Clinical education

Treating sexually transmitted infections

Incidence of STIs has increased in recent years. **Janet Wild** explores the most common infections and how to treat them

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Improved access to sexual health care[1,2] has led to an increase in diagnosis and reporting of sexually transmitted infections (STIs) (see box below).[3] All sexual health screening should encompass testing for the full range of STIs, including HIV.[2] In practice this aspect of the service remains difficult to achieve due to fear of the results and confidentiality concerns, particularly in community settings. Diagnosis of an STI can have a significant impact on the emotional and mental wellbeing of patients.

Changing clinical practice to incorporate sexual health raises a number of issues concerning patient and practitioner education and clinical practice. This includes sexual history taking, collection storage and transport of specimens, contact tracing and which drugs to prescribe.[4–7] NICE guidelines on the prevention of STIs includes advice on identifying high-risk individuals.[8]

This article provides an overview of the treatment of STIs. Many of the oral antibiotics discussed have similar contraindications, interactions and side effects, including nausea, vomiting, diarrhoea and rashes. They also reduce the efficacy of contraceptives. It is not possible to mention all of the contraindications, interactions or side effects and nurse prescribers should refer to an appropriate drug reference such as the *BNF* or *MIMS* for this information.

All patients should be advised to abstain from sexual activity of any kind while taking or receiving medication and for a minimum of one week after completing treatment in order to avoid re-infection. After this, protected sex should be advised for another week and condom use in general should be encouraged. Advice on diet is also important as poor eating habits can increase or exacerbate side effects of medication affect compliance with treatment.

Compliance with treatment is also an issue when there are concurrent infections as this can complicate disease management. Early referral to GUM services is recommended in such cases.[1,2] There is an increased risk of complications in cases where patients are repeatedly reinfected and for those who are asymptomatic and stay so for years until they develop an associated syndrome.

Chlamydia

Chlamydia trachomatis continues to be the most common STI due to its aetiology. The chlamydiae microorganism, an intercellular bacterium, is unable to synthesise the compounds necessary for its survival.[6] The chlamydiae attach to and penetrate a host cell, where they undergo morphological changes, growing and replicating before releasing new infectious particles, the host cells then dies. This initial process takes two to four days and the total incubation period is between seven and 21 days. Testing is recommended after 21 days to ensure the validity of the results.

The primary sites of chlamydia are the urethra, endocervix, rectum and conjunctiva. Around 70–80 per cent of females and 40–50 per cent of males may be asymptomatic.[7,9] Common symptoms in women are post-coital or intermenstrual bleeding, lower abdominal pain and increased vaginal discharge. Men may suffer from urethral discharge, pain on ejaculation and epididymitis. Both sexes may feel generally unwell or have a fever and suffer from dysuria. All of these symptoms, however, have other causes, so tests must be taken to confirm the diagnosis.

Treatment can be prescribed to those with a confirmed diagnosis of chlamydia, their sexual partners and where the index of clinical suspicion is high. Recommended oral treatments are azithromycin 1g as a single dose (taken one hour before food or two hours after food) or doxycycline 100mg twice a day for seven days, which should be taken just before food to avoid gastric upset.[9,10]

Both are contraindicated in pregnant and breastfeeding women and the recommended alternative treatments are erythromycin 500mg four times a day for seven days (taken before or with food) or amoxycillin 500mg three times a day for seven days (taken with food).[9,10] With amoxycillin trace amounts may be found in breast milk. Where alternative treatments are prescribed repeat testing is advised five weeks after completion of treatment, especially in pregnancy, to ensure it has been successful. Higher positive tests after treatment in pregnancy have been attributed to less efficacious treatment regimen, non compliance and re-infection.[9]

Gonorrhoea

Gonorrhoea occurs when a person becomes infected with the bacterium species *Neisseria gonorrhoeae*.[6,7,11] Transmission is through sexual contact with the mucosal surfaces of the urogenital tract, rectum and/or oropharynx of an infected partner. Occasionally transmission may occur via the conjunctiva.

Symptoms appear within two to 10 days. Women may complain of post-coital or intermenstrual bleeding and lower abdominal pain, while men may suffer from painful ejaculation. Both sexes may have dysuria and significant yellow/green discharge, especially men. This discharge may resolve without treatment, but the disease will still be present and this can lead to complications.

Between 50–70 per cent of women and 10–20 per cent of men may have no clinical symptoms. Undiagnosed infection can have serious consequences, including epididymitis in men and pelvic inflammatory disease in women. If gonorrheal infection is suspected referral to a GUM clinic is strongly recommended for diagnosis and treatment.[11]

For known contacts of positive patients, following specimen collection, immediate treatment is recommended. Urine samples may be collected in the community for testing but, generally, urethral swabs are taken from men and endocervical swabs from women. All

THE RISE OF SEXUALLY TRANSMITTED INFECTIONS

The numbers of new diagnoses at genitourinary medicine (GUM) clinics in 2006 show:

- An overall rise in the number of new diagnoses seen in GUM clinics of 2 per cent (from 368,341 to 376,508 between 2005 and 2006.).
- Genital chlamydia remains the most commonly diagnosed STI in GUM clinics, with an increase in diagnoses of 4 per cent (from 109,418 in 2005 to 113,585 in 2006).
- Genital warts increased by 3 per cent (from 81,201 in 2005 to 83,745 in 2006).
- Genital herpes increased by 9 per cent (from 19,830 in 2005 to 21,698 in 2006).
- Syphilis decreased by 1 per cent (from 2,804 in 2005 to 2,766 in 2006). A 19 per cent decrease in females was offset by a 2 per cent rise in males.
- Gonorrhoea decreased by 1 per cent (from 19,248 in 2005 to 19,007 in 2006).
- Figures for other STIs such as pubic lice and non-specific genital infection decreased by 0.1% (from 135,840 in 2005 to 135,707 in 2006).

Source: Health Protection Agency.[3]

SPL *Treponemal pallidum, the bacterial organism that causes syphillis. Cases of this disease are increasing*

sites exposed during sexual activity should be swabbed, including rectal and pharyngeal areas if indicated and the patient consents.

When completing specimen forms drug sensitivities should be requested as the possibility of drug resistance may require alternative treatment. Current guidelines recommend ceftriaxone 250mg intramuscularly or cefixime 400mg orally stat for the treatment of uncomplicated gonorrhoea in adults, including pregnant women.[11] When regional resistance is less than 5 per cent or if antibiotic sensitivities are known, alternative oral treatments are ciprofloxacin 500mg once or ofloxacin 400mg once.[11]

Syphilis

Syphilis is caused by the spirochete bacterium *Treponemal pallidum* a corkscrew-shaped, motile organism that replicates slowly as it moves towards the nearest lymph node where it enters the bloodstream and disperses throughout the body.[12] Inoculation is predominantly through sexual contact. Accidental inoculation may occur through direct contact with the highly-contagious fluid from ulcers or during pregnancy as the spirochete passes through the placenta causing congenital syhpilis.[7,12,13] Incubation varies from 9–90 days, therefore a blood test taken within this time frame should be repeated after the 90-day period. If an initial blood test is positive a repeat test is done immediately to confirm diagnosis.

Take care when collating history, examination findings and when interpreting results, as other treponemal infections such as Yaws or Pinta may give rise to similar symptoms or results.[7,12,13] Immediate referral to tertiary sexual health services is recommended for specialist disease management, contact tracing of sexual partners and discussion on HIV testing.[13]

Primary syphilis is linked with ulcer/chancre formation. It typically presents as a single, painless and indurated lesion in the ano-genital area. Lesions can be atypical and may form in other area, including the tonsils, fingers, lips and nipples.[7] Secondary syphilis is diagnosed six to eight weeks post-chancre appearance and is commonly associated with a generalised polymorphic rash predominately on the torso, arms and legs. It may affect the soles of the feet and palms of the hands.

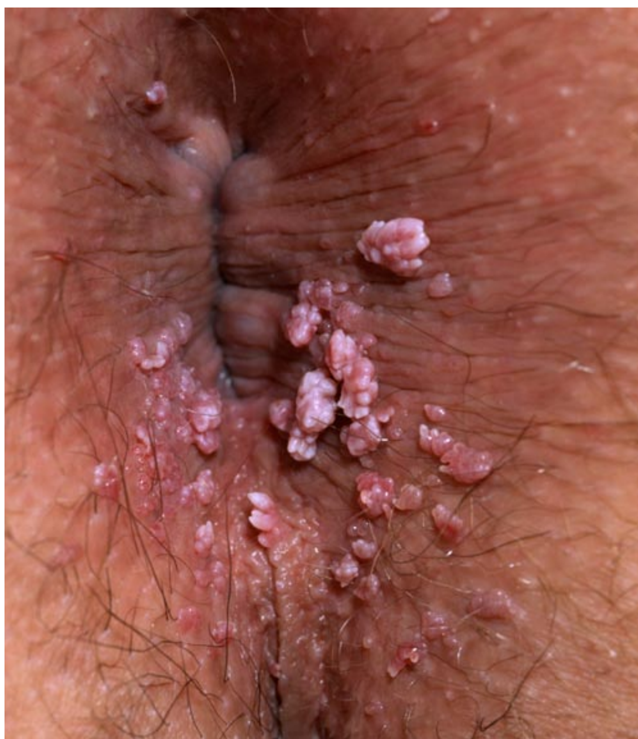
Latent syphilis may be classified as early latent or late latent, which is an infection of greater than two years duration. It is often diagnosed through blood tests because there are generally no outward symptoms.[13] Early latent syphilis may cause cardiovascular and nervous systems problems, and skin and bone conditions. Late latent syphilis manifestations are rare, as patients may have received treponemocidal antibiotics for other conditions.[13]

Recommended treatment for epidemiological, incubating, primary, secondary and early latent syphilis, or for those whose sexual partner has a confirmed diagnosis, is benzathine benzylpenicillin 2.4 MU intramuscularly in a single dose.[13] For late/tertiary syphilis treatment is benzathine benzylpenicillin 2.4 MU intramuscularly once a week for two weeks (three doses) or procaine penicillin 600mg intramuscularly once daily for 17 days.[13]

If patients are allergy-prone, have asthma, are allergic to penicillin, cephalosporins or carapenems and decline or cannot comply with parental treatment, alternative treatments are available. For epidemiological or incubating syphilis these are oral doxycycline 100mg twice a day for 14 days or oral azithromycin 1g single dose.[13] For early, primary, secondary and early latent syphilis the alternatives are oral doxycycline 100mg twice a day for 14 days, oral azithromycin 2g single dose or oral azithromycin 500mg daily for 10 days. For late/tertiary syphilis the alternative is doxycycline 100mg twice daily for 28 days.[13] There is limited availability of benzathine benzylpenicillin and procaine penicillin 600mg in the UK.

Genital warts

Genital warts are acquired through contact with a clinical or subclinical lesion. The human papillomavirus (HPV) enters the basal epidermis where it replicates within the nuclei of these cells.[6,7] The incubation period varies from two weeks to nine months or more. Warts appear on average three months after infection. They are often asymptomatic, but symptoms can include localised itching



Anal warts: Genital warts are acquired through transmission of HPV via contact with a clinical or subclinical lesion

SPL

and irritation. Warts are usually found on the genitals and perianal area and diagnosis is made through visual, external and internal clinical examination. Consideration should be given to possible differential diagnoses and clinicians should refer if in doubt.[6,7,14]

All treatments have significant failure and/or recurrence rates. Developing and adhering to a treatment algorithm or protocol may improve clinical outcome.[14] Written patient information on the management and treatment of side-effects is recommended.[14] Treatment choice or referral depends on patient preference, morphology, number and distribution of warts.[14] All treatment may involve discomfort and local skin reactions. No treatment is an option at any site and may apply particularly to warts in the vagina and anal canal.

Self-applied podophyllotoxin treatments should be applied twice daily for three consecutive days, with a guaranteed rest period of four days, and not used for more than four weeks without review. They should not be used in pregnancy and only used externally and on warts of less than 4cm. Imiquimod treatment may be used on any external lesions, it should be applied thinly three times a week at night, on alternative days until they resolve.

All preparations should be used until lesions resolve or for up to four weeks initially. Following review they may be used for a maximum of 16 weeks. Care must be taken to avoid normal and inflamed skin or open wounds, and there is a risk of phimosis or stricture of the foreskin in uncircumcised men. These preparations should be washed off before sexual activity.[10,14]

Caustic and ablative therapies include cryotherapy, excision and electrocautery may be carried out in specialist services. The government has agreed in principle to introducing an HPV vaccine into the childhood immunisation schedule for all girls aged between 12 and 13 years. Gardasil is already on the market and authorisation for Cervarix is expected for the end of the year. Both vaccines target HPV strains 16 and 18. Gardasil also protects against 6 and 11, which are responsible for 90 per cent of genital warts

Genital herpes

The herpes simplex virus (HSV) is a neuro-tropic virus and infection occurs through close contact with active lesions.[6,7,15] Once the virus enters the body the HSV particle envelope attaches to a cell fusing with the cell's membrane, thus creating an opening allowing the HSV to enter. The HSV eventually moves into the cell nucleus were replication begins.

Incubation takes two to 12 days with symptoms appearing at around day 14–21. Incubation symptoms include fever, headache, malaise and myalgia. Local symptoms can include localised itching and irritation, pain, localised oedema, discharge, erythema and pustular vesicles, which become ulcers. Ulcers may occur internally causing urethritis, cervicitis or proctitis.[6] In addition, lesions may occur on the groin, buttocks, fingers, lips and eyes due to accidental transference contact. Common complications include secondary infections, urine retention, phimosis, pharyngitis, adhesions and psychological problems. Recommended oral treatments are all given for five days: alciclovir 200mg five times daily, famciclovir 250mg three times daily or valaciclovir 500 mg twice daily.[10,15]

Conclusion

This brief overview of STIs and the recommended treatments is to support practitioners in the development of their practice and services relating to sexual health. It is important to work together in partnership with patients and colleagues in other services to provide appropriate, effective care to patients.

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Useful resources and information

- **Patient information** Available from the Terrence Higgins Trust at: www.tht.org.uk/informationresources/otherstis
- **Education** Information about the BASHH Sexually Transmitted Infection Foundation (STIF) course and other courses is at: www.bashh.org

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