their disease status confirmed, treatment and follow up completed.

Further investigations

Screening for other coincident STIs should routinely be performed. Relevant investigations to exclude gonococcal and chlamydial infection (male with symptom of urethritis or routinely in female), and HIV are performed by the Government Social Hygiene Clinics. High vaginal swab for *Trichomonas vaginalis* infection is also performed in female patients. For patients diagnosed to have late syphilis, lumbar puncture and CSF analysis are recommended to establish CNS involvement. Chest X-ray (PA and lateral) and echocardiography should also be performed in appropriate cases. A team approach involving doctors of the relevant specialties may be required in full assessment of patients.

Treatment

	P.S., S.S., E.L.S.	L.L.S., cardiovascular syphilis	N.S., Ocular syphilis
Procaine Penicillin	1.2 megaunit imi	1.2 megaunit imi + Probenecid 500 mg 4x / day	2.4 megaunit imi + Probenecid 500 mg 4x / day
No. of days	10	15	14 – 20
Alternative Treatment	• Doxycycline 100 mg 2x / day • Tetracycline 500 mg 4x / day • Erythromycin 500 mg 4x / day	• Doxycycline 100 mg 2x / day • Tetracycline 500 mg 4x / day • Erythromycin 500 mg 4x / day	• Doxycycline 100 mg 2x / day • Tetracycline 500 mg 4x / day • Erythromycin 500 mg 4x / day
No. of days	14	28	28

P.S.= primary syphilis; S.S.= secondary syphilis; E.L.S.= early latent syphilis; L.L.S.= late latent syphilis; N.S.= neurosyphilis

NOTE:

1. For pregnant women found to have syphilis and who also have history of penicillin allergy, penicillin based regime after desensitization is the preferred management especially during the early and hence more infectious stages of syphilis. Penicillin desensitization should be performed under close observation and in hospital with resuscitation support. The efficacy of erythromycin in this setting is still open to debate. The risk and benefit of either regime should therefore be carefully explained and discussed with the woman. Doxycycline and Tetracycline should not be used during pregnancy or lactation.
2. Baby delivered to woman with syphilis should be treated by procaine penicillin 50,000 units/kg intramuscularly daily for 10-15 days or benzathine penicillin 50,000 units/kg intramuscularly (single dose) if the mother had not been treated by penicillin regimen during her gestation.
3. Benzathine Penicillin 2.4 megaunit intramuscularly weekly for 3 weeks is a less ideal treatment regimen for syphilis nowadays because the level achieved in the CSF is not good enough to prevent CNS involvement by the *Treponema pallidum*. It is, however, acceptable if the compliance to daily treatment or follow-up cannot be assured.
4. Steroid cover with Prednisolone 30 mg daily is recommended to prevent Jarish Herxheimer reaction in the treatment of cardiovascular, neuro and ocular syphilis. Start prednisolone 24 hours before the first injection and continue for two more days.
5. Aqueous crystalline penicillin 18-24 megaunit intravenously daily in 4-6 divided doses for 14-20 days can also be used to treat neurosyphilis.

-

Follow up

Test of syphilitic serology is recommended 12 weeks after completion of antimicrobial therapy and at 6 month and 12 month thereafter. Gradual decline in the titre of VDRL is expected. A fourfold increase in VDRL titre signifies relapse or re-infection. Follow up lumbar puncture and CSF analysis are recommended every 6 months until CSF abnormalities normalised for patients with neurosyphilis. A second visit after 3 months of the last casual sexual intercourse is generally recommended for testing HIV antibody.

Sexual partner

Contact tracing should be pursued in all patients diagnosed to have early syphilis. Empirical epidemiological treatment (a single dose of 2.4 mu benzathine penicillin) should be considered to the contacts of early syphilis. Patient should be advised to avoid unprotected sexual intercourse until they and their partners' stage of infection have been clarified and treatment completed. It is also reasonable for sexual partners and children born to women diagnosed with late syphilis to undergo serological screening with EIA, VDRL or TPPA to diagnose or exclude the infection. Health education and counselling on the disease and safer sex should also be offered to the contacts. With the exception of those sex worker contacts, contact tracing by partner referral is the approach adopted by the Government Social Hygiene Service.

Chancroid

Chancroid is a genital ulcerative disease caused by the bacterium *Haemophilus ducreyi*. Multiple ulcers formation are not uncommon. The ulcers are often painful, soft and multiple with a necrotic base. Painful adenitis is also a characteristic feature. Untreated chancroid may cause phimosis and fistula. Chancroid is an important co-factor of HIV infection.

Case definition and diagnosis:

Culture positive for *Haemophilus ducreyi*

OR

- Negative dark ground microscopy for spirochaete for three (consecutive) days.
- Non-reactive serology for syphilis.
- Negative viral culture for herpes virus.

Presence of all the above three plus one of the two below:

- Demonstration of the typical 'railroad track' or 'shoal of fish' appearance by Gram stain or Wright's stain smear of exudate from ulcer.
- Typical genital ulcer(s) [painful tender non-indurated ulcer(s), with erythematous edge and dirty base].

Chancroid	Clinical	Laboratory
	Typical ulcers	-- Culture positive for *H. ducreyi* OR -- Negative dark ground microscopy for 3 days & -- Negative viral culture & -- Non-reactive syphilitic serology Plus either -- Typical railroad track / shoal of fish appearance by Gram/Wright stain smear or clinical typical ulcer

N.B.:

- Culture for *Haemophilus ducreyi* requires special technique that is not routinely practised in this locality. The sensitivity and specificity, and quality control of culture have not been studied adequately in the local laboratories to allow case definition to rely solely on microbiological testing alone.
- In the local setting, the diagnosis of chancroid is mainly clinical with the support of negative tests for syphilis and herpes progenitalis.

Management:

General advice

- Health education on their conditions and safer sex: monogamous relationship, proper and consistent condom use, prompt and routine medical consultation after unsafe exposure; distribution of relevant printed material is desirable.
- Routine screening and counseling, even in asymptomatic patients (in particularly female patients), are necessary.
- Contact tracing by patient referral.
- Patient should be advised to avoid unprotected sexual intercourse until they and their partner(s) have completed treatment and follow up.

Further investigations

Screening for other causes of genital ulcer and coincident STIs should be performed. Darkground microscopy of the exudate expressed from the ulcer for three consecutive days and herpes culture are routinely performed. (These are particularly important as special culture technique is required for isolation of this organism [could be difficult for most local laboratories] and the diagnosis is mostly based on clinical features in the absence of any positive laboratory evidence of other causes of genital ulcer.) Screening for other coincident STIs should routinely be performed. Relevant investigations to exclude gonococcal and chlamydial infection (male with symptom of urethritis or routinely in female), syphilis and HIV are performed by the Government Social Hygiene Clinics. High vaginal swab for *Trichomonas vaginalis* infection is also performed in female patients.

Treatment

Ceftriaxone 250 mg imi in a single dose OR
Azithromycin 1 gm orally in a single dose OR
Erythromycin 500 mg orally four times daily for 7 days OR
Ciprofloxacin 500 mg orally twice daily for 3 days

Follow up

Two follow up visits are generally recommended. A test of cure is recommended at least 7 days after completion of antimicrobial therapy. A second visit after 3 months of the last casual sexual intercourse is generally recommended for testing VDRL and HIV antibody.

Sexual partner

Contact tracing should be pursued in all patients infected with *H. ducreyi*. Empirical epidemiological treatment is generally delivered to the contacts. Health education and counselling on the disease and safer sex should also be offered to the contacts. With the exception of those sex worker contacts, contact tracing by partner referral is the approach adopted by the Government Social Hygiene Service.

-

Lymphogranuloma Venereum (LGV)

Lymphogranuloma Venereum is caused by the serovar subtypes of *Chlamydia trachomatis* L1, L2 or L3. Initially it presents as a painless papule or pustule followed by buboes formation. The inguinal and femoral lymph nodes may be involved and may lead to the groove sign. The genito-ano-rectal syndrome may follow with the destruction of tissues and formation of fistulas and strictures. Long term complications include lymphoedema of the genital organs and rare association with rectal cancer. Only a few cases were recorded each year by the Government Social Hygiene Service.

Case definition and diagnosis:

Culture positive for respective strains of *Chlamydia trachomatis*.

OR

Clinical features of otherwise typical case and alternative more common differential diagnoses like herpes and syphilis are excluded by clinical and laboratory tests.

Lymphogranuloma venereum	Clinical	Laboratory
	Typical clinical features	Excluding diagnoses like syphilis, herpes, etc. (e.g. negative VDRL, negative herpes culture)

N.B.:

Culture for *Chlamydia trachomatis* from lesions (e.g. ulcers, lymph node aspirate) is available in the laboratory supporting SHS. However confirmation of strains to be L1, L2, or L3 may be difficult technically in the local setting.

Management:

General advice

- Health education on their conditions and safer sex: monogamous relationship, proper and consistent condom use, prompt and routine medical consultation after unsafe exposure; distribution of relevant printed material is desirable.
- Routine screening and counseling, even in asymptomatic patients (in particularly female patients), are necessary.
- Contact tracing by patient referral.
- Patient should be advised to avoid unprotected sexual intercourse until they and their partner(s) have completed treatment and follow up.

Further investigations

Screening for other coincident STIs should routinely be performed. Relevant investigations to exclude gonococcal and chlamydial infection (male with symptom of urethritis or routinely in female), syphilis and HIV are performed by the Government Social Hygiene Clinics. High vaginal swab for *Trichomonas vaginalis* infection is also performed in female patients.

Treatment

Doxycycline 100 mg orally twice daily for 21 days OR
Erythromycin 500 mg orally four times daily for 21 days

Follow up

Follow up until symptoms and signs have resolved is generally recommended. This may occur after 3-6 weeks. A visit after 3 months of the last casual sexual intercourse is generally recommended for testing VDRL and HIV antibody.

Sexual partner

Contact tracing should be pursued in all patients diagnosed to have LGV. Empirical epidemiological treatment is generally delivered to the contacts. Health education and counselling on the disease and safer sex should also be offered to the contacts. With the exception of those sex worker contacts, contact tracing by partner referral is the approach adopted by the Government Social Hygiene Service.

Granuloma Inguinale

Granuloma inguinale is caused by the Gram–negative bacterium *Calymmatobacterium granulomatis*. It presents with a painless genital ulcer which gradually increases in size. There may be regional lymphadenopathy. Complications may include haemorrhage, genital lymphoedema, genital mutilation and development of squamous cell carcinoma. Only a few cases were recorded in the past few years by the Government Social Hygiene Service.

Case definition and diagnosis:

Culture positive for calymmatobacteria by special culture technique or demonstration of the typical 'safety pin' appearance of bacteria by Giemsa stain in squashed preparation of tissue from lesion.

OR

Clinical features of an otherwise typical case and alternative more common differential diagnoses like syphilis or other skin diseases are excluded (skin biopsy may be required).

Granuloma Inguinale	Clinical	Laboratory
	Typical clinical features	Excluding diagnosis like syphilis and other skin diseases (e.g. negative VDRL, negative culture for herpes virus)

N.B.:

Facility for culture of calymmatobacteria is available but is not performed on routine basis. The specificity, sensitive and quality control of test in this locality have not been studied adequately to allow diagnosis or exclusion of case to rely solely on laboratory testing in the local setting.

Management:

General advice

- Health education on their conditions and safer sex: monogamous relationship, proper and consistent condom use, prompt and routine medical consultation after unsafe exposure; distribution of relevant printed material is desirable.
- Routine screening and counseling, even in asymptomatic patients (in particularly female patients), are necessary.
- Contact tracing by patient referral.
- Patient should be advised to avoid unprotected sexual intercourse until they and their partner(s) have completed treatment and follow up.

Further investigations

Screening for other coincident STIs should routinely be performed. Relevant investigations to exclude gonococcal and chlamydial infection (male with symptom of urethritis or routinely in female), syphilis and HIV are performed by the Government Social Hygiene Clinics. High vaginal swab for *Trichomonas vaginalis* infection is also performed in female patients.

Treatment

Doxycycline 100 mg orally twice daily OR
Erythromycin 500 mg orally four times daily OR
Ceftriaxone 1 gm imi daily OR
Azithromycin 500 mg orally daily (or 1 gm weekly) OR
Co-trimoxazole (Septrin) 2 tab orally twice daily
Until all the lesions healed (a minimum of 3 weeks treatment is recommended)

Follow up

Follow up until symptoms and signs have resolved is generally recommended. A visit after 3 months of the last casual sexual intercourse is generally recommended for testing VDRL and HIV antibody.

Sexual partner

Contact tracing should be pursued in all patients diagnosed to have donovanosis. Empirical epidemiological treatment is generally delivered to the contacts. Health education and counselling on the disease and safer sex should also be offered to the contacts. With the exception of those sex worker contacts, contact tracing by partner referral is the approach adopted by the Government Social Hygiene Service.

-

Anogenital Warts

Anogenital warts are caused by genital genotypes of the human papilloma virus (HPV). There are currently more than 100 subtypes identified. Type 6 and 11 are the commonest HPV subtypes causing anogenital warts. It is estimated that only 1 % of the HPV infection manifests itself clinically. It usually presents as filiform lesions, cauliflower-like mass, pigmented lesions resemble seborrhoeic keratosis or flat, smooth papular lesions. Bleeding, obstruction and malignant change (only potentially resulted from infection by certain sub-types) are the main complications. Human papilloma virus is the major aetiological factor in cervical cancer and bowenoid papulosis (also known as vulval intra-epithelial neoplasia).

Case definition and diagnosis:

Clinical features of warts in and around anogenital area.

OR

Biopsy of this lesion to demonstrate the typical histology, or HPV DNA by molecular techniques. (The significance of demonstration of HPV DNA by molecular techniques in specimen from clinically normal sites is to be defined.)

Anogenital wart	Clinical	Laboratory
	Warts in and around anogenital area	OR -- Biopsy of clinical lesion to show the typical histology or presence of HPV DNA

N.B.:

- There is no definite boundary for anogenital area (USCDC has included internal/external genitalia, perineum and perianal region). Examples like warts over pubic area, buttock or groin, etc., may or may not be diagnosed as anogenital warts on individual basis according to the judgement of the attending physician. Factors important for such decision include: the practice of high risk sexual behaviour; contact of an otherwise proven case and presence of concurrent STIs.
- Five percent acetic acid can be applied to suspicious lesion/area. Not all lesions showing acetowhitening are diagnosed to be anogenital warts. Only those lesions that the clinician has some degree of suspicion and turned acetowhite qualify the diagnosis of anogenital warts.
- Genital warts should be reported only once in the whole life of a patient. The first diagnosis for a patient with no previous diagnosis should be reported.
- The histological diagnostic criteria of genital warts have not been standardised. For borderline lesions, most pathologists servicing the SHS use immunohistochemical or in-situ hybridisation technique for confirmation.
- Koilocytosis on its own as revealed in Pap smear is not recorded as a case.

Management:

General advice

- Health education on their conditions and safer sex: monogamous relationship, proper and consistent condom use, prompt and routine medical consultation after unsafe exposure; distribution of relevant printed material is desirable.
- Routine screening and counseling, even in asymptomatic patients (in particularly female patients), are necessary.
- Contact tracing by patient referral.
- Patient should be advised to avoid unprotected sexual intercourse until they and their partners' status of infection have been clarified and treatment completed.

Further investigations

Screening for other coincident STIs should routinely be performed. Relevant investigations to exclude gonococcal and chlamydial infection (male with symptom of urethritis or routinely in female), syphilis and HIV are performed by the Government Social Hygiene Clinics. High vaginal swab for *Trichomonas vaginalis* infection is also performed in female patients. Cervical cytology should be performed in all female patients with genital warts.

Treatment

Treatment options of anogenital warts are as follows:

Topical therapy	Podophyllotoxin (0.5% solution or 0.15% cream)
	30% Trichloroacetic Acid
	Imiquimod 5% cream
	*Podophyllin resin 10-20% (refer to note)
Surgery	Cryotherapy
	Loop surgery
	Curettage and cauterisation
	CO_2 Laser
Systemic	α interferon

Topical therapy

1. Podophyllotoxin – as an active constituent of podophyllin resin available as a 0.5% in ethanolic solution or 0.15% in cream base (Wartec). It can be applied twice daily for three consecutive days weekly by the patients themselves and repeated for 4 weeks. It should be avoided in pregnant or lactating women.
2. Trichloroacetic Acid (TCAA) – 30% TCAA is used in Social Hygiene Service in Hong Kong. It is safe in pregnancy.
3. Imiquimod cream - 5% Imiquimod cream can be used in refractory cases of genital warts or as an adjunct to other forms of treatment for up to 16 weeks.

-

Note:
* In view of its possible adverse effects, concern has been raised in the use of podophyllin resin for treating anogenital warts. Podophyllin resin 10-20% may however be used cautiously for selected cases and limited duration under supervision by doctors with relevant experience. It is not recommended for use in the primary care setting.

Surgery:

1. Cryotherapy – Liquid nitrogen is effective against anogenital warts. It can be used in pregnant women.
2. Loop surgery - It is a common operation performed by the gynaecologists with the principle of electro-surgery or radio-frequency in form of preformed loops.
3. Curettage and Cauterisation – It is usually used in refractory anogenital warts. Local anaesthesia is necessary.
4. CO_2 Laser – It is also reserved for refractory anogenital warts.

Systemic therapy:

1. Interferon – IFN-α may be administered as intramuscular or intralesional injection against anogenital warts. Due to its systemic side effects, it is usually reserved for very severe and recalcitrant cases of anogenital warts.

Follow up

Follow up visits are generally recommended until all clinical lesions are cleared. A visit after 3 months of the last casual sexual intercourse is generally recommended for testing VDRL and HIV antibody. Female patients or contacts of male patients with genital warts are strongly advised to have regular cervical smear according to the latest recommendations.

Sexual partner

Contact tracing should be pursued in all patients infected with clinical anogenital warts. Health education and counselling on the disease and safer sex should also be offered to the contacts. Condoms may reduce the chance of getting HPV and should be encouraged to prevent transmission of other STIs. However, condoms alone do not provide absolute protection because HPV can be transmitted through skin to skin contact. With the exception of those sex worker contacts, contact tracing by partner referral is the approach adopted by the Government Social Hygiene Service.

The overall changes in health of an individual may lead to reactivation of an inactive HPV infection to become overt clinical anogenital wart. Hence, a recent diagnosis of anogenital warts does not necessarily mean that the partner has recent sex with a non-regular partner. Infection with HPV may have occurred years ago but only recently become active and clinically detectable. However, voluntary partner referral is encouraged for screening of other STIs and providing a chance for open communications between the partners to ensure an intimate and trusting relationship.

Genital Herpes, Herpes progenitalis (HG)

Genital herpes can either be caused by herpes simplex virus type 1 (HSV-1) or type 2 (HSV –2) although the latter is much more common in Hong Kong. Primary infection may result in symptomatic disease with an acute viral illness. After that, the virus may remain latent in the local sensory ganglion. The clinical features of genital herpes include pain, erythema, blisterings, erosions, dysuria, local lymphadenopthy and general malaise. Atypical presentations are common especially in people infected with HIV. Complications like urinary retention, meningitis, autonomic neuropathy and dissemination in the newborn are possible. The clinical symptoms and signs are much milder in recurrent diseases. Asymptomatic infection or shedding of virus is increasingly recognised nowadays.

Case definition and diagnosis:

Clinical features of cluster of vesicles or erosions in or around anogenital area.

AND

Culture positive for herpes simplex virus (HSV) (either HSV1 or HSV 2) of specimen from the vesicles or erosions.

Herpes progenitalis	Clinical	Laboratory	
		Site of specimen	
	Cluster of vesicles or erosions in or around anogenital area	Vesicles or erosions	Culture positive growth for HSV 1 or HSV 2

N.B.:

- No definite boundary can be drawn to define anogenital area. In borderline case, factors considered may include whether it is type 1 or 2 HSV, history of contact of a definite case of herpes progenitalis, practice of high risk sexual behaviour and other concurrent STIs for case definition.
- Direct immunofluorescence study is occasionally performed in the major hospitals and can be used for case definition.
- Endocervical swab for herpes culture may be used to diagnose HSV infection (even for the normal looking cervix).
- Histology of biopsy specimen from genital ulcer(s) can also be used for case definition. Nonetheless, herpes zoster may occasionally only involve the genital or perineal area and histology cannot differentiate if these lesions are zoster or HSV in nature. Diagnosis and case definition should therefore be made in the appropriate clinical context.

Management

General advice

- Health education on their conditions and safer sex: monogamous relationship, proper and consistent condom use, prompt and routine medical consultation after unsafe exposure; distribution of relevant printed material is desirable.
- Routine screening and counseling, even in asymptomatic patients (in particular female patients), are necessary.
- Partner notification is an effective way of detecting individual with unrecognised infection. It is particularly important for identifying women with subclinical infection as they may be taught to recognise symptomatic recurrence in order to prevent perinatal transmission.
- Patients should be advised to avoid unprotected sexual intercourse with their partners when they have clinical relapse. Patients should also be advised against unprotected sexual intercourse with new partners even though they do not have clinical lesions because of asymptomatic shedding of virus.

Further investigations

Screening for other coincident STIs should routinely be performed. Relevant investigations to exclude gonococcal and chlamydial infection (male with symptom of urethritis or routinely in female), syphilis and HIV are performed by the Government Social Hygiene Clinics. High vaginal swab for *Trichomonas vaginalis* infection is also performed in female patients. Currently, Western Blot is still the gold standard for HSV type specific antibody testing. This testing technique is however only available in a few reference laboratories. (The Government Virus Unit is the only laboratory who has developed this technique in Hong Kong.)

N.B.: Type-specific serologic testing for herpes simplex virus is NOT a substitute for detection of the virus. This serologic test, which indicates past exposure to herpes simplex virus type 1 or type 2, has limited clinical applications. It would be useful for the following purposes: identifying those pregnant women with no history of herpes who are however at risk of primary herpes infection from the partners; when either partner of a couple is confirmed to have contracted HSV-2 while the other has not, and they plan to have pregnancy i.e. condom use is not applicable. The other applications of the serologic testing are yet to be updated and individualised.

Two type-specific commercial antibody tests are approved currently by the US FDA. They are HerpeSelect and POCKit (however there is a temporarily shortage of supply because the manufacturer is developing the next generation kit). These tests are probably useful in testing and differentiating HSV- 2 and 1 type specific antibody, their applications are yet to be validated in Hong Kong. Consultation with a colleague experienced in this area should be sought.

Treatment

The indications for treatment with specific antiviral agent are: primary infection, first episode herpes progenitalis, severely symptomatic recurrent infection, systemic infection or infection among compromised hosts. These are not common in Hong Kong. The follows are treatment options:

Acyclovir 200 mg orally five times daily for 5 days OR
Famciclovir 250 mg orally three times daily for 5 days OR
Valaciclovir 500 mg orally twice daily for 5 days

Local treatments such as saline or potassium permanganate dressing and topical antibiotics for secondary infection are common measures for symptomatic relief.

Prophylactic treatment is indicated when more than 5 episodes of relapse are documented. The optimal dose of acyclovir used is 800 mg daily in divided doses. Valaciclovir 250 mg bd (or famciclovir 250 mg bd) can also be used. Prophylactic treatment should be discontinued after 1 year of suppressive therapy. Indication for continuation of suppressive therapy should be reviewed according to the frequency of relapse.

N.B.: Recommendation of continuing suppressive therapy with these agents to prevention infection to others should take into account of the following facts: at most, its effectiveness (in preventing transmission of herpes virus) is comparable to condom use and it cannot replace the strong recommendation of safer sex (prevention of many other STI/HIV); for those regular partners, they are likely to have been exposed to or have contracted the virus well before the genital herpes manifests clinically in the index patient; simple and accurate diagnostic method to differentiate if one is infected with HSV-2 (not HSV-1 that is overwhelmingly non-sexually transmitted locally) is not available locally; the duration of suppressive therapy for this purpose is not yet defined and prolonged drug treatment carries the risk of nurturing resistant species.
It is perhaps logical if an infected male patient wants to protect his wife/regular partner (even without proof of infection status) from infection as the couple plans to have pregnancy. If conception is successful, the woman should nonetheless inform her caring obstetrician that her partner has been infected with HSV-2 so as to allow prevention of perinatal transmission (because the woman may have been infected before the current conception takes place).

Follow up

A visit after 3 months of the last casual sexual intercourse is generally recommended for testing VDRL and HIV antibody.

Sexual partner

As discussed in the above paragraph, contact tracing is probably helpful in preventing further transmission of HSV. Health education and counselling on the disease and safer sex should also be offered to the contacts. With the exception of those sex worker contacts, contact tracing by partner referral is the approach adopted by the Government Social Hygiene Service.

Candidiasis

Candidiasis or moniliasis are mainly caused by *Candida albicans* (80-92%) and other non-albican species like *C. glabrata*. The symptoms and signs of candidiasis include vulval itchiness, pain, vaginal discharge, erythema and bean curd like discharges. Asymptomatic colonisation of candida may be possible in some women especially during pregnancy. Diabetes, HIV infection and other immunosuppressive states increase the occurrence of candidiasis.

Case definition and diagnosis:

Demonstration of germinating yeast (i.e. presence of pseudohyphae) in the Gram stain preparation of high vaginal smear.

OR

Positive culture of candida species (including torulopsis, parapsilosis, etc.) together with suggestive clinical symptoms and signs like pruritus, soreness, vulval erythema with satellite lesions, or presence of cheesy discharge.

Candidiasis	Clinical	Laboratory
		Germinating yeast in the Gram stain preparation of high vagina smear

N.B.:

- For clinical suspicious cases with a negative smear, the patient can be treated as for vaginal candidiasis but is not recorded as a case for the purpose of case definition and statistical analysis.
- Positive culture on its own is not diagnostic.

Management:

General advice

- Health education on their conditions and safer sex: monogamous relationship, proper and consistent condom use, prompt and routine medical consultation after unsafe exposure; distribution of relevant printed material is desirable.
- Routine screening and contact tracing in asymptomatic patients are usually not necessary.

Further investigations

Screening for other coincident STIs could be performed if behavioural risk assessment is positive. In case required, relevant investigations to exclude gonococcal and chlamydial infection (male with symptom of urethritis or routinely in female), syphilis and HIV are performed by the Government Social Hygiene Clinics. High vaginal swab for *Trichomonas vaginalis* infection is also performed in female patients in these circumstances.

Treatment

Clotrimazole vaginal pessary one tab intravaginally nocte for 6 days OR
Isoconazole vaginal pessary two tab intravaginally nocte for once OR
Nystatin 100,000 unit (one pessary) intravaginally nocte daily for 14 days OR
Tioconazole 2% vaginal cream intravaginally nocte for 3 consecutive days OR
Econazole 150 mg (vaginal) ovule one ovule intravaginally nocte for 3 days OR
Miconazole 200 mg vaginal suppository, one tab intravaginally nocte for 3 days OR
Fluconazole 150 mg as a single oral dose OR
Itraconazole 200 mg orally daily for 3 days

(Note: some preparations may damage latex condom and diaphragm; other preparations may be available [attending physicians may refer to the manufacturer's instruction for use as appropriately], drugs listed above do not signify order of preference.)

Follow up

Test of cure is not usually required. A second visit after 3 months of the last casual sexual intercourse is generally recommended for testing VDRL and HIV antibody in case behavioural risk assessment is positive.

Sexual partner

There is no evidence to support treatment of asymptomatic male sex partners.

Trichomoniasis

Trichomonas vaginalis is a motile, flagellated protozoan. In adults, trichomonas is mostly sexually transmitted. The commonest symptom in the female is vaginal discharge due to vaginal infection although cervical infection is also possible. Up to 50% of infected female can be asymptomatic. Infection in men are usually transient and asymptomatic. The affected male may however present with urethral discharge and dysuria. Recent reports have associated trichomonas infection with HIV transmission.

Case definition and diagnosis:

Demonstration of typical trichomonads by microscopy in the wet mount preparation of high vaginal smear or anterior urethra of male.

OR

Positive culture for trichomonas from these sites.

Trichomoniasis	Clinical	Laboratory	
		Site of specimen	
		Posterior fornix of vagina OR Anterior urethra of male	Positive microscopy by wet mount OR Positive culture

Management:

General advice

- Health education on their conditions and safer sex: monogamous relationship, proper and consistent condom use, prompt and routine medical consultation after unsafe exposure; distribution of relevant printed material is desirable.
- Routine screening and contact tracing in asymptomatic patients are desirable. Routine screening and counseling, even in asymptomatic patients (in particularly female patients) are necessary.
- Contact tracing by patient referral.
- Patient should be advised to avoid unprotected sexual intercourse until they and their partner(s) have completed treatment and follow up.

Further investigations

Screen for other coincident STIs should routinely be performed. Relevant investigations to exclude gonococcal and chlamydial infection (male with symptom of urethritis or routinely in female), syphilis and HIV are performed by the Government Social Hygiene Clinics. Urethral swab for *Trichomonas vaginalis* infection may also be performed in male contacts of female patients.

Treatment

Metronidazole or Tinidazole 2 gm as a single oral dose to be taken at the clinic OR
Metronidazole 400 mg given orally twice daily for 5-7 days if single dose is not effective

Follow up

Test of cure should be undertaken if the patient remains symptomatic following treatment, or if symptom recurs. A second visit after 3 months of the last casual sexual intercourse is generally recommended for testing VDRL and HIV antibody.

Sexual partner

Current partners should be screened for the full range of STIs and treated for *T. vaginalis* irrespective of the results of investigations. In a male contact found to have NGU, it is reasonable to treat initially for *T. vaginalis* and repeat the urethral smear before treating additionally for NGU.

Pediculosis Pubis

Pediculosis Pubis is caused by the crab louse *Phthirus pubis* and is transmitted by close sexual or bodily contact. The public hair, body hair, eyebrows and eyelashes are all possible sites of infestations by the adult lice. Nits may be seen adhered to the shaft of the hairs. The main symptom is pubic itchiness. Asymptomatic cases have been reported.

Case definition and diagnosis:

Clinical examination to demonstrate the presence of crab lice or nits stick on the hairs in the region from below the umbilicus to knee or on the eyelashes.

Pediculosis pubis	Clinical	Laboratory
	Crab lice or nits in hairy area from umbilicus to knee or eyelashes	

Management:

General advice

- Health education on their conditions and safer sex: monogamous relationship, proper and consistent condom use, prompt and routine medical consultation after unsafe exposure; distribution of relevant printed material is desirable.
- Routine screening and contact tracing, even in asymptomatic patients, are desirable.
- Patients should also be advised to avoid close body contact until they and their partner(s) have completed treatment and follow up.
- Underclothing, towels and bed linen should be washed in the usual way and pressed with a hot iron.

Further investigations

Screening for other coincident STIs should routinely be performed. Relevant investigations to exclude gonococcal and chlamydial infection (male with symptom of urethritis or routinely in female), syphilis and HIV are performed by the Government Social Hygiene Clinics. High vaginal swab for *Trichomonas vaginalis* infection is also performed in female patients.

Treatment

Malathion 0.5% lotion applies to dry hair from umbilicus to knee (and also perianal area) and wash out after 12 hours (usually overnight) OR
Permethrin 1% cream applies to damp hair from umbilicus to knee (and also perianal area) and washed out after 10 minutes (this is also the recommended treatment in pregnant or nursing mothers)

Follow up

Patients should be re-examined for the absence of lice after 1 week. A second visit after 3 months of the last casual sexual intercourse is generally recommended for testing VDRL and HIV antibody.

Sexual partner

Current partners should be screened and treated. Health education and counselling on the disease and safer sex should also be offered to the contacts. With the exception of those sex worker contacts, contact tracing by partner referral is the approach adopted by the Government Social Hygiene Service.

Non-specific Genital Ulcer (NSGU):

Non-specific genital ulcer is not an uncommon diagnosis in the Social Hygiene Service in Hong Kong. It is a diagnosis of exclusion. It is absolutely essential to exclude early syphilis and genital herpes in patients presenting with genital ulcers. Other dermatological conditions like drug reaction, pemphigus, Behcet's Syndrome and malignancy should also be excluded. Diagnostic skin biopsy may be required to rule out the above conditions before establishing the diagnosis of NSGU.

Case definition and diagnosis:

Clinical feature of non-specific genital ulcer(s) with no feature suggestive of trauma, pyoderma, neoplasia, autoimmune diseases (including Behcet's Syndrome), drug reaction, dermatitis, chemical burn, or self inflicted causes.

AND

Negative dark ground microscopy for spirochaetes and syphilitic serology, and negative herpes culture.

Non-specific genital ulcer	Clinical	Laboratory
	-- Non-specific ulcer(s) -- Without obvious causes	-- Negative dark ground microscopy for spirochaetes -- Negative syphilitic serology -- Negative herpes culture

Management:

General advice

- Health education on their conditions and safer sex: monogamous relationship, proper and consistent condom use, prompt and routine medical consultation after unsafe exposure; distribution of relevant printed material is desirable.
- Contact tracing by patient referral according to the final diagnosis (STIs).
- Patient should be advised to avoid unprotected sexual intercourse until they and their partner(s) disease status have been confirmed, treatment and follow-up completed.

Further investigations

Screening for other causes of genital ulcer and coincident STIs should be performed. Darkground microscopy of the exudate expressed from the ulcer for three consecutive days and herpes culture are routinely performed. (These are particularly important as the diagnosis is mostly based on clinical features in the absence of any positive laboratory evidence of other causes of genital ulcer.) Skin biopsy may sometimes be required to establish the diagnosis of some of the dermatological conditions. Screening for other coincident STIs should be performed as appropriately. Relevant investigations to exclude gonococcal and chlamydial infection (male with symptom of urethritis or routinely in female), syphilis and HIV are performed by the Government Social Hygiene Clinics. High vaginal swab for *Trichomonas vaginalis* infection is also performed in female patients.

Treatment

Local treatment such as saline or potassium permanganate wet compression and topical/systemic antibiotics for secondary infection are common measures used for symptomatic relief. Antibiotics including penicillin, cephalosporins and tetracycline may mask the clinical manifestation of the other ulcerative STIs, and therefore should be used cautiously.

Follow up

Follow up visits are generally recommended to monitor the progress of the ulcer. A visit after 3 months is generally recommended for testing syphilitic serology and HIV antibody. (An earlier visit at 4-6 weeks for syphilitic serology should be considered if the diagnosis of syphilis is contemplated.)

Sexual partner

Contact tracing should be conducted if a diagnosis of STI is established. In this circumstance, health education and counselling of the disease and safer sex should also be offered to the contacts. With the exception of those sex worker contacts, contact tracing by partner referral is the approach adopted by the Government Social Hygiene Service.

Suggested citation: Social Hygiene Service, Centre of Health Protection, Department of Health. Recommendations in Case Management of STIs in HK 2004.

This publication is also available on Internet at the following address: www.aids.gov.hk

Correspondence to: Social Hygiene Service, Department of Health c/o 3/F West Kowloon Health Centre, Cheung Sha Wan Dermatological Clinic, Social Hygiene Head-office, 303 Cheung Sha Wan Road, Kowloon Fax: 2152 0035