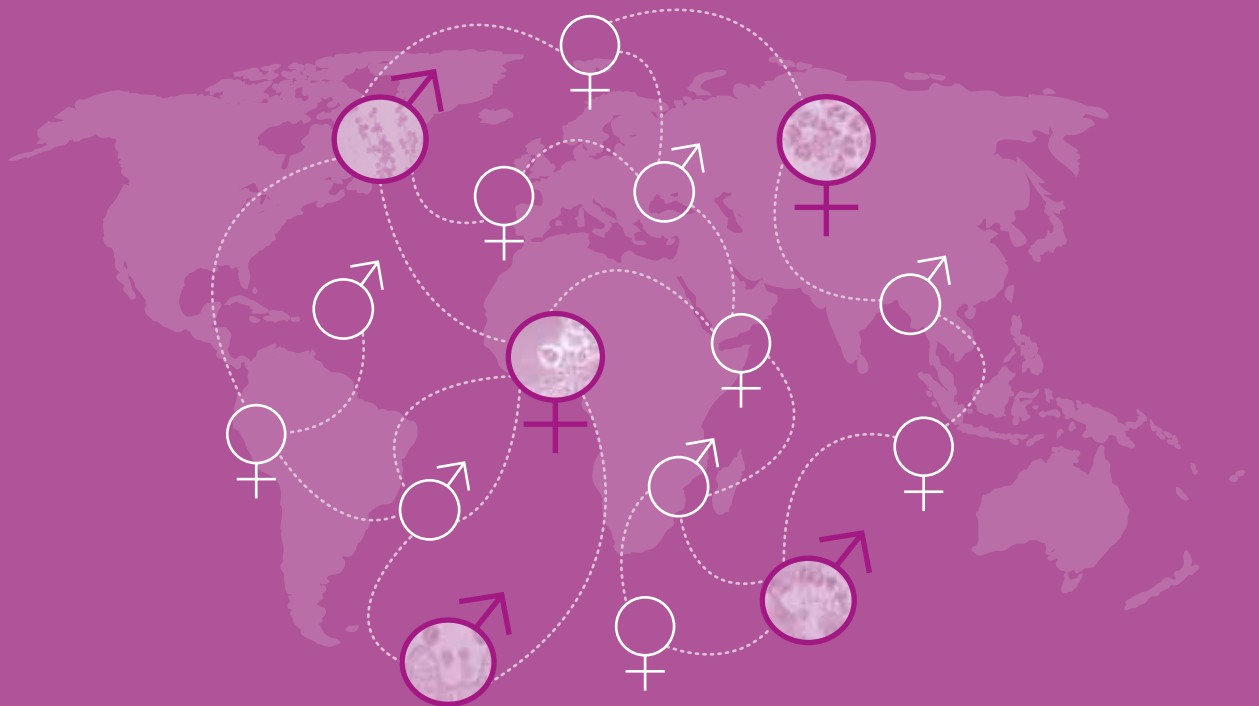


# Training Modules for the Syndromic Management of Sexually Transmitted Infections 2nd Edition

## Module 4 Diagnosis and Treatment

*Breaking the chain of transmission*

*Breaking the chain of transmission*



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## **Module 4**

# **Diagnosis and Treatment**

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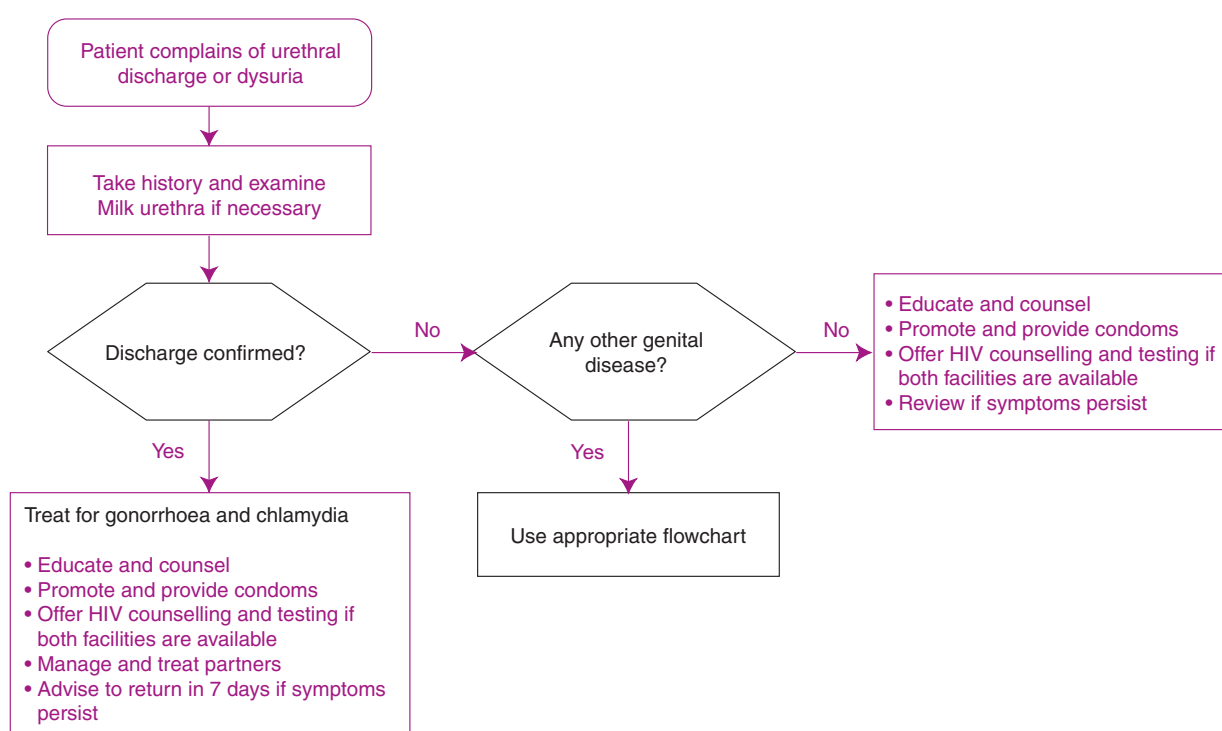
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## Introduction

This module provides you with a practical, step-by-step guide to using each of the global syndromic flowcharts for the management of sexually transmitted infections (STIs). It explains all the important decisions and actions to take.

At the end of the module you will find lots of questions to help you check your understanding of the flowcharts, as well as an action plan that will help you develop your skills.



**PLEASE NOTE:** because of the differing prevalence of each STI from region to region, it is important that you work with your national flowcharts if these are available.

- *If you have national flowcharts, it is essential to have them with you as you work through the module.*
- *Use the global flowcharts only if national ones are not available.*
- *If you work in a special setting, such as family planning or an antenatal clinic, use an appropriately adapted management guideline, e.g. WHO Medical Eligibility Criteria and WHO Guides to Essential Practice.*

*Key differences between the global and national flowcharts include the guidelines on drug treatments, risk assessment questions and, of course, the number of syndromes, and therefore flowcharts, appropriate for your region.*

## Your learning objectives

This module together with all its activities will enable you to:

- name the decisions and actions on each of the national or global flowcharts;
- use the global or national flowcharts to make a clinical diagnosis for a variety of case-studies;
- list the correct drug therapies and dosages for each diagnosis;
- with practice, diagnose and treat patients correctly.

### **Tip**

*You will find this module easier if you have first studied Module 2, Introducing STI Syndromic Case Management, and Module 3, History-taking and Examination. These two modules provide a broad overview of the techniques and skills you will need.*

## General guidelines on use of the flowcharts

All the flowcharts have the same general features: an entry point, action, decision and treatment boxes.

### The patient's symptom

As you already know if you have studied Module 2, the entry point to each of the flowcharts is a problem box like this one. It refers to an STI-related symptom.

Patient complains of a  
genital sore or ulcer

You should be able to turn to the appropriate flowchart as soon as you have a clear understanding of a patient's symptoms.

### The action boxes for each flowchart

Action boxes like these ask you to do something:

Take history and examine

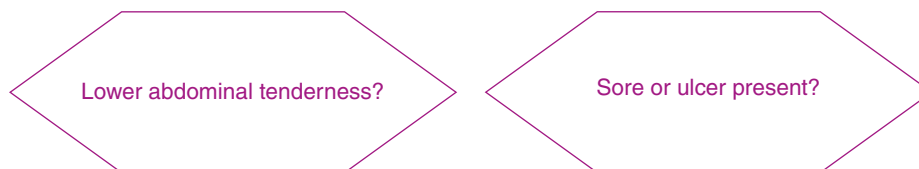
- Reassure mother
- Advise to return if necessary

Refer for surgical opinion

- Educate and counsel
- Promote and provide condoms
- Offer HIV counselling and testing if both facilities are available

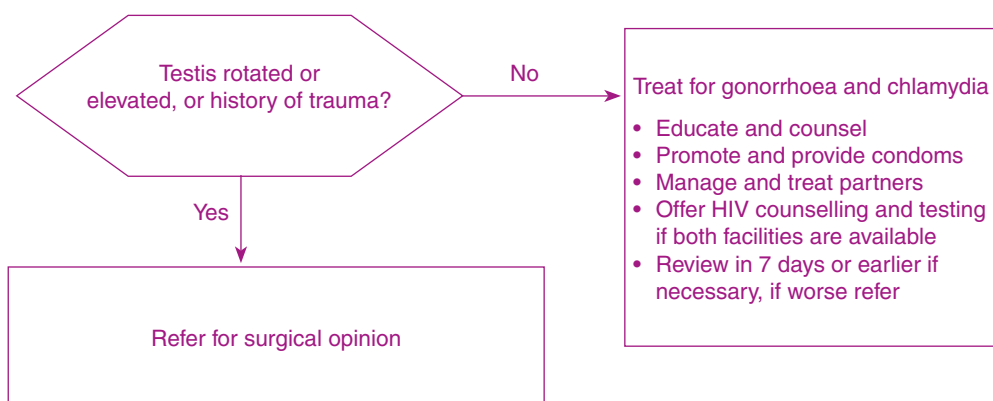
## Decision boxes

These ask you to answer a question – with either "Yes" or "No".



The answer you give takes you along a particular route from the decision box.

You can see how easy the flowcharts are to use with this example.



In this example, the question asks if the testis is rotated or elevated or there is a history of trauma:

- If you can answer "yes", you follow the YES arrow to the box that says you should refer the patient for a surgical opinion.
- If your answer is "no", you follow the NO arrow, which tells you to treat the patient for gonorrhoea and chlamydia.



### Treatment

As in the treatment box on page 3, all flowcharts include guidance on education for behaviour change, counselling, condom promotion and partner referral and care. These topics are covered in more detail in Modules 5 and 6, but we briefly describe them below.

In this course, we refer to education as including the following topics:

- advising patients on the importance of complying with treatment and completing a course of tablets;
- explaining how STIs are transmitted and the possible complications of infection;
- advising the patient not to engage in sexual activity until completely cured;
- discussing the patient's choices for safer sexual behaviour;
- educating and counselling the patient on condom use;
- enlisting the patient's help with partner referral.

**Always treat your patient with courtesy and respect.**  
You need to win his/her trust and confidence if you are to provide comprehensive and effective STI case management.

Sometimes, service providers also need to *counsel* patients. For example, patients might feel unable to refuse a sexual relationship or to talk to their partners for fear of criticism or even rejection. Listening to and counselling them can help them to cope with or resolve the difficulty.

### Drug therapies

At the back of this module is space for you to record the recommended drugs and treatment for each STI. Please consult your trainer or manager about these.

The World Health Organization (WHO) recommends that only drug therapies with 95% or more efficacy be used to treat patients with STIs. Resistance to particular drugs is high and growing in parts of the world, requiring more effective and often more expensive drugs to be used. In any given setting, monitoring for resistance to antimicrobials is essential; and even more so for organisms such as *Neisseria gonorrhoeae*.

### Use of gloves

Although syndromic diagnosis of STIs in women does not necessarily require internal examination, WHO recommends you use gloves when examining patients.

**A special note: *risk assessment* – only if you will use the vaginal discharge flowchart**

Using vaginal discharge as an entry point to manage cervical infection is far from ideal. While vaginal discharge is highly indicative of vaginal infection, it is poorly predictive of cervical infection with gonorrhoea and/or chlamydia.

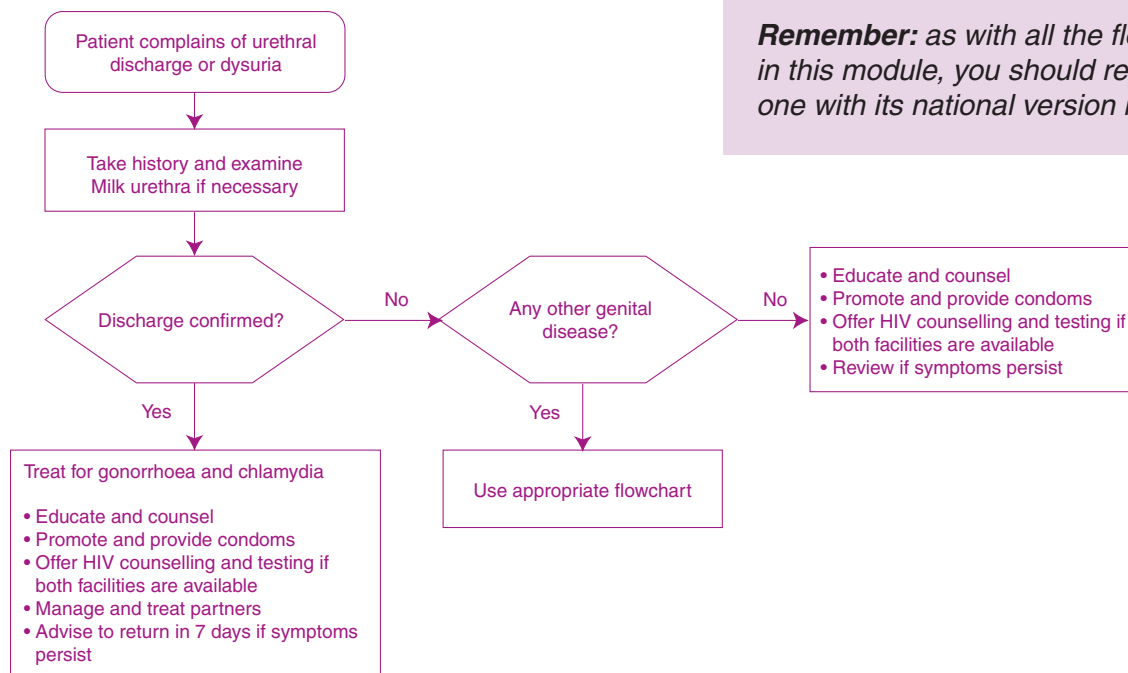
The flowchart may become more predictive of cervical infection if a number of risk factors are included. In the literature a number of risk factors have been shown to be indicative of cervical infection. Some of those demonstrated to be significant, but not necessarily all in the same setting, were:

- being under 21 years of age (or 25 in some settings);
- being unmarried;
- having more than one sexual partner in the last three months;
- having a new partner in the last three months;
- the current partner having a sexually transmitted infection;
- recent use of condoms by the partner.

Risk factors differ in different populations, so they cannot be readily translated from one setting to another and from one population to another. Therefore, risk factors need to be evaluated to respond to the population and the setting. For this reason consult your trainer or manager to determine the prevailing risk factors. However, your country may have abandoned the use of risk factors altogether.

# 1: Urethral discharge

A man comes to your health centre complaining that he has noticed a discharge from his penis. You will use the flowchart for urethral discharge.



**Remember:** as with all the flowcharts in this module, you should replace this one with its national version if available.

Take history and examine  
Milk urethra if necessary

This action box asks you to examine the patient in order to confirm that he has a urethral discharge and to see if any other STI is present.

Look at the external genitalia, not forgetting the inner surface of the foreskin and the parts normally covered by the foreskin. If you cannot see any discharge, ask the patient to squeeze the penis gently and milk the urethra from its base to the meatus. After examining the patient, go to the next box.

Discharge confirmed?

This decision box asks you if there is a urethral discharge. If there is, go to the treatment box immediately below. If you cannot find a urethral discharge, read the decision box on the right: “Any other genital disease?”.

### Treat for gonorrhoea and chlamydia

- Educate and counsel
- Promote and provide condoms
- Offer HIV counselling and testing if both facilities are available
- Manage and treat partners
- Advise to return in 7 days if symptoms persist

This box tells you what treatment to give and reminds you to educate him, promote condom use, and supply them if this is your policy. Offer counselling and testing for HIV if such services are available, and explain the importance of also having sexual partners treated.

Don't forget to ask the patient to return if his symptoms persist.

### Any other genital disease?

This box asks you to decide whether the patient has any other syndromes of genital disease.

- If not, go to the box on the right: "Educate and counsel".
- If there is evidence of another STI, then use the appropriate flowchart.

- Educate and counsel
- Promote and provide condoms
- Offer HIV counselling and testing if both facilities are available
- Review if symptoms persist

When you come to this box on the right, you have not been able to confirm the presence of urethral discharge or any other STI. The patient may be worried that he has an STI as a result of taking part in risky sexual behaviour. So he needs your reassurance. This is a good opportunity to educate him, promote the use of condoms and supply them.

### Use appropriate flowchart

Turn to the appropriate flowchart according to the syndrome you identified.

### **Persistent or recurrent symptoms**

If the patient returns with the same symptoms after seven days, check for poor compliance and reinfection and treat the patient as before, if either of these proves to be the case.

If compliance seems good, the persistent syndrome may be due to:

- drug resistance; if so, offer an alternative drug therapy suggested by your manager;
- a different causal agent; if your setting has a high prevalence of *Trichomonas vaginalis*, treat the patient for this.

If symptoms continue to persist, refer the patient.

Starting on page 30 are questions to help you recall and apply the correct treatment. Feel free to refer to and use the questions as you need.

## 2: Genital ulcers

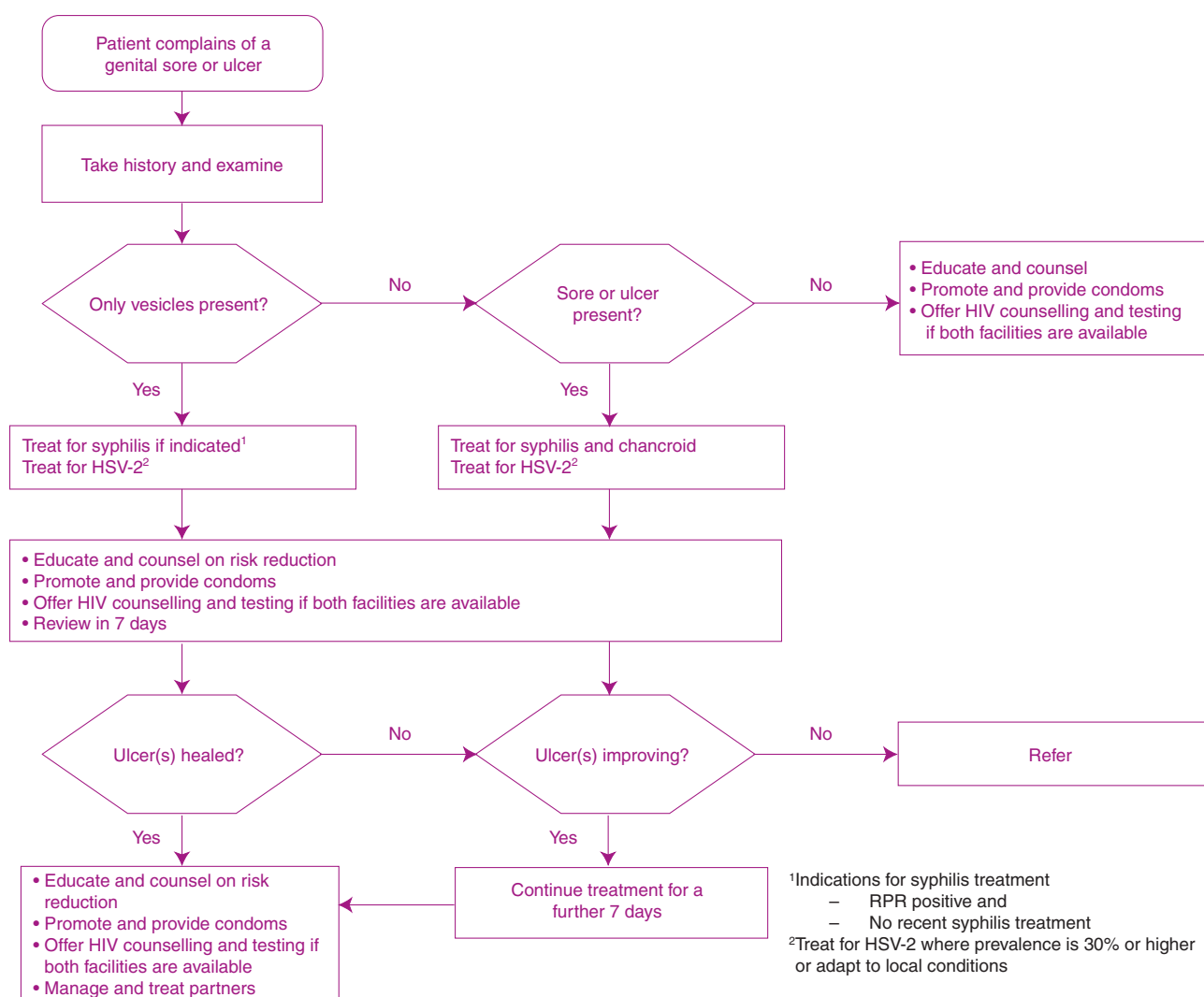
*Syphilis screening and treatment of pregnant women is cost-effective, even in areas of prevalence as low as 0.1%.*

A patient complains that he or she has noticed a sore on the genitals. Use the flowchart for genital ulcer disease.

This flowchart should be replaced with a more relevant national version if either syphilis or chancroid are of low prevalence. Equally, if granuloma inguinale and/or lymphogranuloma venereum (LGV) are prevalent, include the relevant treatment.

Genital herpes is the most frequent cause of genital ulcer in many parts of the world.

**Please see the note on page 11 about genital ulcer disease and HIV infection.**



Take history and examine

This box asks you to examine the patient for genital ulcer and any other STI that may be present. An ulcer is a break in the skin or mucous membrane surface.

- In **men**, look at the external genitalia. Don't forget the inner surface of the foreskin and the parts it normally covers.
- In **women**, examine the skin of the external genitalia. Ask the patient to separate the labia so that you can look at the mucous surfaces for ulcers. If you have clean gloves available, you can separate the labia to look for ulcers yourself.

After you have examined the patient, go to the next box.

Only vesicles present?

Vesicular lesions look like a number of tiny blisters packed closely together, which can burst later to form a small sore.

- If what you see are such lesions, go to the treatment box below.
- If the ulcer is not vesicular, go to the next decision box to the right.

Sore or ulcer present?

If a sore or ulcer is present, move to the treatment box below.

If there is no evidence of a sore, ulcer or vesicles or other STI, the fact that the patient feels concern about STIs makes this an excellent opportunity for education. Move to the box on the right.

- Educate and counsel
- Promote and provide condoms
- Offer HIV counselling and testing if both facilities are available

The next box asks you to educate the patient, counsel him or her if necessary, offer HIV counselling and testing if available, and promote the use of condoms, supplying them if possible. In fact, this is an excellent opportunity for education because the patient has come to you with concerns about STIs.

## Diagnosis and Treatment

Treat for syphilis if indicated<sup>1</sup>  
Treat for HSV-2<sup>2</sup>

<sup>1</sup>Indications for syphilis treatment

- RPR positive and
- No recent syphilis treatment

<sup>2</sup>Treat for HSV-2 where prevalence is 30% or higher or adapt to local conditions

This action box suggests that you treat the patient for syphilis 'if indicated'. The indications are given as footnotes to the flowchart. Namely:

- the patient is RPR positive
- the patient has not had recent treatment for syphilis (so this may be a reinfection).

This action box also asks you to treat the patient for HSV-2. The indication given as a footnote to the flowchart is to treat for HSV-2 when the prevalence of HSV-2 in patients with genital ulcer disease is 30% or higher or adapt to local conditions.

Treat for syphilis and chancroid  
Treat for HSV-2<sup>2</sup>

<sup>2</sup>Treat for HSV-2 where prevalence is 30% or higher or adapt to local conditions

This action box asks that you treat the patient for syphilis and chancroid.

The box also asks you to treat the patient for HSV-2. The indication given as a footnote to the flowchart is to treat for HSV-2 when prevalence is 30% or higher in patients with genital ulcer disease, or adapt to local conditions.

- Educate and counsel on risk reduction
- Promote and provide condoms
- Offer HIV counselling and testing if both facilities are available
- Review in 7 days

Educate and counsel the patient on the management of these STIs.

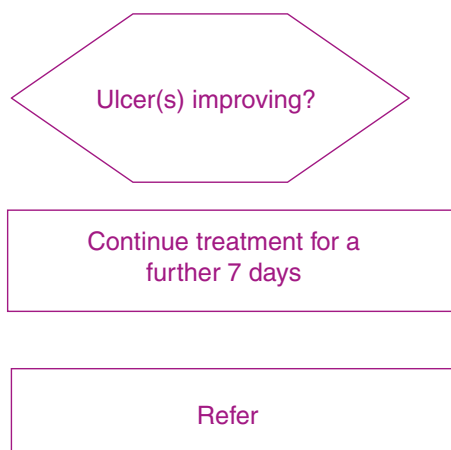
On the management of herpes, reassure the patient that, although the lesions cannot be cured, they will go away of their own accord, but might recur. Explain the importance of keeping the area clean and dry, and advise the patient not to have sexual contact until the area has healed. Specific treatment for herpes may be offered in some settings. Explain to patients that this treatment only controls the ulcers, but does not cure herpes.

Ulcer(s) healed?

- Educate and counsel on risk reduction
- Promote and provide condoms
- Offer HIV counselling and testing if both facilities are available
- Manage and treat partners

Re-examine the patient upon his or her return. The remaining boxes ask you to take action depending on whether the ulcer has improved, healed or not:

- If the ulcer has healed, educate and counsel the patient, promote and, if possible, provide condoms and offer HIV counselling and testing if both are available.



- If the ulcer is improving, continue treatment for another seven days. Educate and counsel the patient, promote and, if possible, provide condoms and offer HIV counselling and testing if both are available.
- If there has been no improvement of the ulcer, refer the patient.

### **Genital ulcer disease and HIV infection**

An ulcer in the genital area offers easy access for HIV. In an HIV-infected person, the natural history of syphilis and chancroid may change, so that their respective lesions are atypical. In chancroid, the ulcers can be more extensive and even multiple, sometimes accompanied by fever and chills; reference should be made to the local treatment guidelines in such settings.

In areas where HIV infection is prevalent, an increasing number of cases of genital ulcer may harbour genital herpes, which also becomes more prevalent. A person with HIV may have atypical HSV-2 ulcers, which are persistent, multiple ulcers requiring medical attention. Antiviral treatment becomes important for the patient's comfort; this treatment protocol in patients with HIV may require adapting, which you must refer to in your local setting:

*“HSV-2 and HIV appear to operate in a vicious circle, each increasing the risk of contracting and passing on the other. Unfortunately, HSV-2 infection is lifelong and incurable. Drugs that suppress the genital ulcers and viral shedding associated with HSV-2 do exist, but they are very expensive, and their widespread use in poor countries is problematic. Thus, the only practicable option for HSV-2 is prevention.”*

**Report on the global AIDS epidemic. UNAIDS, 2000.**



### 3: Vaginal discharge

It is normal for women to have some vaginal discharge. Women may notice it more during certain phases of the menstrual cycle, during and after sexual activity and during pregnancy and lactation. Usually women complain of vaginal discharge when they think it is unusual for them or if it causes itching or discomfort. In general, they will not seek medication for a discharge they consider normal.

Women develop the symptom of vaginal discharge if they have either vaginitis (infection of the vagina) or cervicitis (infection of the cervix), or both. It is important to distinguish between these conditions because one of them, cervicitis, leads to serious complications, so the patient's sexual partner(s) must also be treated to avoid reinfection.

We can summarize the differences between vaginitis and cervicitis with this table.

Vaginitis	Cervicitis
Caused by trichomoniasis, candidiasis and bacterial vaginosis	Caused by gonorrhoea and chlamydia
Most common cause of vaginal discharge	Less common cause of vaginal discharge
Easy to diagnose	Difficult to diagnose
No serious complications	Major complications
Treatment of partner unnecessary, except for trichomoniasis	Need to treat partner

Unfortunately, it is not easy to distinguish between cervicitis and vaginitis, especially when it is not possible to do an internal examination. Cervicitis is more likely in areas where the prevalence of gonorrhoea and/or chlamydia is high. The higher the prevalence, the stronger the justification for treatment.

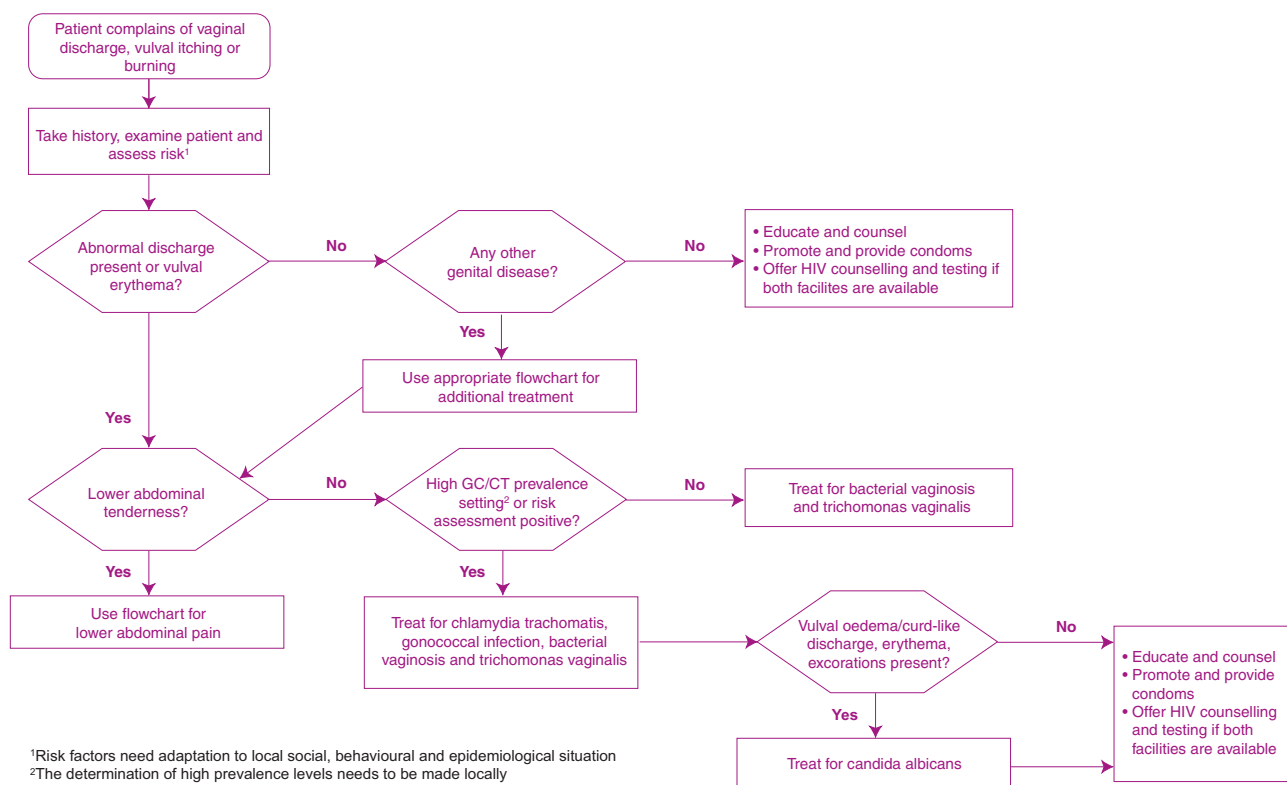
In areas where gonorrhoea and chlamydia are highly prevalent, risk assessment questions may help to identify women with a higher risk of cervical infection.



### Activity 1

If you do not already know your local risk assessment questions, please find out what they are and note them here.

Work out a way to ask the risk assessment questions so that patients will understand them easily. For example, you might ask if the patient has had a new partner “since Christmas” – or at some time that is equally easy to recall.



This is only one example of a vaginal discharge flowchart. Adaptation is recommended for different settings. You must make sure that you acquaint yourself with the flowchart adapted to your setting and use that one in your day-to-day work.

## Diagnosis and Treatment

Take history, examine patient and assess risk<sup>1</sup>

<sup>1</sup>Risk factors need adaptation to local social, behavioural and epidemiological situation

Take the patient's history. Her symptoms can include vaginal discharge and/or vulval itching or burning. Examine her for vaginal discharge and ask the risk assessment questions (see page 5 if you have a locally relevant set of risk factors, familiarize yourself with them). There is space to note them on the previous page.

Abnormal discharge present or vulval erythema?

If no discharge or erythema (superficial reddening) is present, turn to the decision box on the right about other disease.

If you confirm a discharge or erythema, go on to the decision box asking about lower abdominal tenderness.

Any other genital disease?

This decision box asks you if there is any other evidence of genital disease, such as sores or ulcers:

- If so, use the appropriate syndromic flowchart for any additional treatment required.
- If not, move to the education box on the right.

- Educate and counsel
- Promote and provide condoms
- Offer HIV counselling and testing if both facilities are available

This box asks you to educate and counsel the patient, promote condom use and provide them if available, and offer HIV counselling and testing if both services are available.

Lower abdominal tenderness?

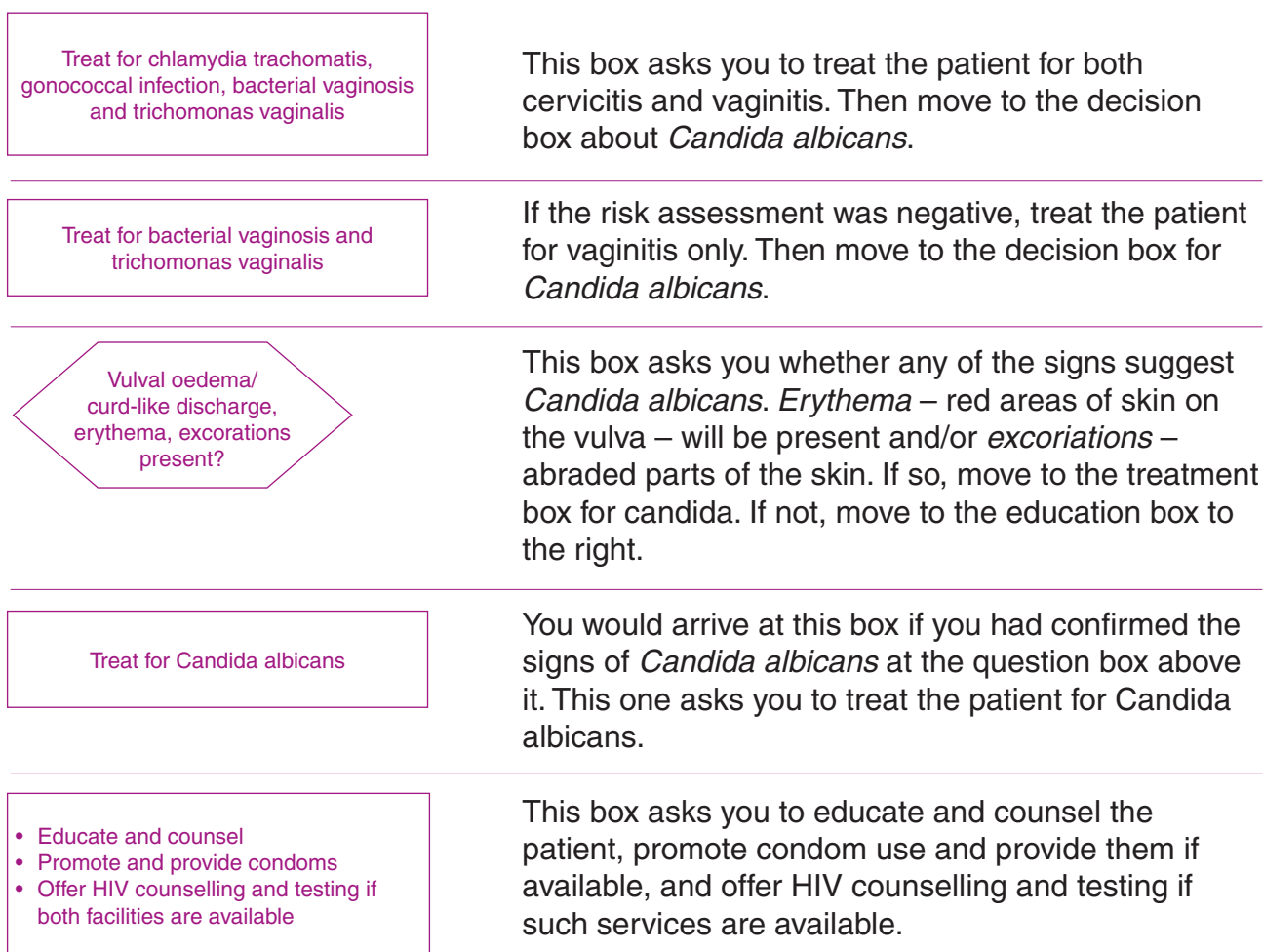
This decision box asks you if you found any lower abdominal tenderness during the physical examination:

- If so, the box below indicates that you should turn to the flowchart for lower abdominal pain;
- If not, move to the decision box on the right about high prevalence.

High GC/CT prevalence setting<sup>2</sup> or risk assessment positive?

<sup>2</sup>The determination of high prevalence levels needs to be made locally

If your region has a high prevalence for gonorrhoea or chlamydia and/or the risk assessment was positive, go to the treatment box below. If neither, use the treatment box to the right, for vaginitis.



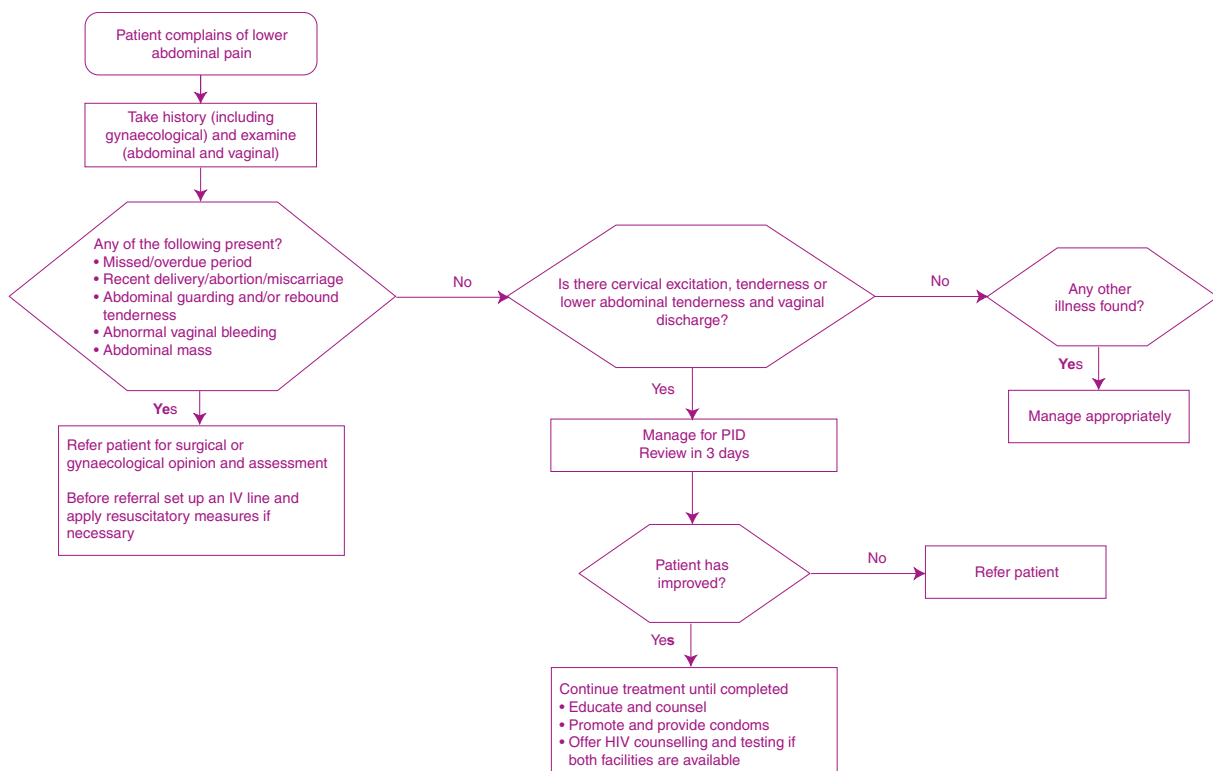
## 4: Lower abdominal pain

The term pelvic inflammatory disease (PID) refers to infections of the female upper genital tract: the uterus, fallopian tubes, ovaries or pelvic cavity. It occurs as a result of infection going through the cervix. It can be caused by gonorrhoea, chlamydia and some anaerobic bacteria.

PID includes endometritis, salpingitis, tubo-ovarian abscess and pelvic peritonitis. It can also lead to generalized peritonitis, a potentially fatal condition. Salpingitis may lead to a blocked fallopian tube, resulting in decreased fertility or total infertility if both tubes become infected. It may also lead to *partial* tubal obstruction, allowing spermatozoa to pass through, but not the relatively larger fertilized ovum. The result can be a tubal or ectopic pregnancy, which will eventually rupture, causing massive intra-abdominal haemorrhage and, possibly, death.

Women with PID usually have a history of lower abdominal pain and vaginal discharge. However, in addition, some women with PID or endometritis will *not* complain of lower abdominal pain. Other suggestive symptoms include pain during intercourse, vaginal discharge, abnormal bleeding from the womb at any time including during a period, painful urination, pain during menstruation, fever and sometimes nausea and vomiting.

Although difficult to diagnose, PID becomes more probable when one or more of the symptoms above combine with lower abdominal tenderness, vaginal discharge and cervical motion tenderness.



Take history (including gynaecological) and examine (abdominal and vaginal)

This box asks you to take the patient's history, including gynaecological history, and examine the patient.

In the history, you need to check for other symptoms, such as erratic bleeding, missed or overdue period, recent delivery, abortion or miscarriage. Erratic bleeding might be an early symptom of ectopic pregnancy. Ask questions similar to these:

- Are there any problems with your periods?
- Do you have any vaginal bleeding not related to normal menstruation?
- Have you had a miscarriage, abortion or delivery in the last six weeks?

When examining the patient:

- Check the patient's temperature. A high temperature indicates infection.
- Palpate the abdomen for **tenderness, rebound tenderness, guarding** and detection of a **mass**. Abdominal palpation should first be superficial to detect pain on light palpation. Pain on palpation is referred to as *tenderness*.
- Then make a careful and deep palpation. In the area where you found tenderness to light palpation, press down slowly and very gently and release the pressure suddenly. Any severe pain that results is known as *rebound tenderness*.

When the peritoneum is inflamed, upon palpation the abdominal muscles will become rigid and will not allow you to apply pressure. This is known as *guarding*. Guarding and rebound tenderness are features of peritonitis or an intra-abdominal abscess.

Light abdominal palpation will also enable you to detect a swelling or lump in the patient's abdomen. This is known as a *mass*. Upon deep palpation of the lower right and lower left abdomen, you might detect a tender mass deep in the pelvic cavity. This may be a tubo-ovarian abscess.

## Diagnosis and Treatment

- Check for vaginal bleeding. This should alert you to the possibility of an ectopic pregnancy or abortion.
- Finally, check for abnormal vaginal discharge.

Any of the following present?

- Missed/overdue period
- Recent delivery/abortion/miscarriage
- Abdominal guarding and/or rebound tenderness
- Abnormal vaginal bleeding
- Abdominal mass

This decision box lists the signs and symptoms for which you must refer the patient. If your examination or the patient's history suggest any of these signs or symptoms, move to the refer box below.

If the patient has none of these signs and symptoms, move to the decision box on the right.

Refer patient for surgical or gynaecological opinion and assessment

Before referral set up an IV line and apply resuscitatory measures if necessary

This action box asks you immediately to refer all patients with severe conditions to a facility where specialist gynaecological opinion and surgical treatment are available to treat a pregnancy complication, peritonitis or features of tubo-ovarian abscess.

Is there cervical excitation, tenderness or lower abdominal tenderness and vaginal discharge?

This decision box asks you to make another decision, based on whether or not the patient has cervical excitation tenderness or lower abdominal tenderness and vaginal discharge.

- If so, treat her for PID as described in the action boxes below.
- If not, move to the right-hand decision box, which asks about other illnesses, then asks you to manage these appropriately.

Manage for PID  
Review in 3 days

This box asks you to manage the patient for PID. Remember that, in doing so, you must give treatment simultaneously for gonococcal, chlamydial *and* anaerobic bacterial infection. It is also important to persuade the patient to return in three days and to complete the course of drugs exactly as you ask.

Patient has improved?

When the patient returns, interview and examine her. Has her condition improved? If so, educate and counsel her as in the box below. If not, refer her immediately. Emphasize the importance of completing the treatment course even when symptoms have completely resolved.

### Continue treatment until completed

- Educate and counsel
- Promote and provide condoms
- Offer HIV counselling and testing if both facilities are available

This box asks you to educate and counsel the patient and offer HIV counselling and testing if both services are available.

Refer patient

If the patient's condition has not improved upon her return visit, refer her immediately for gynaecological evaluation.

### ***Seriously consider hospitalizing patients with PID when:***

- the diagnosis is uncertain;
- surgical emergencies such as appendicitis and ectopic pregnancy cannot be excluded;
- a pelvic abscess is suspected;
- severe illness precludes management on an outpatient basis;
- the patient is pregnant;
- the patient is unable to follow or tolerate an outpatient regimen;
- the patient has failed to respond to outpatient therapy.

Many experts recommend that all patients with PID should be admitted to hospital for treatment.



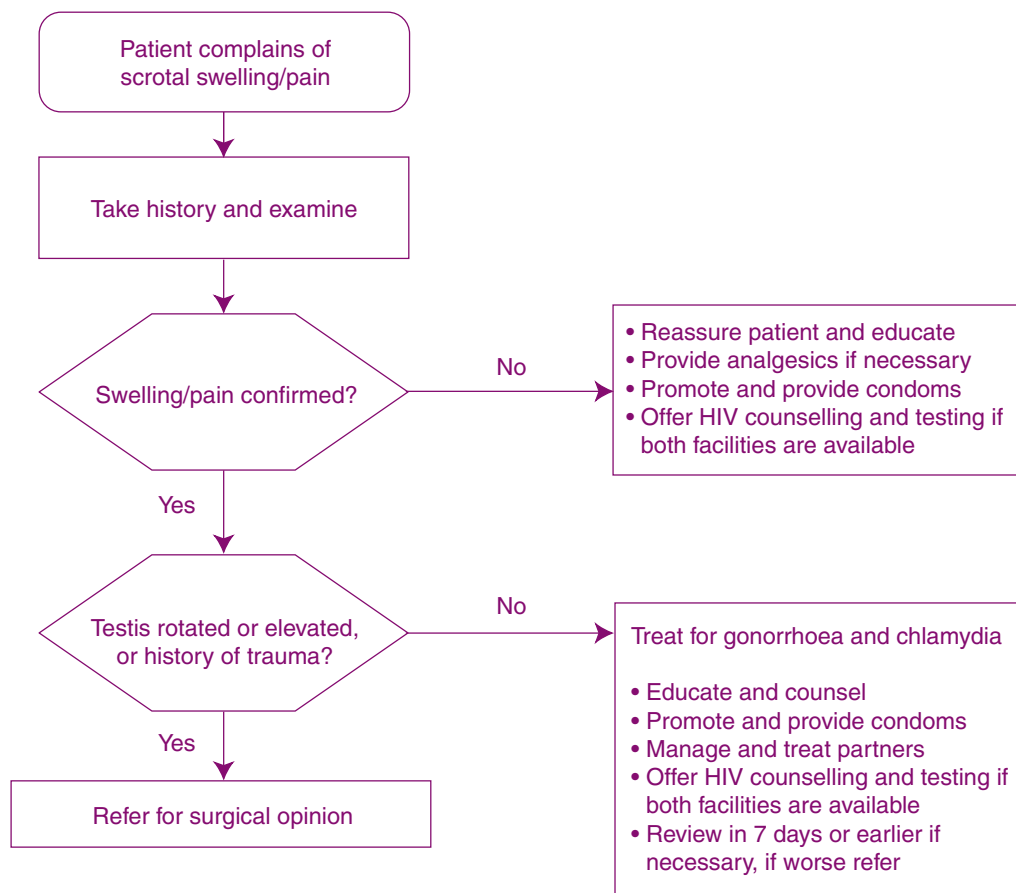
## 5: Scrotal swelling

Infection of the testis or epididymis is a serious complication of gonococcal urethritis and chlamydial urethritis. When infected, the testis becomes swollen, hot and very painful. If early and effective therapy is not given, the inflammation will heal with fibrous scarring and destruction of testicular tissue. This may lead to infertility.

It is important to consider possible non-infectious causes of scrotal swelling and pain, as well as non-sexually transmitted infections.

Non-infectious causes include trauma, tumour and testicular torsion and all require referral.

In men over 35 years with no risk of STIs, and among pre-pubertal boys, other general infections may be responsible.



Take history and examine

This action box asks you to take a history and examine the patient for scrotal swelling or pain. In taking the history, the following two questions are particularly important.

- Has the patient sustained any injury to the scrotal region?
- Has the patient had an STI in the last six weeks?

Examine the patient:

1. Inspect the scrotal sac and compare the two sides for swelling of the testis. Palpate and note any tenderness.
2. What is the position of the testis in the scrotal sac? Is it elevated or rotated? If so, this is characteristic of testicular torsion.
3. Is there bruising of the scrotal skin which could indicate trauma?
4. Is there an obvious urethral discharge? If not, ask the patient to gently squeeze the penis and milk the urethra in order to express any discharge.
5. Is there evidence of any other STI such as an ulcer?
6. Is there swelling in the inguinal area or does the scrotal swelling increase when the patient raises the intra-abdominal pressure (straining as if passing stools)? This may point to a hernia and requires referral to a surgical facility.

Swelling/pain confirmed?

This decision box asks whether or not the swelling or pain is confirmed.

- If you have no positive findings after taking the patient's history and examining him, the swelling is not confirmed. Follow the instructions in the right-hand education box.
- If you can confirm the presence of swelling and/or pain in the testis, move to the decision box below.

## Diagnosis and Treatment

- Reassure patient and educate
- Provide analgesics if necessary
- Promote and provide condoms
- Offer HIV counselling and testing if both facilities are available

This box asks you to explain that you can find no signs of swelling or other infection, educate and counsel on safer sex, provide analgesics if necessary, promote the use of condoms and provide them if possible. Offer HIV counselling and testing if both services are available.

Testis rotated or elevated,  
or history of trauma?

If the patient has swelling and/or pain in the scrotum, this decision box asks you to check whether the testis is elevated or rotated or if there has been a recent trauma.

- If any of these are so, or if you think the patient has a scrotal hernia (see 6 above), refer him immediately to a facility where a surgical opinion can be obtained.
- If none of the factors can apply to the swelling or pain, treat the patient as described in the action box to the right.

### Treat for gonorrhoea and chlamydia

- Educate and counsel
- Promote and provide condoms
- Manage and treat partners
- Offer HIV counselling and testing if both facilities are available
- Review in 7 days or earlier if necessary, if worse refer

This action box asks you to treat the patient for gonorrhoea and chlamydia, and also to educate the patient and counsel him if needed, promote safe sex and condom use, manage sexual partners and offer HIV counselling and testing if both are available.

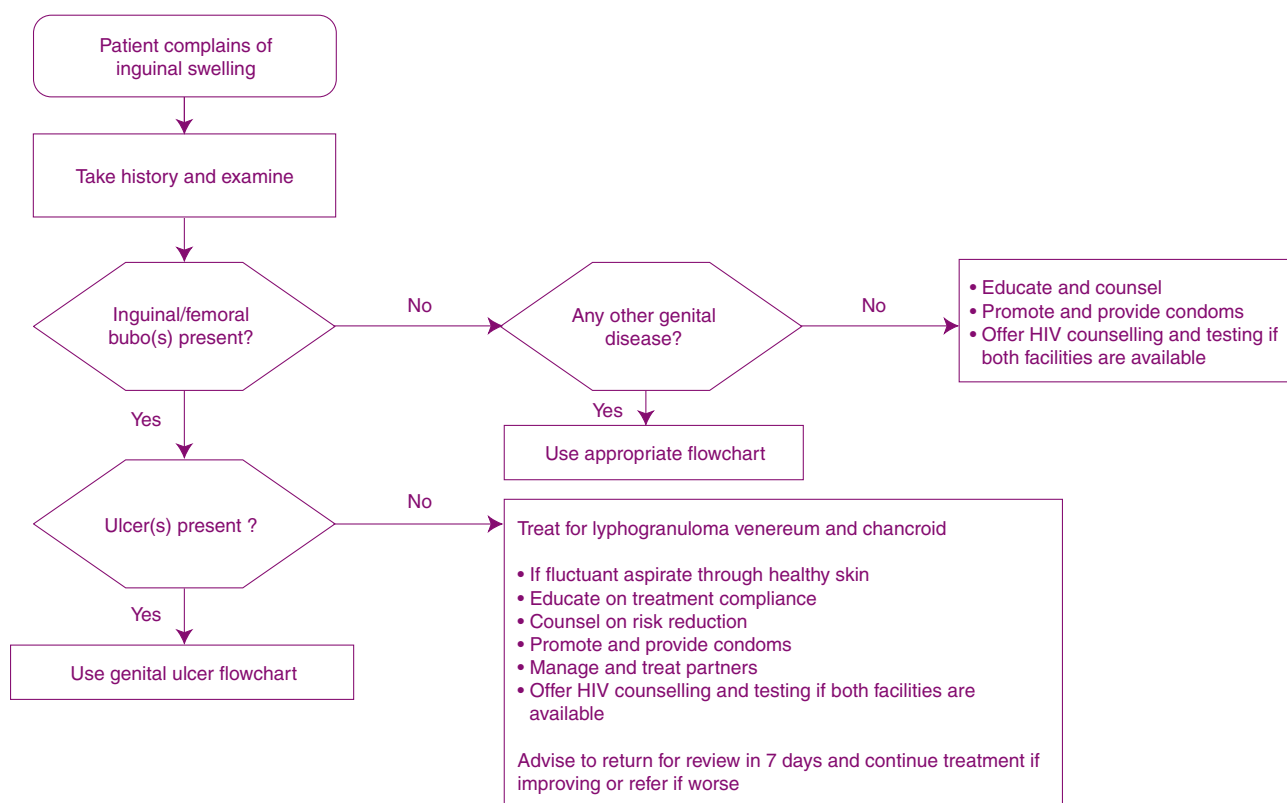
Most importantly, you should also ask the patient to return at the same time next week, or earlier if symptoms become any worse. Stress the importance of this for the patient's own health.

## 6: Inguinal bubo

This is a painful, often fluctuant, swelling of the lymph nodes in the inguinal region (groin). Buboes are usually caused by either chancroid or lymphogranuloma venereum (LGV).

In many, but not all, cases of chancroid, a genital ulcer may be visible. If so, you should refer to the genital ulcer flowchart and treat the patient for that syndrome.

Infections of the lower limb and other non-STIs can also cause swelling of the inguinal lymph nodes.



Take history and examine

This action box requires you to take a history and examine the patient. When you take the history, include these three questions:

- Is there pain in the groin?
- Does the patient also have a genital ulcer, or has he/she recently had a genital ulcer?
- Has the patient noticed any swellings elsewhere in the body?

When examining the patient, try and determine whether the swelling is really a bubo or simply enlarged lymph nodes or any other pathology which has enlarged nodes in other sites. A bubo is usually painful, warm, tender when palpated and fluctuant. There may be one large mass or a collection of smaller painful swellings. Occasionally the bubo might have ruptured and a sinus, discharging pus, will be present.

If a bubo is present, make sure to look for genital ulcers:

- In men, remember to examine the underside of the foreskin and the parts normally covered by the foreskin. If the patient cannot retract the foreskin because of swelling, assume there is a genital ulcer and use the appropriate flowchart.
- In women, examine the skin of the external genitalia and then separate the labia and look at the mucous surface for ulcers.

Inguinal/femoral  
bubo(s) present?

This box asks you to decide whether an inguinal bubo is present:

- If so, move to the decision box below, which asks if an ulcer is present.
- If not, move to the right-hand box, which asks if any other genital disease is present.

Any other genital disease?

This box asks if any other genital disease is present such as vaginal or urethral discharge or lower abdominal pain.

- If so, use the appropriate flowchart.
- If not, educate and counsel the patient, promote condoms and provide them if possible, and offer HIV counselling and testing if both facilities are available.

Ulcer(s) present ?

This box asks you if an ulcer is also present.

- If so, follow the instructions in the action box below it and refer to the genital ulcer flowchart
- If only an inguinal bubo is present, go to the action box to the right.

Treat for lymphogranuloma venereum and chancroid

- If fluctuant aspirate through healthy skin
- Educate on treatment compliance
- Counsel on risk reduction
- Promote and provide condoms
- Manage and treat partners
- Offer HIV counselling and testing if both facilities are available

Advise to return for review in 7 days and continue treatment if improving or refer if worse

This action box states that, if you find an inguinal bubo *but no ulcer*, you should treat the patient for lymphogranuloma venereum and chancroid.

If the bubo is fluctuant, aspirate it through healthy skin. Avoid incision and drainage or excision of nodes because these may delay healing.

As always, it is important to educate the patient on treatment compliance, counsel on risk reduction, promote and provide condoms, discuss partner management and offer HIV counselling and testing if both are available.

Advise the patient to return within seven days, review progress and continue treatment if it is going well.

If the condition seems worse upon the return visit, refer the patient for specialist opinion.

## 7: Neonatal conjunctivitis

Neonatal conjunctivitis (ophthalmia neonatorum) is defined as purulent conjunctivitis occurring in a baby less than one month of age. The most important causes of this potentially sight-threatening condition are *gonorrhoea* and *chlamydia*. If caused by gonorrhoea, blindness often follows.

In developing countries, gonorrhoea accounts for 20–75% and chlamydia for 15–35% of cases of neonatal conjunctivitis. Newborn babies are generally presented because of redness and swelling of the eyelids, discharge from the eye or "sticky eyes".

For babies older than one month, the cause is unlikely to be an STI.

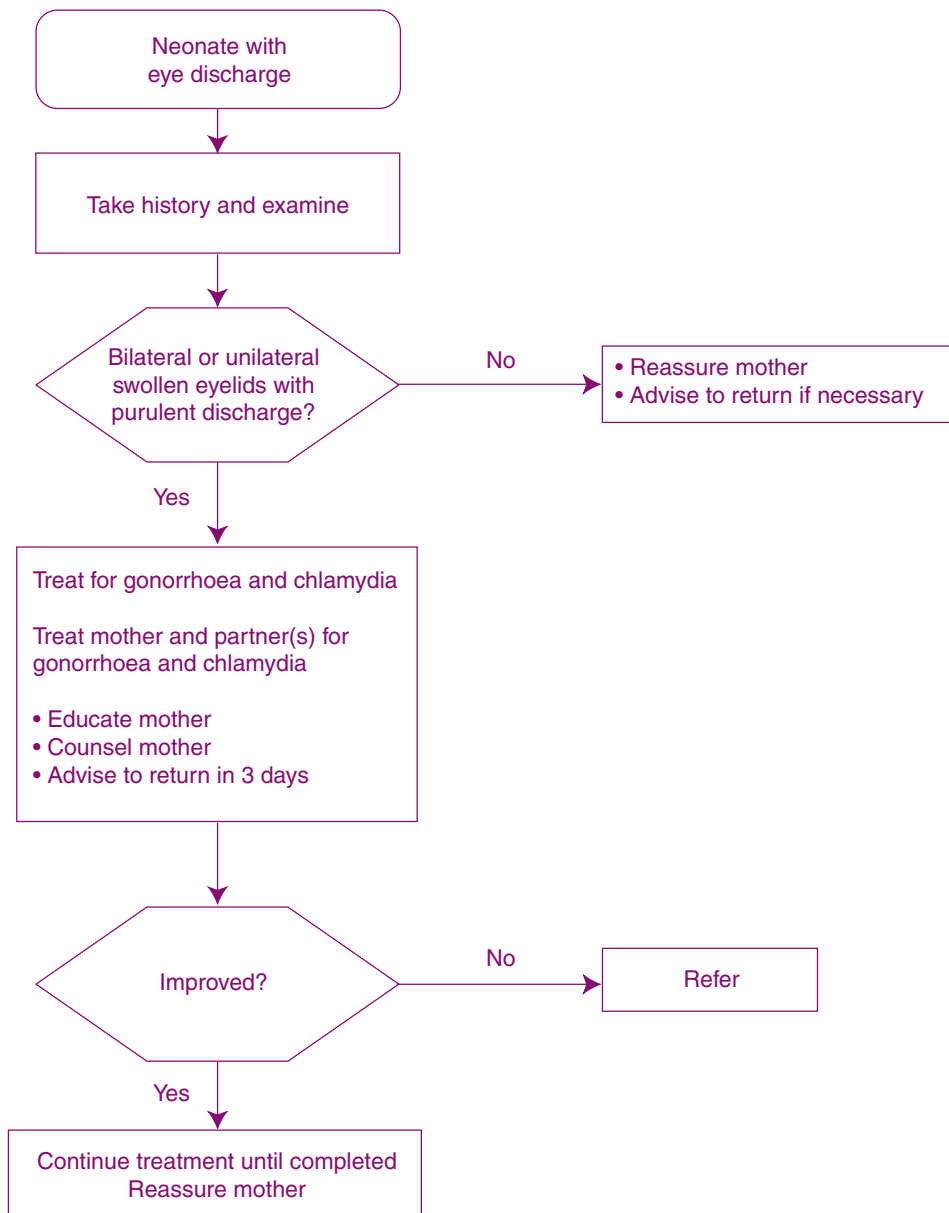
### Prevention of neonatal conjunctivitis

Prompt eye prophylaxis at delivery should prevent gonococcal neonatal conjunctivitis. All new born babies should have preventive therapy carried out as follows:

- As soon as the baby is born, carefully wipe both eyes with dry, clean cotton wool.
- Then apply 1% silver nitrate solution or 1% tetracycline eye ointment into the infant's eyes.
- Remember that the baby's eyes are usually swollen soon after birth and may be difficult to open. Therefore, the eyes should be opened and the eye ointment placed in the lower conjunctival sacs and not on the eyelids.

## Management of neonatal conjunctivitis

If a baby of less than one month has swollen eyes and pus, use the flowchart below.





## Diagnosis and Treatment

Take history and examine

This first action box tells you to take a history from the mother and examine the baby. Ask the mother if she or her sexual partner(s) have any symptoms of STIs. Examine the baby, looking specifically for a purulent conjunctival discharge. The baby's eyes are usually closed, and the eyelids swollen. You will notice that when the eyelids are separated or pressed, pus pours out from beneath them.

Bilateral or unilateral swollen eyelids with purulent discharge?

- If one or both eyes are swollen with a purulent discharge, move to the treatment box below.
- If conjunctivitis is not found, reassure the mother and ask her to return with the baby if symptoms persist.

Treat for gonorrhoea and chlamydia

Treat mother and partner(s) for gonorrhoea and chlamydia

- Educate mother
- Counsel mother
- Advise to return in 3 days

If you have found purulent conjunctivitis, treat the baby and the mother and her partner(s) for both gonorrhoea and chlamydia.

Remember to educate the mother on treatment compliance and the mode of transmission of STIs, the nature of the baby's infection, how to clean the baby's eyes and possible complications of infection. Counsel her on avoiding risk and advise her to return with the baby in three days. This short review date ensures that the baby is responding or that treatment is modified before eye damage occurs.

Improved?

When the mother returns with the baby, examine the baby's eyes once again.

- If the eyes have improved, reassure the mother and advise her to continue with the treatment.
- If the condition has not improved, refer the baby for paediatric or ophthalmic opinion.

## Review

**Remember!**  
The flowcharts in this module are global ones. National flowcharts, if you have them, are based on local prevalence and incidence of STIs and so should be used in preference.

In this module, you have worked through all the guidance you need for the syndromic diagnosis and treatment of STIs.

The module contains a lot of detailed information, so you now need time to digest what you have read, and to begin to apply it.

To help you with this important aspect of your learning, the remaining pages contain questions (with their answers), an action plan and an activity.

The aim of the **questions** is to help you understand and remember specific details in the flowcharts. It is a chance to check your learning and practise applying it in small case-studies.

Please take your time over the questions, and check your answers carefully with ours. Feel free to refer to specific flowcharts and their associated text at any time.

The **action plan** contains some suggestions on how you make the flowcharts as accessible as possible at your place of work.

The activity is to identify effective **drug treatments** for each syndrome if you have not already done so.

Finally, please use the space below to note down any questions or concerns you have about anything in this module, and be sure to discuss them soon with your tutor or colleagues.



### Activity 2

My questions and concerns

## Self-check questions



1. When is a vaginal discharge NOT a problem?
2. For what syndrome may it be useful to assess risk factors?
3. When a patient complains of scrotal swelling, what two specific questions must you ask when taking the patient's history?
4. While examining the patient who complains of scrotal swelling, what six signs should you look for particularly?
5. How does an inguinal bubo differ from an enlarged inguinal lymph node?

6. On the next few pages are some brief case-studies to help you practise using the flowcharts. Please use as many of them as you wish to help you practise diagnosis and treatment. For each case history, you need to decide what flowchart you would use, then read what happens when you take the patient's history and examine him or her. We will then ask you how to treat the patient.

*If you have a list of the treatment therapies recommended, you might like to note what these should be. Then ask your manager or trainer for feedback.*

- a) Mas is an adolescent boy of 15 years who lives in the slum area of a large town. He has been brought to the district hospital because his scrotum is swollen and he is vomiting. What flowchart do you use?

On examination, the scrotum is swollen and painful; the testes elevated and rotated. How do you manage this patient?

- b) Gloria took her four-day-old baby to the clinic when she noticed that his right eye was swollen and there was pus in both eyes (the right eye more than the left). What flowchart do you use?

What treatment do you offer, to whom?

- c) Doris, aged 22, attended the family planning clinic for her usual check-up while on the contraceptive pill. She tells the nurse about a yellow, itchy vaginal discharge that she has had for the past four days. What flowchart do you use?

Doris says she has no abdominal pain or urination pain. She had her period two weeks ago and it was normal. Shyly, she discloses that she had sex with an old school friend a week ago, and that she did not use a condom because she was on the pill. She last had sex with her regular boyfriend a month ago, as he was out of town. For what do you treat Doris?

- d) An 18-year-old dock worker named Mark attends your clinic complaining that he had a discharge yesterday. What flowchart do you use?

On examination, you can find no discharge, even after milking the urethra. However, you do find an ulcer on his penis. What do you do now?

For what do you treat this patient?

- e) 24-year-old Puloka states that she began seeing Hopi, her new partner, three months ago. She is now experiencing a dull persistent abdominal pain, which she thinks has been brought on by her excessive sexual activity with Hopi. What flowchart do you use?

Puloka tells you that her periods are normal and she has never been pregnant. She thought that there might be some increase in what she considers to be normal vaginal discharge. On examination, she has no rebound tenderness or guarding, but clearly feels pain when you palpate the lower abdomen. What treatment do you give to her, using which flowchart?

- f) Richard says he noticed a slight pain in his left groin. Two days later, he noticed that it looked swollen. He has rushed to the clinic after work. What flowchart do you use?

On examination, you find that he has a small sore on his penis. His left groin is tender and swollen. For what do you treat Richard, using which flowchart?

7. Below are four case-studies to give you more practice in diagnosing the cause or causes of vaginal discharge. Please decide whether you need to treat each woman for vaginitis only, or for both vaginitis and cervical infection.
- a) Sara moved in with her present partner four months ago. She is 22 years old. In addition to the discharge, she says her lower abdomen feels tender. Her partner has no symptoms.
  
  - b) Jasmin complains of a slight vaginal discharge. She is 25 years old and has been married for eight years. Her third child was born four months ago, so she's been busy caring for him at home. Apart from this discharge, she feels well and has no other symptoms.
  
  - c) Ami is 17 years old, living in an urban area. She reports a slight discharge but no other symptoms. She has lived with her current boyfriend for nine months.
  
  - d) 34-year-old Sharma complains of a slight yellow discharge. She has not been with anyone since her husband left home six months ago. She has no other symptoms.

The answers to these questions start on page 36

## More case stories

*If you want more practice, please work through these extra case studies. There are no answers, but you should find it quite easy to diagnose the syndrome and the treatment*

### **Palantina**

25-year-old Palantina complains of a watery vaginal discharge. She has had this for two weeks and it is getting worse. She does not know whether her partner has a penile discharge because she has not seen him for two weeks. She has no other symptoms.

### **A newborn baby**

A two-week-old baby is brought into the clinic with an obvious eye infection. One eye appears swollen, the other is swollen and discharging yellow pus.

The mother brings the baby back after the weekend complaining that the eye infection is no better.

### **Jon**

For the last four days Jon, a young businessman, has had pain when he passes urine. You note a slight watery discharge from the tip of his penis. Jon's wife is in their village 150 kilometres away: he has not seen her for three months.

### **Sofi**

Sofi's partner has informed her that he has gonorrhoea. She has no discharge and no fever. She has pain in her left lower abdomen. On palpation, her abdomen is soft, with tenderness on the left side but no guarding. One week later, she returns at your request and is still tender on palpation.

### **Tram**

A young man called Tram comes into the health centre complaining of a painful groin. The testes are swollen and painful, with no history or evidence of trauma or torsion.

### **Mrs Bogatsu**

Mrs Bogatsu complains of a painful vulva. Her husband is her only partner. She appears ill and feverish. On examination, she has many small sores filled with a clear liquid on both labia majora and minora, and no visible ulcer.

### **Ahmed**

Ahmed, 32 years old, attends the centre because of severe pain in the groin. He has had several different sexual partners over the last few months and does not use condoms on a regular basis. There is no visible sore on the penis, but there is a large, swollen node in the right groin.

## Action plan

### Preparing to use STI flowcharts in your health centre

Below we suggest some ways you can practise syndromic diagnosis using the flowcharts. Please adapt them according to what you most need to learn or practise, given your prior experience and learning.

#### ***Check what drugs are available and effective for each condition***

This is an important priority so, if you have not done so already, find out what drugs are available to treat each syndrome. At the back of the module, you will find space to record locally recommended drugs.

Make sure you have easy access to a list of the locally recommended drugs. You might, for example, write them on a piece of paper or card that you could keep on your desk, or use a permanent marker to note them on each flowchart.

#### ***Confirm the risk factors that you will use***

For specific places, the risk factors for vaginal discharge may need to be amended. If you have not already consulted your trainer on this matter, please do so.

#### ***Practise using the flowcharts***

Can you arrange to practise using the flowcharts with colleagues?

- Act out managing different syndromes in pairs, remembering to ask the appropriate questions and include the necessary advice.
- A third person could observe you both, with this module open at the appropriate pages to check that you do not miss out anything.
- If you do not have colleagues to work with, imagine a patient with particular symptoms of STIs, then work through what you would ask and do with the appropriate flowchart open – but the module closed. You could then read through the module to check how you have done.

As soon as you feel confident about using the flowcharts, arrange to practise syndromic diagnosis and treatment at your local health centre.



## Answers

If you are a clinician or have already worked with STIs, you may have found these questions very easy. On the other hand, if all this is new, it will take longer to reach the point where you feel confident about syndromic diagnosis – so do not worry if you found the questions difficult. Remember their purpose is to help you learn.

1. Vaginal discharge is physiological or normal both during and after sexual activity, before, during and after a menstrual period, and during pregnancy and lactation. Remember that most women will not seek medical attention unless they perceive the discharge to be different or unusual in some way.
2. An assessment of specific risk factors may be useful for vaginal discharge. Remember that its purpose is to help you decide whether the discharge is caused by vaginitis alone or by both vaginitis and cervicitis. Risk factors cannot be generalized from one population to another or from one country to another.
3. When interviewing a patient who complains of scrotal swelling, these are the additional two questions that you need to ask.
  - Has the patient sustained any injury to the scrotal region?
  - Has he had an STI in the last six weeks?
4. This was quite a difficult question, so well done if you remembered all six of the signs to look for when examining a patient with scrotal swelling:
  - swelling/pain in the testis when you palpate the scrotal sac;
  - testis elevated or rotated;
  - bruising of the scrotal skin;
  - an obvious urethral discharge;
  - evidence of any other STIs;
  - evidence of an inguinal hernia.

Remember that you can check for inguinal hernia by asking the patient to raise the intra-abdominal pressure.

5. An inguinal bubo differs from an enlarged inguinal lymph node in that it is usually painful, warm, tender to palpation and fluctuant. We also stressed that it can take the form of either one large mass or a collection of smaller swellings, and that occasionally it might rupture, so that you will see a sinus which discharges pus.

6a) **Mas**

The correct flowchart to use for this patient is the one for scrotal swelling.

- The management guidelines state that you should refer Mas immediately. He might have a testicular torsion.

6b) **Gloria's baby**

The correct syndrome and flowchart to use for Gloria's baby is the one for neonatal conjunctivitis.

- You should have noticed that the baby *and the mother and her partner(s)* must be treated for both gonorrhoea and chlamydia.

6c) **Doris**

The correct flowchart to use is the one for vaginal discharge.

- Well done if you wrote that Doris should be treated for both cervicitis and vaginitis. Why? Because she has had sex with more than one person in the last three months, which is one of the global risk factors to take into account. She might also be positive on a second risk factor – sex with a new partner in the last three months. We cannot be sure whether or not the 'old school friend' is a new sexual partner, but this uncertainty in itself is sufficient to treat Doris for both causes.

6d) **Mark**

You are quite right to select the flowchart for urethral discharge at first, because this is the symptom of which the patient complains.

- Given the result of your examination, the flowchart directs you to look for other signs of genital disease.
- Examination has already confirmed that the patient has an ulcer, so you must use the flowchart for genital ulcers and treat him for both syphilis and chancroid (and herpes, depending on local policy).
- It may be argued that Mark should receive treatment for gonorrhoea and chlamydia as well. At any rate, he must be reviewed or asked to return if the symptom of urethral discharge recurs.

### 6e) Puloka

The correct flowchart to use is the one for lower abdominal pain.

- Upon examination, the pain in Puloka's lower abdomen suggests that she has pelvic inflammatory disease. She should be treated for gonorrhoea, chlamydia *and* anaerobic bacterial infections.
- Please remember that pain during examination is not the only decisive sign. Either an observed vaginal discharge or a temperature of 38°C, in addition to her given symptom of lower abdominal pain, would have been sufficient to lead to a diagnosis of PID.

### 6f) Richard

The correct initial flowchart for Richard's symptom is the one for inguinal bubo.

- Upon examination you confirm that Richard's groin is both swollen and tender. This is a sign of inguinal bubo. However the patient has an ulcer, so the flowchart and text state that you must look for other signs of genital disease and, in this case, use the flowchart for genital ulcers.
- The treatment to offer Richard is for syphilis, chancroid and HSV-2, depending on local policy. If the swelling shows signs of fluid retention, you also need to aspirate the bubo.

7. Deciding whether a woman who complains of vaginal discharge should be treated for only vaginal infections or both vaginal infections and cervical infections depends on a number of factors. High prevalence of gonorrhoea and chlamydia and a positive risk assessment are two such deciding factors. If you have been given local risk factors, please check your answers with your tutor or supervisor. Our answers are based on the risk factors noted in this module.
- a) Sara says that she has pain in the lower abdomen. If this is confirmed on examination and pregnancy is excluded, she should be treated for both cervical and vaginal infections, as per the lower abdominal pain flowchart.
  - b) Jasmin's case is more difficult. The discharge is slight and may not be abnormal in a woman who is still breastfeeding. The nature of the discharge needs to be verified by examination. If abnormal, she should be treated for vaginal infections only. However, more information regarding her partner may be relevant before making a final decision about treatment.

- c) Ami's case is even more complicated than Jasmin's. She is an unmarried adolescent. These two factors, namely age below 21 years and 'single', have been identified in certain settings as positive risk factors for cervical infection. This tends to classify most single adolescents with a vaginal discharge as having a sexually transmitted infection. Obviously, there is need to 'tailor' risk factors to respond to the needs of adolescents. You need to take a detailed history of her sexual behaviour and that of her boyfriend. Screening strategies with simple laboratory tests may be needed for such circumstances.
- d) Sharma is the only person we can confidently treat for vaginitis alone, because none of the risk factors or questions apply in her case.

## Drug treatments

### Urethral discharge

Gonococcal urethritis  
*plus*

Treatment: \_\_\_\_\_  
\_\_\_\_\_

Chlamydial urethritis

Treatment: \_\_\_\_\_  
\_\_\_\_\_

### Genital ulcers

Syphilis  
*plus*

Treatment: \_\_\_\_\_  
\_\_\_\_\_

Chancroid  
*plus*

Treatment: \_\_\_\_\_  
\_\_\_\_\_

Herpes genitalis

Treatment \_\_\_\_\_  
\_\_\_\_\_

### Vaginal discharge

#### ***Risk assessment negative***

Bacterial vaginosis  
*plus*

Treatment: \_\_\_\_\_  
\_\_\_\_\_

Trichomonas vaginalis  
*plus, where indicated*

Treatment: \_\_\_\_\_  
\_\_\_\_\_

Vaginal candidiasis

Treatment: \_\_\_\_\_  
\_\_\_\_\_

#### ***Risk assessment positive***

Treat for vaginitis as above,  
*plus*

#### **Treat for cervical infections:**

Gonorrhoea  
*plus*

Treatment: \_\_\_\_\_  
\_\_\_\_\_

Chlamydia

Treatment: \_\_\_\_\_  
\_\_\_\_\_

**Lower abdominal pain**

Gonorrhoea Treatment: \_\_\_\_\_

*plus* \_\_\_\_\_

Chlamydia Treatment: \_\_\_\_\_

*plus* \_\_\_\_\_

Anaerobic bacterial infection Treatment: \_\_\_\_\_

\_\_\_\_\_

**Scrotal swelling**

Gonococcal urethritis Treatment: \_\_\_\_\_

*plus* \_\_\_\_\_

Chlamydial urethritis Treatment: \_\_\_\_\_

\_\_\_\_\_

**Inguinal bubo**

Lymphogranuloma venereum Treatment: \_\_\_\_\_

*plus* \_\_\_\_\_

Chancroid Treatment: \_\_\_\_\_

\_\_\_\_\_

**Neonatal conjunctivitis**

**Treat baby:**

Gonococcal ophthalmia Treatment: \_\_\_\_\_

*plus* \_\_\_\_\_

Chlamydial ophthalmia Treatment: \_\_\_\_\_

\_\_\_\_\_

**Treat mother and partner(s):**

Gonorrhoea Treatment: \_\_\_\_\_

*plus* \_\_\_\_\_

Chlamydia Treatment: \_\_\_\_\_

\_\_\_\_\_

## Glossary

Action box	The box on a flowchart that tells you to do something, for example, take history, treat or educate
AIDS	Acquired immunodeficiency syndrome caused by the human immunodeficiency virus (HIV)
Anaerobic bacteria	Bacteria that grow without air or need an oxygen-free environment to live, usually <i>Bacteriodes</i> species, one of the causes of <b>PID</b>
Aspirate	Draw fluid away by suction, e.g. draw pus out of an <b>inguinal bubo</b>
Cervicitis	Inflammation of the <b>cervix</b> , usually caused by <b>gonorrhoea</b> or <b>chlamydia</b>
Cervix	Lower part of the uterus that protrudes into the vagina, often called the neck of the uterus/womb
Complications	Secondary diseases or conditions that can arise if the primary disease is not treated
Decision box	The box on a flowchart that asks you to obtain information and make a decision
Dysuria	Painful or difficult urination
Ectopic pregnancy	A potentially fatal condition caused by a pregnancy that occurs outside the uterus (usually in the <b>fallopian tubes</b> )
Endometritis	Inflammation of the endometrium (lining of the uterus)
Fibrous scarring	Scarring that looks like fibres or is thread-like
Fluctuant/fluctuation	Movement of fluid such as pus within a bubo or abscess
Gonococcal	Caused by gonorrhoea, as in gonococcal urethritis
Guarding	During examination of women for the syndrome of <b>lower abdominal pain</b> you may find that the abdominal muscles may be so irritated that the patient does not allow you to apply pressure – this is known as guarding. It is usually a sign of <b>peritonitis</b> or an <b>intra-abdominal abscess</b>

Inguinal hernia	A ruptured muscle wall in the groin through which internal organs may be partly displaced
Lactation	Another term for breastfeeding
Mass	Lump of tissue
Mucous membrane	Mucous-secreting tissue lining many body cavities and tubular organs
Ophthalmia neonatorum	Conjunctivitis occurring in a baby less than one month old, usually due to gonorrhoea or chlamydial infection
Ophthalmic	Concerning the physiological functions and diseases of the eyes
Ovum/ova	Egg or eggs (ova is plural)
Paediatric	Concerning the physiological functions and diseases of children
Palpate/palpation	To examine or feel with the hand
Peritoneum	Lining of the abdominal cavity
Peritonitis	Inflammation of the <b>peritoneum</b>
Physiological	Healthy, normal functioning of a living organ or organism
Purulent	Discharging pus
Rebound tenderness	This is one of the signs of <b>peritonitis</b> or an <b>intra-abdominal abscess</b> which you would look for during an examination for the syndrome <b>lower abdominal pain</b> . The patient will feel severe pain when you press down slowly and gently on a tender area and then suddenly release the pressure. Along with <b>guarding</b> it is usually a sign of potentially serious condition(s)
Salpingitis	Inflammation of the <b>fallopian tubes</b>
Sign(s)	Indication of the existence of disease or any objective evidence of a disease as is perceptible to the examining health care provider
Sinus	An abnormal channel or fistula permitting escape of pus or fluids



Spermatozoa	Mature motile sperm cells
Syndrome	A set of symptoms and signs giving rise to a consistently recognizable disease entity, e.g. the syndrome of urethral discharge
Tubal pregnancy	A potentially fatal pregnancy that occurs in the fallopian tubes
Tubo-ovarian abscess	A potentially serious abscess in the fallopian tubes or ovaries
Unilateral	Affecting only one side (e.g. the eye in conjunctivitis)
Urological	Of the urinary system
Urethra	The duct through which urine is discharged from the bladder
Vaginitis	Inflammation of the vagina
Vesicular lesions	Small blisters which, when occurring on the genitals, are usually indicative of <b>herpes</b> infection

## Abbreviations

GUD	genital ulcer disease
HSV-2	herpes simplex virus type 2
LGV	lymphogranuloma venereum
PID	pelvic inflammatory disease
RPR	rapid plasma reagin
RTI	reproductive tract infection
STI	sexually transmitted infection
TV	trichomonas vaginalis
WHO	World Health Organization