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SIMPLIFIED APPROACHES FOR SEXUALLY TRANSMITTED DISEASE (STD) CONTROL AT THE PRIMARY HEALTH CARE (PHC) LEVEL

Report of a WHO Working Group
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Simplified Approaches for Sexually Transmitted Disease (STD) Control at the Primary Health Care (PHC) Level

Report of a WHO Working Group

A Working Group on Simplified Approaches for Sexually Transmitted Disease (STD) Control at the Primary Health Care (PHC) Level met in Geneva from 24 to 28 September 1984. Dr G.Y. Causse, Chief Medical Officer, Bacterial and Venereal Infections, Division of Communicable Diseases, WHO, opened the meeting.

1. INTRODUCTION

A major objective of any national STD control programme is the prevention of the devastating consequences of sexually transmitted diseases. Serious complications of STD, such as pelvic inflammatory disease leading to ectopic pregnancy and infertility; urethral stricture; congenital syphilis, and ophthalmia neonatorum, arise particularly in situations where infected individuals are not identified and/or are treated inappropriately in the course of their disease. This underlines the need to increase the competence of health services close to the community to deal more effectively with the STD problem.

Within this context and the objectives of the strategy of "Health for All by the Year 2000", WHO has given priority to the development of methods and technologies to enable health care units with minimal or no laboratory diagnostic support to provide effective treatment to STD cases and their contacts. In such a "simplified STD control approach" simple patient management instructions in the form of flow charts will be provided to physicians, practitioners and other community health workers to guide them in the appropriate management of patients with suspected sexually transmitted diseases and their sex partners.

In order to bring about a significant reduction in disease transmission and the development of sequelae, these clinical activities will have to be supplemented by other STD control strategies (e.g., screening for asymptomatic cases, promotion of changes in health and illness behaviour, etc.) and should receive the support of the community.

The purposes of this document are:

1) to outline general principles for STD control at the PHC level, and
2) to offer guidance in the design, implementation and evaluation of patient management protocols covering a wide range of STD-associated syndromes.

As such, this document is directed to professionals responsible for improving STD control in a defined geographic area.

The Group realizes that the increasing complexity of the STD field and the continuing changes in our understanding of the microbiology, epidemiology, diagnosis and management of STDs pose a formidable challenge and defy efforts for designing all-inclusive approaches and procedures applicable to all settings. However, with proper adaptation, this document will prove useful to clinicians and health administrators charged with the integration of STD control activities into the existing PHC structure.

For its discussions, the Group reviewed the topics covered in WHO Technical Report Series Nos. 616, 660, and 674 (see Annex 6), and was assisted by WHO staff with expertise in laboratory technology and health manpower development at the PHC level.

Finally, various WHO meetings (1-5) had recently addressed in detail some of these issues. Relevant conclusions and recommendations of those Groups have been freely quoted, used and adapted, to fit into the present document.

1.1 Some current obstacles to STD control at PHC level

Many developing countries facing health problems which result in high mortality and morbidity have very limited resources in trained manpower, laboratory facilities and funds to solve them. Frequently, health centres have to satisfy the needs and demands of 80 to 90% of the population living in rural and peri-urban areas. Under the best conditions, the health centres (or their equivalent) are staffed with medical and/or auxiliary workers and act as the first referral services for primary care within the community. These facilities are expected to deliver integrated community health care including curative and preventive services. Generally, approximately 10% or more of their daily work load is related to sexually transmitted diseases or their complications. However, diagnostic facilities in the health services are often either very limited (microscope only) or non-existent. Furthermore, even in places with access to better laboratory facilities, the delays in reporting of test results and the limitations inherent in the techniques used for STD detection may hinder timely treatment of infectious cases. Long patient waiting time, scarcity of drugs, and poor service are often encountered in the clinics.

As a result, a varying but usually large proportion of STD patients resort to self-treatment or are managed by traditional healers, drug vendors, pharmacists, and other self-styled practitioners outside the official STD and public health services. Those patients who can bear the expense, seek care from private physicians who, in general, seldom provide partner management, and rarely report STD cases or follow official STD treatment guidelines.

In some countries where prostitution is believed to be a significant factor in the transmission of these diseases, "control programmes" tend to devote their resources almost exclusively to providing some sort of preventive STD diagnosis and treatment to these women. Unfortunately, these programmes often are of poor technical quality, reach only a small proportion (probably less than 20%) of the total prostitute population and in general have failed to produce a demonstrable impact on STD morbidity in the community. In addition, prostitute control programmes often interfere with the introduction of other STD control measures. Health policy makers are frequently satisfied that by implementing "prostitute control" enough is being done and additional resources need not be devoted to STD problems in the community.

Antimicrobial resistance of STD organisms has become a major problem in most developing areas and has rendered some of the low cost drug regimens useless.

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1) "Current Treatments in the Control of Sexually Transmitted Diseases." Report of a WHO Consultative Group (16-19 Nov. 1982). Unpublished WHO document WHO/VDT/83.433.

2) "Control of Sexually Transmitted Diseases." (WHO, Geneva 1985).

3) "Prevention and Treatment of Conjunctivitis in the Newborn at the Primary Level." Report of a meeting (29 Nov-2 Dec, 1983). Unpublished WHO document PBL/84.4.

4) "Prevention of Infertility at the Primary Health Care Level." Report of a WHO meeting (12-16 December, 1983). Unpublished WHO document MCH/84.4.

5) WHO Expert Committee on Venereal Diseases and Treponematoses, Geneva, 1-7 November 1983, in press.

Adoption of drug regimens or health policies found appropriate elsewhere has lead to serious consequences in some settings (e.g., inadequate treatment of PPNG infections, or increased frequency of gonococcal ophthalmia neonatorum following abandonment of silver nitrate prophylaxis).

For all the above reasons, it is important that those patients already seeking care for an STD-related problem, as well as their sexual contacts be identified, properly managed, and be referred, if necessary, to the next higher level.

The Group believes that the design, implementation, and evaluation of patient management protocols will not only contribute to these ends but will have additional value as a means of assessing and improving other STD control components and activities.

Although most of this discussion relates to conditions present in developing countries, it is by no means restricted by geography. For small segments of the population in industrialized nations (migrant workers, minorities, etc.) some of the problems discussed above are relevant. Similarly, a medical practitioner seeing a patient with STD in an industrialized country may face the same clinical judgement dilemma and lack of immediate laboratory resources confronting a health worker in a peri-urban setting in Asia, Africa or Latin America.

2. GENERAL PRINCIPLES FOR STD CONTROL AT THE PHC LEVEL

The main aims of STD control are:

a) to interrupt the transmission of disease, and
b) to prevent the development of complications and their consequences.

This is accomplished by:

a) Reducing disease exposure by educating individuals at risk to avoid sexual intercourse with persons who have a high probability of being infected.
b) Preventing infection by promoting the use of condoms or other prophylactic barriers.
c) Detecting and curing disease by implementing disease detection activities, providing effective and efficient diagnostic and treatment facilities, and promoting health-seeking behaviour.
d) Limiting complications of infection by providing early and appropriate treatment for both symptomatic and asymptomatic infected patients and their contacts; and
e) Limiting disease transmission within the community with the above efforts

2.1 Strategies for STD control

These efforts are translated into the following main STD control strategies:

2.1.1 Disease detection

This strategy is accomplished by applying the following three tools:

a) screening: Ascertainment of probability of disease in populations or individuals not directly seeking health care; e.g., serological screening for syphilis (VDRL) in selected groups in the community.
b) case finding: Use of clinical and/or laboratory tests to detect an infection in individuals seeking health care for other reason; e.g., VDRL to detect syphilis in patients admitted to hospitals; and
c) diagnosis: Application of clinical and laboratory procedures to detect the cause of specific disease in individuals presumed ill; e.g., VDRL in an individual with lesions suggesting secondary syphilis.

2.1.2 Treatment

Treatment is the application of drugs, surgical procedures and other interventions to cure or ameliorate the patient's health problem. STD treatment usually refers to the application of antimicrobial regimens. The selection of an appropriate drug is determined by:

a) efficacy: Ability to cure the disease. When coexisting infections are common, preference is given to drug regimens which can cure more than one of the STD infections likely to be present.
b) acceptability: Lack of toxicity or side effects and ease of patient compliance.
c) convenience: For the health worker administering the drug and the patient receiving it, and
d) cost and availability of the drug.

2.1.3 Health education

This strategy consists of

a) activities which increase individual and community awareness and knowledge of STD, and
b) efforts which produce positive changes in their attitudes and health and illness behaviours in STD and their prevention.

In patients attending health services, patient counselling is one of the mainstays of proper management and aims to increase a patient's compliance with the clinician's advice and instructions on treatment, avoidance of re-exposure, and active collaboration with sexual partner referral.

2.1.4 Management of sexual contacts

This activity may be a direct result of patient counselling which may include motivating the patient to assume an active role in bringing contacts for evaluation and treatment or it may be implemented as an active search for STD contacts by health personnel. The appropriate management of STD patients must include the application of full treatment regimens to all known contacts; particularly the regular sex partner (husband/wife), in addition to the source of infection and those contacts at high risk of having been infected.

*) "epidemiological" treatment.

2.2 Clinical services

The clinical services are usually provided at a clinic, hospital, private office, health post, drugstore, or any other facility ensuring some privacy for the patient-clinician* encounter. It is within this context that most of the strategies outlined above are implemented. Thus the clinician tries to provide adequate management by:

a) detecting or ruling out disease;
b) giving treatment, if necessary;
c) counselling the patient regarding disease prevention;
d) advising the patient on treatment compliance, and
e) ensuring that the patient's contact(s) are evaluated and treated.

* In this document the term "clinician" will be used to designate any person actually diagnosing and treating patients (i.e., health worker, pharmacist, midwife, etc.) and not only physicians.

The clinician must realize that treatment of a case is only a part of proper STD management and control. The identification and treatment of sexual contacts, which are often asymptomatic, are important in limiting disease transmission in the community, and in preventing reinfection and the development of complications.

2.3 Support components (see 5.)

In order to provide proper STD management, it is necessary to have support services:

2.3.1 Professional and technical training, to ensure that health personnel have the necessary knowledge/skills and the proper attitude and behaviour to work in STD control.

2.3.2 Laboratory services - Laboratory support is a highly desirable objective for improving both patient management and the quality of epidemiological data. Unfortunately, these services are seldom available at the peripheral level.

2.3.3 Information systems - Information systems consist of the information flow between the peripheral, intermediate and central levels and permit epidemiological surveillance and the planning and evaluation of control activities. Adequate information systems should include data gathering, collation, analysis and feedback.

2.4 Administration

An administrative system is necessary to support and supervise STD control activities and strategies. A person or a cadre of persons with managerial and policy-making abilities should be part of the STD control programme. These administrators need not be STD specialists or even health workers and often will have responsibilities which extend beyond STD control and include other PHC services (e.g., immunizations, oral care, family planning). Some designated person must be administratively responsible for:

a) planning, directing and organizing activities;
b) procuring and administering resources, including drugs and other supplies; and
c) evaluating the results of STD control activities.

2.5 Technical-scientific authority

Each country and/or region usually has individuals with knowledge and skills necessary to establish a viable STD control programme. Unfortunately, this national or regional expertise is often not recognized or used sufficiently by health authorities. Whenever possible, these experts should be organized as a group representing the various disciplines (i.e., microbiology, laboratory science, epidemiology, behavioural science, clinical medicine, health administration, etc.) and institutions (i.e., academic and professional organizations, Social Security Institutes, Army, Labour or private organizations, etc.) necessary for STD control. In some countries, the formation of such a group of experts, aided by community leaders and other "movers" from public and private organizations, has resulted in the creation or improvement of a national "STD centre of excellence" which then becomes the technical-scientific and policy-making focus for STD control. This centre has the ability to:

a) provide professional and technical training;
b) act as a reference laboratory;
c) conduct operational research activities (especially the very necessary evaluation of appropriate diagnostic tests and treatments);
d) conduct epidemiological surveillance activities; and
e) guide supervision, evaluation and policy-making activities.

2.6 Integration of STD control at the PHC level

Categorical STD control programmes and special STD clinics are expensive and effective but they reach only small segments of the population. Scarcity of categorical resources and predicted worldwide increases in the sexually active population at risk provide a fertile ground for STD dissemination; therefore, the deteriorating public health problems posed by sexually transmitted diseases will have to be addressed within the framework of the existing PHC services. The strategies and components for STD control outlined above need not be implemented as a "special" or categorical programme. However, the Group felt very strongly that a categorical technical-scientific and supervisory focus should be maintained at the central level in all countries. Inserting an STD control element into the activities of the PHC service is a difficult but worthwhile task that will permit:

a) broadening the basis of STD control activities, and
b) increasing the contribution of the primary health care level to STD prevention and control.

The first consideration for integration is the recognition that the problem can be managed by non-specialists, if "categorical" multi-disciplinary expertise on STD control is available to provide technical and scientific support to programme activities. The second consideration is that this expertise should be translated into practical and useful guidelines for simplified approaches for STD control at the primary health care level, such as patient and contact management protocols.

3. GENERAL PRINCIPLES FOR THE DESIGN OF STD MANAGEMENT PROTOCOLS

The management protocol is a flowchart outlining the actions that the clinician should undertake to manage a patient's problem according to the epidemiological, clinical, and therapeutic information available.

3.1 Initial steps

Whenever possible, the person responsible for primary health care or STD control should seek the assistance of two or more interested and capable professionals with knowledge of STD including their clinical management to integrate a working group, to provide technical information, and to help design and write the protocol(s).

3.2 Problem identification

The STD health problem(s) selected should have medical and public health importance in terms of frequency of presentation, burden to health services, seriousness of consequences (if undetected and untreated in time), and vulnerability to control (i.e., it should be amenable to successful medical intervention). The presenting symptoms and signs (clinical syndrome) of the STD problem should be identifiable by paramedical personnel without extensive clinical training and with minimal or no laboratory support.

3.3 Assessment of health care practices and policies in the community

It may be helpful to obtain data on current treatment, as well as local preferences for ensuring patient compliance by asking practitioners how the genitourinary problem selected is being managed locally. The characteristics of the community and health system that may influence (negatively or positively) protocol implementation should be considered at this stage (e.g., acceptance of nonmedical personnel, utilization of local clinics, ability to pay for medical services or supplies, etc.).

3.4 Definition of intended users of the protocols

It is also important to establish who will be the user of the protocols since the amount of information and the complexity of the protocols may vary accordingly (e.g., between a general practitioner with access to laboratory tests in an urban setting and a rural village worker in a remote community). Some countries may even want to make the protocols available to de facto "STD healers" (e.g., drug vendors). This is not a government endorsement of their activities but a realistic recognition of the fact that they provide most STD care in a community, often inadequately.

3.5 Technical information on etiology, diagnosis and treatment

The working group should make the best possible educated guesses when no information can be obtained or very little is known about the etiologies of common syndromes in a certain geographic area. Ideally and as part of the design of the protocol(s), the working group should review relevant information on STD morbidity when available (medical literature, statistical data, hospital and outpatient records, etc.). In some instances it will be necessary or desirable to conduct limited clinical microbiological studies to further define the etiologies producing a certain syndrome as well as the response of these organisms to various treatment regimens. When pertinent, the group should also collect and review information on laboratory tests for diagnosis (sensitivity, specificity, cost, etc.) and treatment (efficacy, cost, convenience, acceptability, availability, antimicrobial resistance, etc.). Ad hoc operational research studies on test evaluation and clinical trials (controlled and uncontrolled) may sometimes be needed. Information from neighbouring countries and adjacent areas may occasionally prove useful.

3.6 Protocol design

Before developing a protocol, a clear statement of the signs and symptoms which constitute the syndrome under consideration ("case definition") should be made for operational purposes (e.g. the clinical syndrome "urethritis" may be defined as urethral discharge with or without dysuria and frequency). To be useful, a protocol should be:

a) sensitive, i.e. correctly identify patients with a particular STD problem;
b) specific, i.e. identify those patients requiring other forms of management or having other conditions;
c) feasible, i.e. be prone to implementation based on manpower and resources;
d) practical, i.e. follow the logic actions and procedures of the clinician who will implement it;
e) cost-effective, i.e. obtain intended results at acceptable cost;
f) relevant, i.e. appropriate to the health problems, the setting, the patient and the practitioner; and
g) adaptable, i.e. amenable to changes in setting and time. Ideally, patient management protocols should be different for each level of competence and designed in such a way that they are also helpful and acceptable to private clinicians.

3.7 Testing of the protocol

Once the protocol is designed, it is highly desirable to test and evaluate its performance in a small demonstration or pilot project before extending its implementation to all PHC services. Many times, changes in design and corrections in recommended treatment regimens will be done at this stage. It is important to remember that the local disease patterns and resources may vary widely and sometimes will require different area-specific management protocols within the same country. In other cases, similarities between countries may permit the design and implementation of protocols which are equally effective over a wide area.

4. STD MANAGEMENT PROTOCOLS AT THE PHC LEVEL

The following section deals with some of the more common and easily distinguishable STD-associated clinical syndromes seen at the PHC level and gives examples of protocols for adaptation to the local circumstances. The health problems addressed are:

Urethral discharge (4.1)
Vaginal discharge (4.2)
Pelvic inflammatory disease (4.3)
Genital ulcer (4.4)
Bubo (4.5)
Balanitis (4.6)
Ophthalmia neonatorum (conjunctivitis of the newborn) (4.7)
Swollen scrotum (4.8)
Suspected STD (4.9).

These syndromes can be further refined by the use of simple microscopic tests (Annex 4) which could also allow the application of more specific and less costly treatment sequences.

4.1 Urethral Discharge

4.1.1 Definition.

Presence of secretion in the anterior urethra, sometimes accompanied by dysuria or urethral discomfort.

4.1.2 Background information

Importance. Urethral discharge is the most common presenting complaint of STD in male patients. Untreated urethritis may lead to complications, such as epididymitis, male infertility and urethral stricture.

Etiology. In males with history of sexual exposure, urethral discharge is usually produced by Neisseria gonorrhoeae, Chlamydia trachomatis, Ureaplasma urealyticum, and rarely, by other STD agents (e.g. T. vaginalis). For practical purposes STD-related urethritis is subdivided into gonococcal urethritis, produced by N. gonorrhoeae and nongonococcal urethritis (NGU), which is usually caused by C. trachomatis or U. urealyticum. Non-infectious traumatic urethritis caused by excessive manipulation of the penis may be seen in some patients.

In primary health care settings in developing countries, the vast majority of urethritis is caused by gonococci; some of these patients also have a concomitant infection by C. trachomatis. Nongonococcal urethritis is the form found most frequently in industrialized countries and in pretreated urethritis patients in developing countries. C. trachomatis can be isolated in approximately 50% of males with nongonococcal urethritis and in up to 1/3 of patients with concomitant gonococcal infections. Chlamydial infection is therefore the most common cause of urethral discharge in those settings.

Treatment. The choice of an appropriate regimen is crucial (see Annex 3). In countries where gonococci are still sensitive to tetracyclines and erythromycin, the NGU treatment schedules for chlamydial infections are effective in also curing gonorrhoea.

Owing to varying resistance patterns, the choice of an appropriate treatment for gonorrhoea may be difficult. National or local health authorities need to consider the following before recommending any therapeutic regimen:.

- prevalence of beta-lactamase producing gonococci in the area and the level of chromosomal sensitivity to penicillin and other antimicrobials.

- recommendations by WHO scientific groups and other institutions. Recommendations from neighbouring countries or regions should also be considered.
- results of local clinical trials with recommended schedules.

Recommendations for the treatment of uncomplicated urogenital gonococcal infections are given in Annex 3. In general, a single dose regimen is preferred at PHC level.

4.1.3 Subjective complaints

Most patients complain of "pus dripping from penis", and/or "burning or pain on urination".

4.1.4 Objective findings

Physical examination. In uncircumcised males it is important to check that the secretion is coming from the urethral meatus and not from the glans (e.g. in balanitis (4.6), genital ulcer (4.4), or phimosis). The discharge may range from "abundant and purulent" to "scarce and mucoid". It may be necessary to "milk" the urethra in order to see the discharge.

Laboratory tests. Microscopic examination of a smear of urethral discharge stained with methylene blue (MB) or Gram stain (Annex 4) can be used immediately to detect gonococcal urethritis (characteristic intracellular diplococci) or NGU (pus cells without intracellular diplococci). If properly performed, the sensitivity and specificity of the Gram or MB stain are above 95% for gonococcal urethritis. Patients with concomitant gonococcal and chlamydial infections will not be identified by this method.

In some PHC settings, cultures for isolation of N. gonorrhoeae are available but the result of this test will not be known for two or more days and is, therefore, not helpful in guiding the initial management decision. Cultures are, however, important when isolation of the gonococcus is required (e.g. screening for beta-lactamase production, or antimicrobial susceptibility at a reference laboratory).

Cultures for C. trachomatis, U. urealyticum, and other STD agents are usually not available at the PHC level, but, when available, will not aid in the initial decision to treat the patient.

Newer non-culture tests for C trachomatis (e.g. ELISA, monoclonal antibody) and for N. gonorrhoeae (e.g. ELISA, transformation test) are being evaluated. These technologies are still expensive and insufficiently tested for widespread application.

4.1.5 Noteworthy information

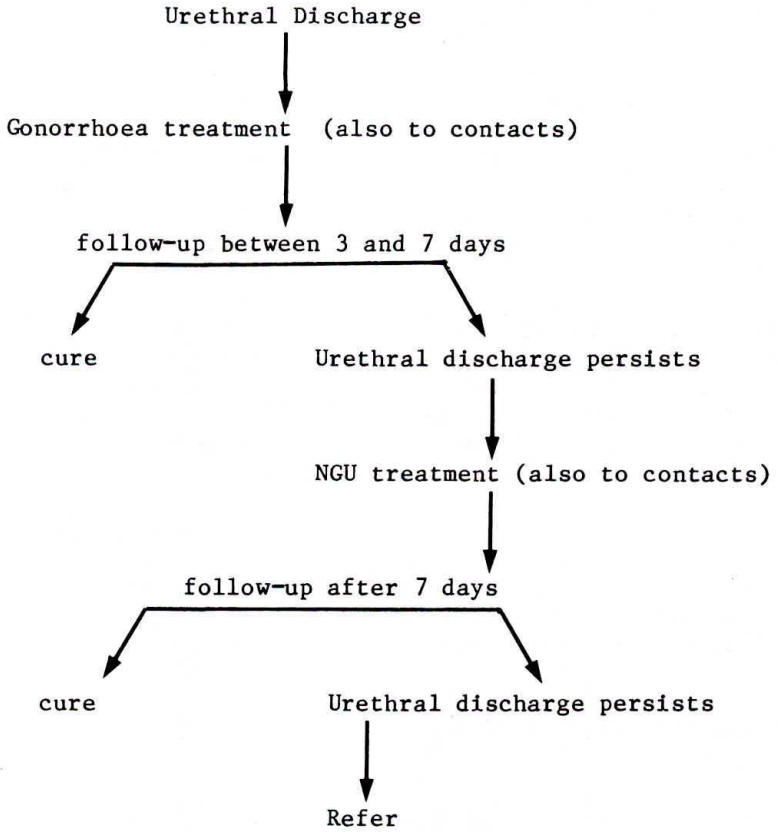
Gonococcal urethritis tends to produce more severe symptoms and has a shorter incubation period (2-3 days) than NGU (around one week). Consequently, some clinicians in high gonococcal prevalence areas rely on the characteristics of the urethral discharge to differentiate between gonorrhoea (abundant, purulent secretion) and NGU (scanty secretion, usually mucoid or serous). However, these physical signs are not sufficiently discriminatory to predict the etiology of the urethral discharge in a given patient. The clinician must be aware of the possibility of concomitant (gonococcal and chlamydial) infection in the patient, and of the presence of resistant gonococcal strains (e.g. PPNG) in the community.

4.1.6 Management plan

Sexual contacts should be treated with full treatment regimens, the same as the patient. In a male with urethral discharge in the absence of laboratory support, PROTOCOL 1A or 1B should be used. If microscopy is available to examine a stained smear of the urethral discharge, the management protocol can be made more specific (PROTOCOL 2).

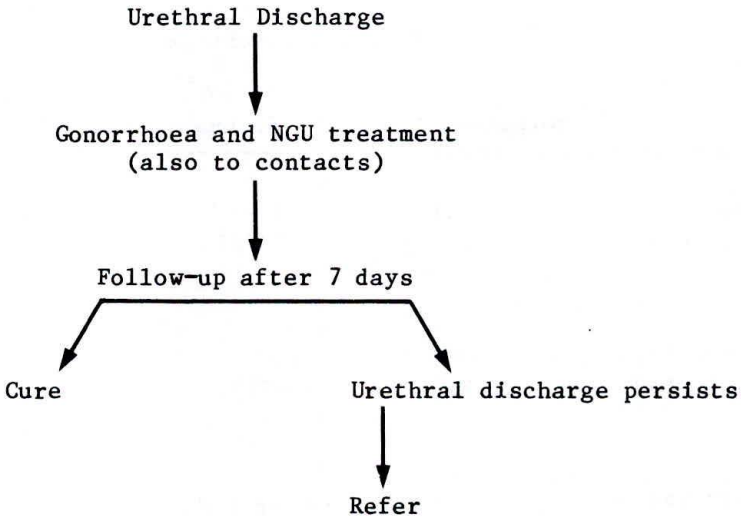
PROTOCOL 1 (Urethral Discharge)

A. In settings in which urethral discharge is mainly due to gonococcal infection (e.g. above 80%)



If a urethral discharge is seen on clinical examination, the standard gonorrhoea regimen is administered. The patient is instructed to return between 3 and 7 days after the gonorrhoea treatment if he still has symptoms. If upon return a urethral discharge can be verified, the standard NGU (chlamydia) regimen is administered. If the urethral discharge still persists 7 days after completion of treatment, the patient should be referred to a higher level.

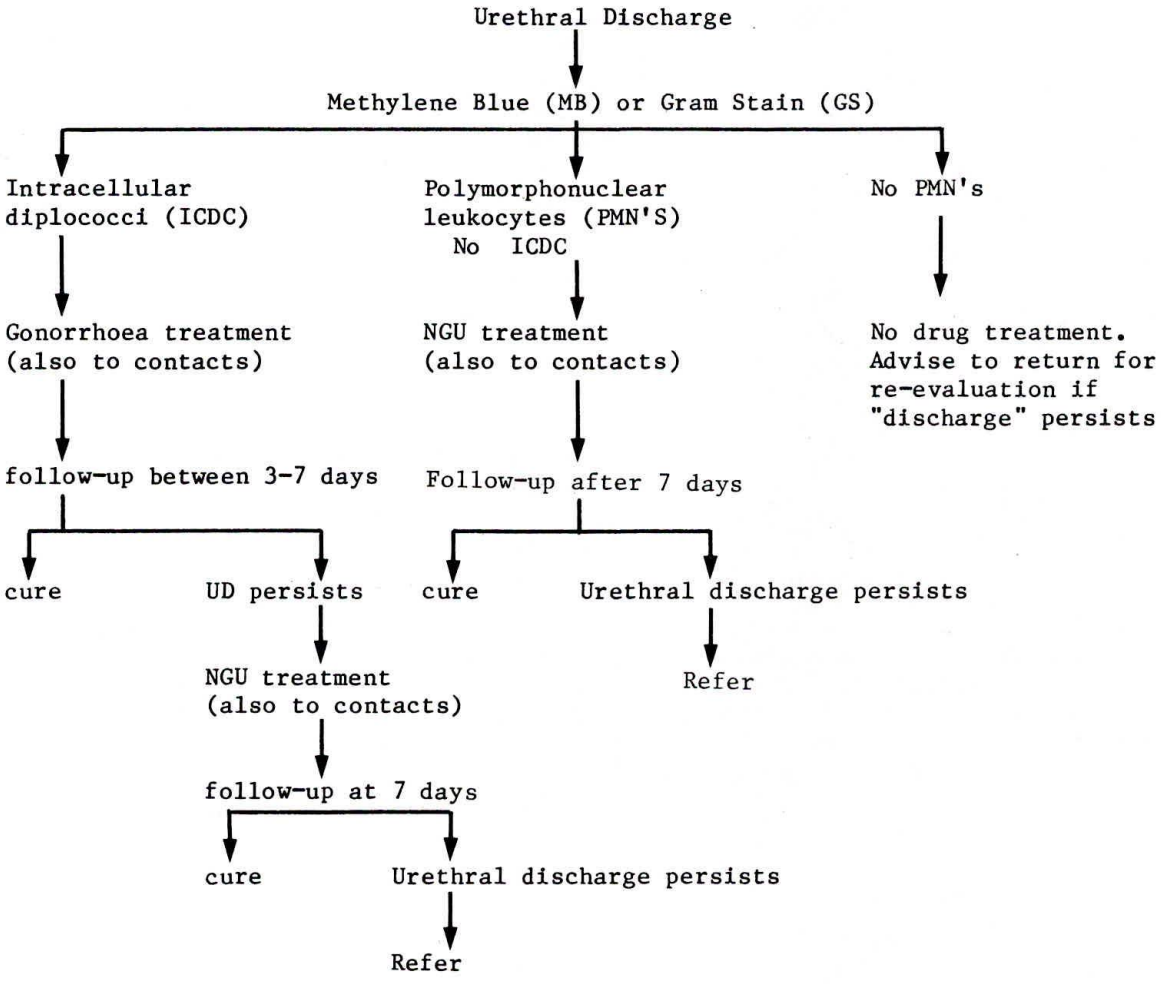
B. In settings in which urethral discharge is due to gonococcal infection in less than 80%.



If a urethral discharge is seen on clinical examination, both the standard gonorrhoea plus the standard NGU regimen are administered. (In areas where tetracyclines or erythromycin are appropriate for treatment of gonorrhoea, only one regimen needs to be used for both gonorrhoea and NGU). The patient is instructed to return 7 days after completion of treatment if not cured. If the urethral discharge still persists, the patient has to be referred to a higher level

In a male with urethral discharge when microscopic examination is available, use PROTOCOL 2.

PROTOCOL 2 (Urethral Discharge)



If a urethral discharge is seen on physical examination a smear of the discharge should be examined after staining with methylene blue or Gram stain.

Based on results of the smear three possibilities exist:

- Intracellular diplococci (ICDC) are seen; the patient is given standard gonorrhoea treatment and followed-up if not cured.
- No intracellular diplococci are seen but polymorphonuclear leucocytes are present; the patient is given NGU standard treatment and followed-up if not cured.
- No polymorphonuclear leucocytes are seen on the smear; no drug treatment is given and the patient is asked to return for re-evaluation if the discharge persists.

4.2 Vaginal Discharge

4.2.1 Definition

STD-related vaginal discharge is defined as a change in colour, odour and/or an increase in the amount of vaginal secretion attributable to vaginal or cervical infection. Vaginal discharge may be accompanied by pruritus, genital swelling, dysuria, or lower abdominal or back pain (see also pelvic inflammatory disease, 4.3).

4.2.2 Background information

Importance. Vaginal discharge is probably the most common gynaecological complaint. In addition to patient discomfort, a vaginal discharge may indicate the presence of STD or other problem which may lead to serious consequences (e.g. PID, see 4.3).

Etiology. The main infectious causes of a STD-related discharge are N. gonorrhoeae, C. trachomatis, and Herpes simplex virus for cervicitis, and T. vaginalis, C. albicans, and a combination of Gardnerella vaginalis and anaerobes ("bacterial vaginosis") for vaginitis.

In most countries the prevalence of trichomonas and candida infections are very similar (30-40% of women seeking care), but the prevalence of gonorrhoea and chlamydial infection vary according to the setting. As in the case of urethritis in males, concomitant infection by N. gonorrhoeae and C. trachomatis occurs commonly (1/2 of cases in some series).

Treatment. Considerations for selecting treatment include pregnancy status, patient discomfort, and the most likely etiology. The regular sex partner should be included in the management of all cases except in candidiasis and bacterial vaginosis. Suspicion of gonococcal or chlamydial etiologies warrant immediate treatment of the patient and her contact.

4.2.3 Subjective complaints

The individual patient's and the community's perception of what constitutes "vaginal discharge" may also vary. In general, most women with this syndrome will complain of soiling of undergarments, excess of secretion, change in colour and/or odour, itching, dysuria, dyspareunia, redness of vulva, and sometimes lower abdominal pain (see 4.3). Pregnancy should be checked for by asking the patient about the presence or absence of menses.

4.2.4 Objective findings

Clinical examination. A proper gynaecological examination may not be possible when facilities (table, gloves, speculum, etc.) are not available or when the patient refuses to be examined or for cultural or religious reasons. In those cases the patient's complaints may be the only basis for management (see PROTOCOL 1).

If a clinical examination can be done the following situations may arise:

A. Table for examination, but no gloves or speculum. Some clinical manoeuvres should be undertaken including inspection of vulva and introitus looking for discharge, skin aspect, erosions, presence of ulcer (if ulcer is present, see 4.4, genital ulcer) and palpation of the lower abdomen. If palpation is painful, refer to 4.3, pelvic inflammatory disease.

B. Table and speculum, but no gloves. Inspection of genitalia and palpation of lower abdomen are possible. After introducing the speculum, the aspect of the cervix, the characteristics of the discharge and the apparent origin of the secretion (vaginal, endocervical) may provide some helpful information for management.

C. Table and gloves, but no speculum. Inspection of vulva will be possible and a bimanual pelvic examination may aid in ruling out pregnancy. If mobilization of cervix elicits pain (see 4.3 pelvic inflammatory disease).

D. Table, speculum, and gloves. All three clinical manoeuvres: inspection of vulva, visualisation of cervical orifice and discharge using the speculum, and bimanual examination should be done.

Laboratory tests. Although desirable, culture facilities are usually not available at PHC level. In some facilities microscope, a wetmount examination for trichomoniasis and candidiasis, and "vaginosis" (KOH test, ratio of pus cells to epithelial cells and presence of "clue" cells) may be useful (see Annex 4). If planning to use Gram stain for diagnosis, the quality and validity of this method should be tested under local circumstances. In general, the Gram stain procedure for gonococcal infection is not a helpful diagnostic method in female patients.

4.2.5 Noteworthy information

Some vaginal discharges due to gonococcal or chlamydial infection, if left untreated, can lead to pelvic inflammatory diseases, infertility and other complications (e.g., chronic pain, ectopic pregnancy). If patient has lower abdominal pain, refer to PID protocol (4.3). Occasionally, information of a recent STD problem in the male partner may be available and may aid in patient management (e.g. patient is a contact of a urethritis case).

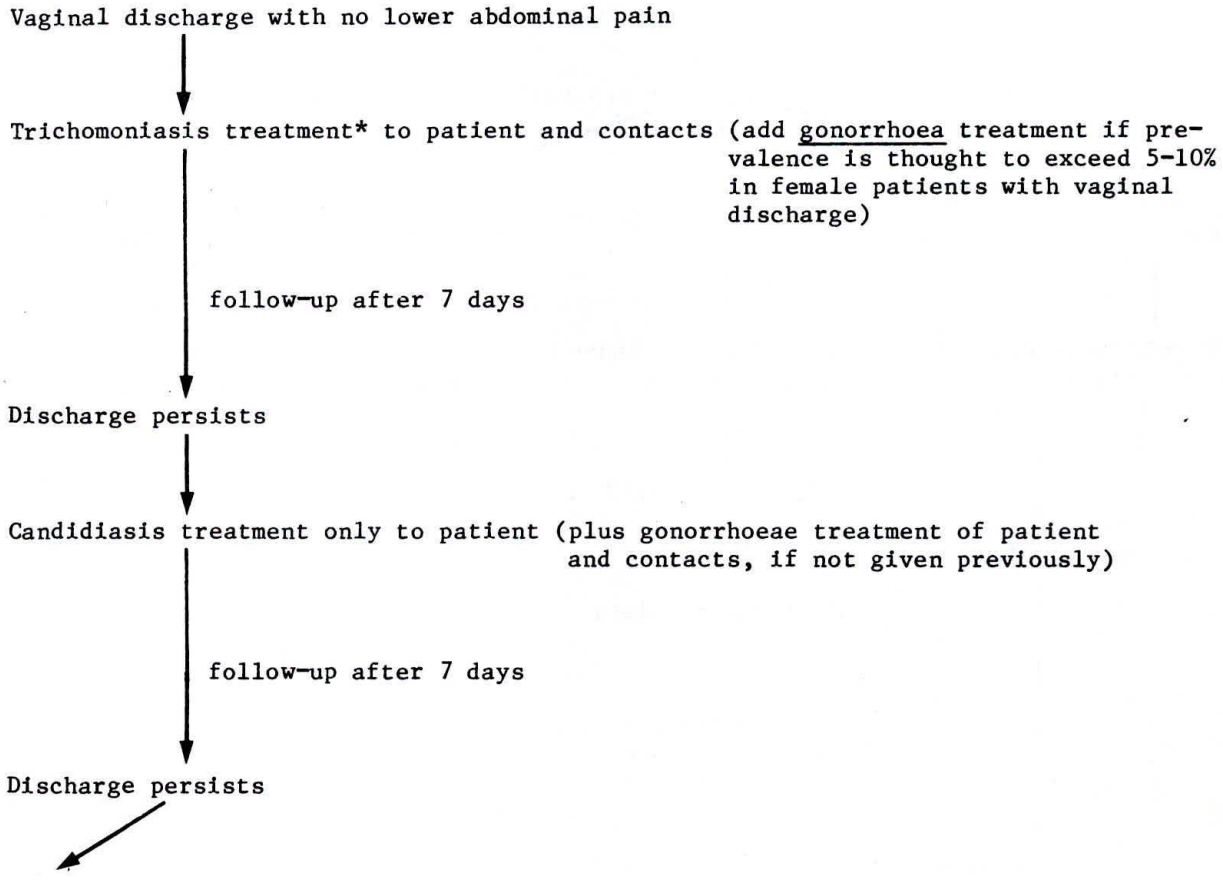
Pregnant women should not receive tetracycline; infants born to women with untreated gonorrhoea or chlamydial infection may develop ophthalmia neonatorum if no eye prophylaxis was given at birth (see 4.7).

4.2.6 Management plan

Always investigate if the patient is the contact of a known case (e.g., a male with urethritis), and use this information to guide the management of the suspected STD (see 4.9).

Depending on the information available, the following protocols are suggested:

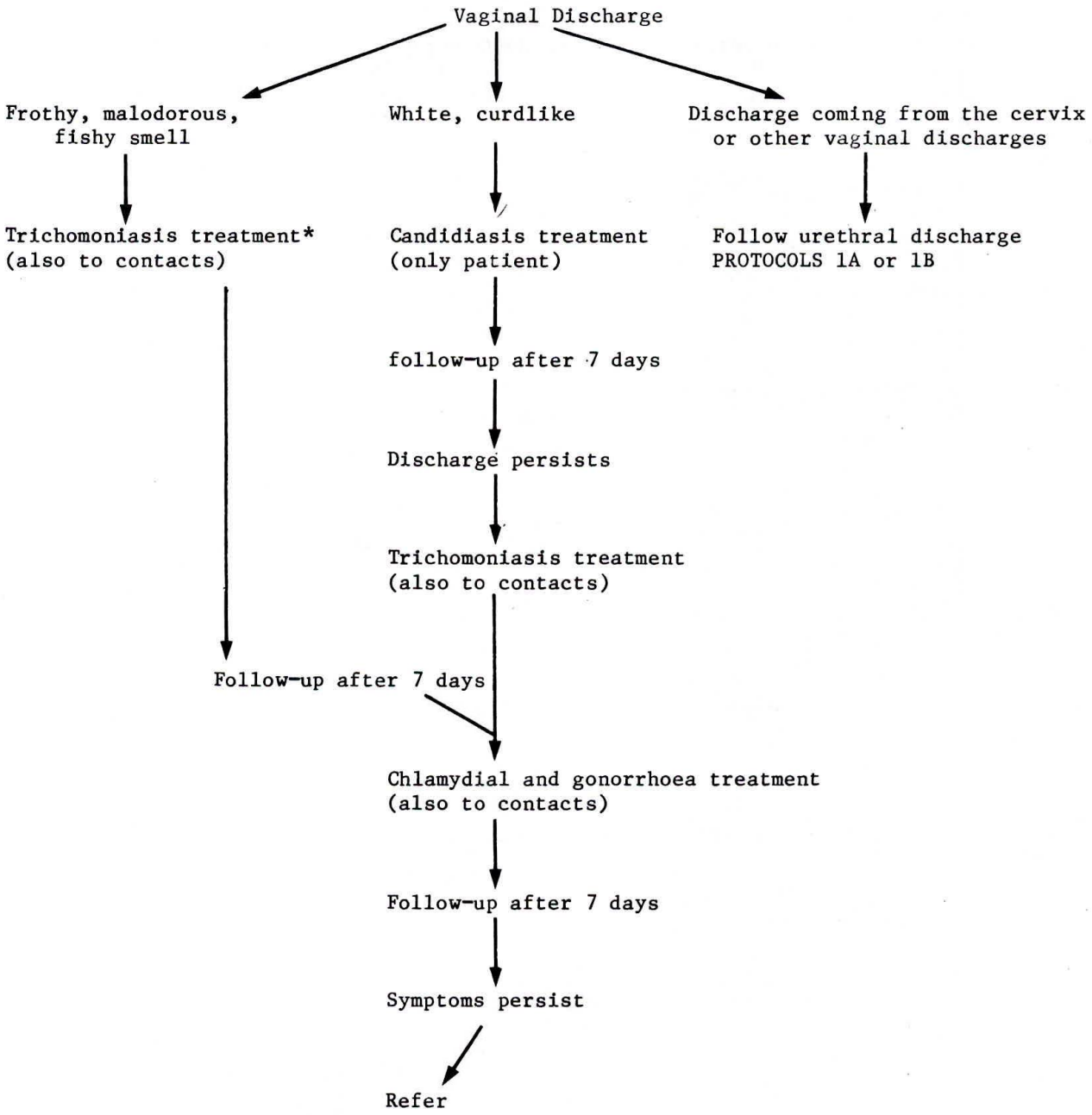
PROTOCOL 1 (no clinical examination nor laboratory tests can be done)



* This treatment is also efficacious for most patients with bacterial vaginosis

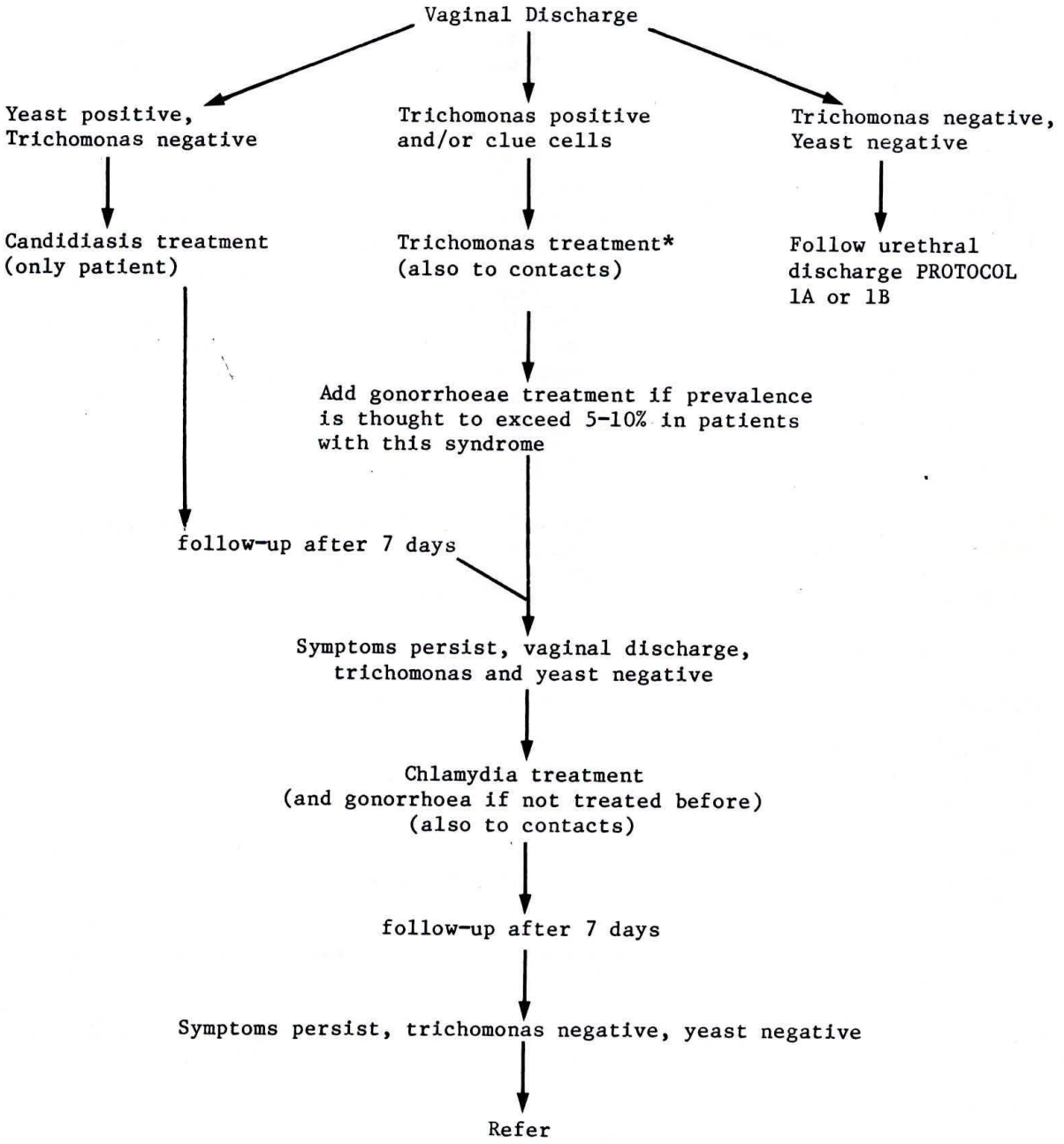
PROTOCOl 2 (Clinical examination with visualization of cervix but no microscopy)

If vaginal discharge is accompanied by lower abdominal pain or pain on mobilization of cervix, use pelvic inflammatory disease protocol (4.3.).



* This treatment is also efficacious for most patients with bacterial vaginosis

PROTOCOL 3 (Clinical examination and microscopy - wet mount - done)



* Clue cells without polymorphonuclear leukocytes in the absence of trichomonas suggest bacterial vaginosis which requires no partner treatment

4.3 Pelvic Inflammatory Disease (PID)

4.3.1 Definition

Pelvic inflammatory disease is a general name for pelvic infections in women (e.g., salpingitis, endometritis, parametritis, oophoritis, pelvic peritonitis) caused by microorganisms which generally ascend from the lower genital tract and invade the endometrium, the Fallopian tubes, the ovaries and the peritoneum.

4.3.2 Background information

Importance. STD-related pelvic infections are a major cause of infertility, recurrent infection, ectopic pregnancy, and chronic pain. PID is a common reason for admission to gynaecological wards and emergency rooms. Complications, such as tubo-ovarian abscess, require major surgical procedures and may cause death. Common STD pathogens producing PID are N. gonorrhoeae, C. trachomatis, and perhaps M. hominis. Facultative and strictly anaerobic bacteria are also found frequently, especially in clinically severe, suppurative infections. In addition to STD-related PID, post-partum and post-abortion ascending infections also occur and are usually related to lack of hygiene and poor obstetrical care. The presence of intrauterine devices favours the development of PID, particularly in the month following insertion.

4.3.3 Subjective complaints

Mild to severe lower abdominal pain (LAP), which usually worsens before menses and which is sometimes associated with fever and/or symptoms discussed under vaginal discharge (see 4.2), should make the clinician suspicious of PID. Inquire about any previous attacks of this condition and rule out pregnancy and abortion.

4.3.4 Objective findings

Physical examination. Should exclude medical-surgical emergencies. Check for:

a) Suprapubic tenderness
b) Vaginal discharge (see 4.2)
c) Ulceration (also in ext. genitalia) (see 4.4)
d) Presence of IUD
e) Open cervix, tissue seen or felt (abortion)
f) Bimanual examination for unilateral and bilateral adnexal tenderness
g) Temperature 38°C.

Physical examination should also include the inspection of the external genitalia for ulcerations (see 4.4).

Laboratory tests. Direct microscopy (wet mount) of a vaginal specimen: Presence of pus cells outnumbering epithelial cells suggests lower genital tract infection.

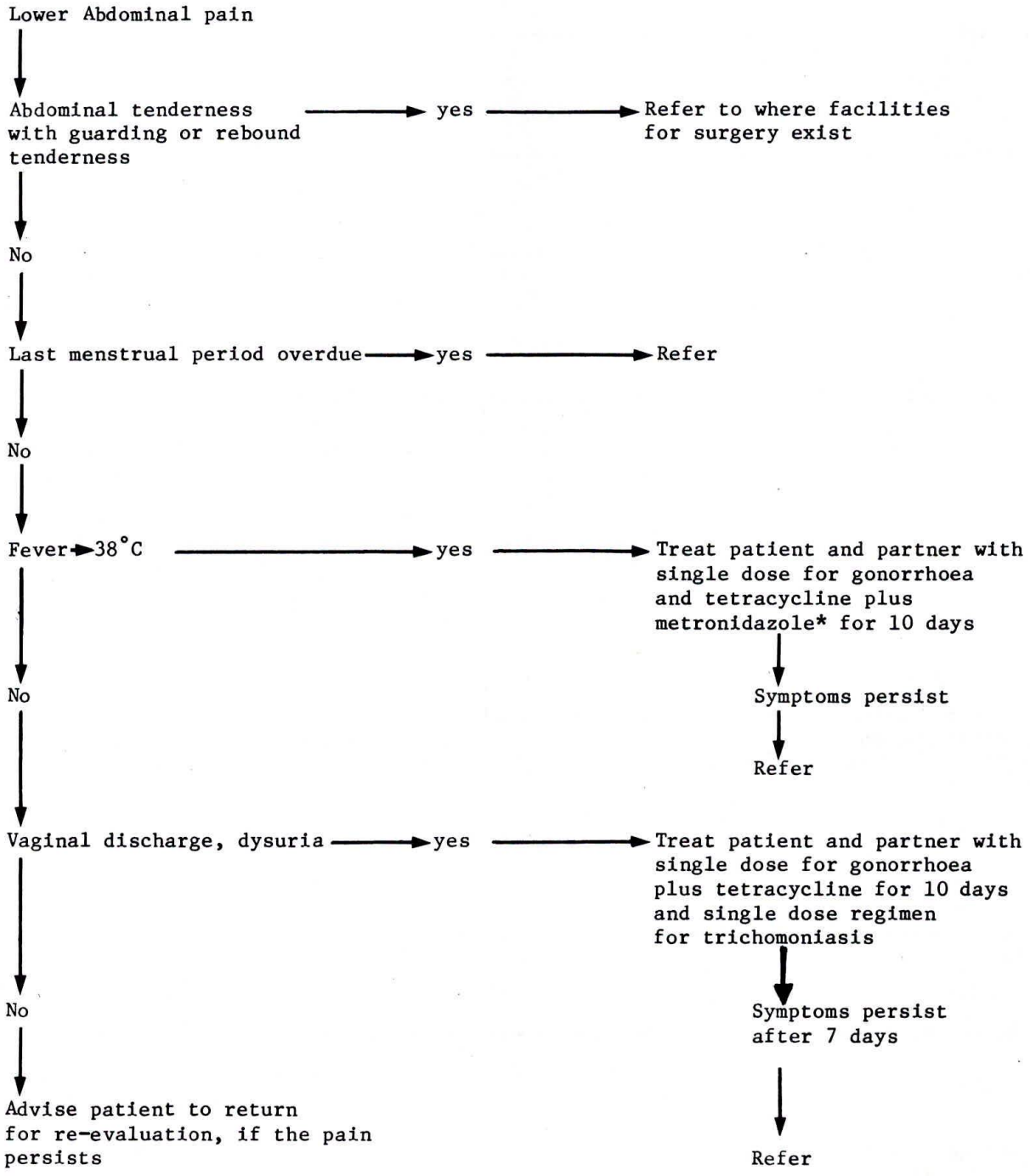
4.3.5 Noteworthy information

If lower abdominal pain is present surgical emergencies (gastro-intestinal, abdominal, appendicitis, obstetrical, gynaecological, such as extra-uterine pregnancy, etc.) and complications of puerperium should be ruled out. A diagnosis of PID should lead to antibiotic treatment of patient and partners of at least 10 days duration. Lower genital tract infections (cervicitis included) require antibiotic treatment of patient and contacts for 7 days.

4.3.6 Management plan

Depending on the clinical facility and the ability to examine the patient, the following PID protocols are suggested:

PROTOCOL 1 (Only interrogation and external palpation of patient are possible)



* Metronidazole not required for contact treatment

PROTOCOL 2 (When gynecological examination is done)

Lower Abdominal Pain (without bowel symptoms (diarrhoea) or urinary symptoms)

↓

Abdominal tenderness + guarding → yes → Refer

↓ No

Last menstrual period overdue → yes → Refer

↓ No

Recent pregnancy or abortion → yes → Treat, if feasible, by evacuation/curettage → Otherwise refer

↓ No

Intrauterine device (IUD) → yes → Treat patient and partner with single dose for gonorrhoea plus tetracycline for 10 days. Consider removing IUD (see Annex 3)

Fever 38°C → yes → Treat patient and partner with single dose for gonorrhoea plus tetracyline for 10 days

↓ No

Painful pelvic examination (uterine mobilisation) → yes → Treat patient and partner with single dose for gonorrhoea and tetracycline plus metronidazole* for 10 days

If symptoms persist → Refer

↓ No

Pelvic mass → yes → Refer

↓ No

Vaginal discharge → yes → Follow vaginal discharge PROTOCOL

↓ No

Advise patient to return for re-evaluation, if the pain persists

---

* Metronidazole not required for contact treatment

4.4. Genital Ulcer

4.4.1 Definition

Loss of continuity of skin producing one or more ulcerative lesions in the genitalia. Genital ulcers may be painful or painless and are frequently accompanied by inguinal lymphadenopathy.

4.4.2 Background information

Importance. Genital ulcerations are a common cause of consultation in tropical countries. Depending on etiology, this syndrome may cause serious complications (i.e. late symptomatic syphilis, mutilating lesions of the genitalia, etc.).

Etiology. Common STD agents producing genital ulcers are *Treponema pallidum*, *Haemophilus ducreyi*, *Calymmatobacterium granulomatis*, *C. trachomatis* (serovars L1 - L3), and herpes simplex viruses. Ulcers due to trauma can become secondarily infected by other bacteria.

The relative frequency of the different STD agents causing genital ulcers varies according to the setting. In studies in East and Southern Africa *H. ducreyi* infection (chancroid) accounted for 40-60% of all cases; *T. pallidum* (syphilis) for 9-17%; *C. trachomatis* (LGV) for 0-12%; and herpes simplex viruses for 4-11%, and donovanosis for 0-1%. In Thailand, chancroid outnumbers syphilis (30:1) as a cause of genital ulcer disease. STDs which are frequently accompanied by buboes include syphilis, chancroid, lymphogranuloma venereum and genital herpes.

Treatment. Treatment schedules for diseases causing genital ulcer(s) are given in Annex 3.

4.4.3 Subjective complaints.

Patients usually complain of a sore or sores of the genitalia. Uncircumcised males may complain of penile discharge or inability to retract the prepuce. Females may complain of a burning sensation on urination if ulcers are situated in the vulva.

4.4.4 Objective findings

Physical examination. The number and characteristics of the lesions should be noted. Examination of females may be difficult to perform in some settings but should be done whenever possible. Presence of inguinal lymphadenopathy (bubo) should be noted.

Laboratory tests. Generally, diagnostic tests for this syndrome are not useful for initial treatment decision at the peripheral level. When available, Giemsa stain for *C. granulomatis* (donovanosis), darkfield microscopy for syphilis, serological tests for syphilis (STS), or cultures (*H. ducreyi*) may provide additional information which may lead to a more disease-specific treatment approach at the initial or follow-up visit.

4.4.5 Noteworthy information

Painless, indurated lesions are attributed to syphilis (wear gloves for palpation); painful, easily bleeding sores are attributed to chancroid; the presence of vesicular lesions or superficial erosions indicates probable herpetic infection. However, genital ulcers often do not correspond to textbook descriptions and in areas where chancroid and syphilis are frequent etiologies of genital ulcers, the clinical diagnosis is not sufficiently discriminatory. Since double infections are not uncommon, the initial management could be directed at both diseases. Crucial for the development of management instructions is to know the importance of each etiology in the genital ulcer problem in the area.

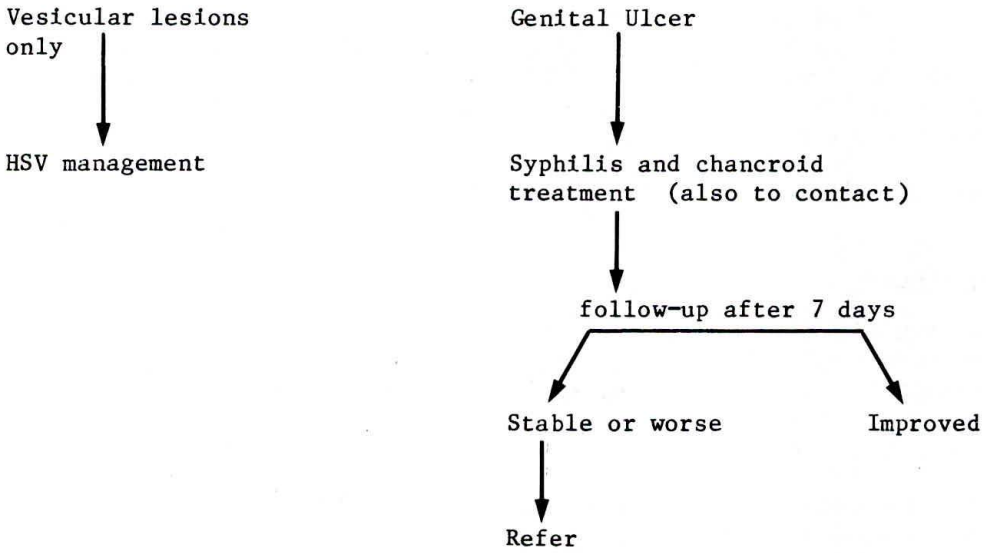
4.4.6 Management plan

Management is based on the clinical examination and should always include sexual partners who must receive the same treatment as the index case.

In areas where laboratory support is not available, the following protocol is proposed If no genital ulcer is seen but vesicular lesions are present, the patient is advised to keep the lesions clean and dry. If a genital ulcer is present, treatment for syphilis as well as chancroid are given at the initial visit. If no improvement is noted at follow-up, the patient is referred.

PROTOCOL (Genital Ulcer)

A. Without laboratory facilities



B. With laboratory facilities

If darkfield microscopy is available at the initial visit and the examination is positive, treat for syphilis; if the examination is negative, treat for chancroid.

Note on buboes

A bubo is frequently associated with the genital ulcer(s) and although the ulcer heals under treatment, the bubo can progress to fluctuation and rupture. Fluctuant buboes should be aspirated through healthy adjacent normal skin (should not be incised for drainage).

4.5 Bubo

4.5.1 Definition

Bubo is an enlargement of lymph glands in the groin area.

4.5.2 Background information

Importance. A bubo as the sole manifestation of an STD is not frequent. In most cases the bubo is combined with genital ulcer (see 4.4).

Etiology. Patients with lymphogranuloma venereum caused by Chlamydia trachomatis (serovars L1-L3) often present with a bubo and without any genital ulcer. In other STDs, the bubo is nearly always accompanied by ulcerative lesions. Other infections can produce inguinal adenopathy (e.g., infection of lower limbs).

4.5.3 Subjective complaints

The patient consults for pain and swelling in the groin. The bubo can be painless. It is important to know the duration of the problem, and a history of preceding genital ulceration.

4.5.4 Objective findings

The prepuce should be retracted to detect ulcers. The bubo can be unilateral or bilateral. The palpation reveals pain or fluctuation.

4.5.5 Noteworthy information

Management of patients with buboes is important because inadequate treatment can lead to rupture with chronic fistulization, scarring, etc.

4.5.6 Management plan

PROTOCOL. If genital ulcers are present, the genital ulcer protocol (see 4.4) must be applied. In a patient with inguinal bubo without accompanying genital ulcer, give tetracycline hydrochloride 500 mg x 4 daily for 2 weeks. Fluctuating buboes require aspiration. If the bubo persists, the patient has to be referred to the next higher level. The same treatment should be applied to sexual partners.

4.6 Balanitis and balanoposthitis

4.6.1 Definition

Inflammation of the glans (balanitis) and/or the prepuce (posthitis) of the penis may occur simultaneously. A mild to profuse superficial secretion may be present and should be distinguished from urethral discharge (see 4.1) by direct inspection.

4.6.2 Background information

Importance. An uncommon cause of consultation which can, however, produce considerable discomfort (irritation, itching, etc.).

Etiology: Lack of good hygiene is a predisposing factor especially in uncircumcised males. Micro-organisms commonly causing balanitis are staphylococcus, streptococcus, and Candida albicans. In most cases the partner shows no subjective nor objective signs of infection but some contacts may have candida lesions in the genitalia or pathological vaginal discharge.

4.6.3 Subjective complaints

The patient usually complains of "swollen member", itching at the glans penis, discharge or phimosis.

4.6.4 Objective findings

Physical examination. Redness of the glans and the penis; erosions and sometimes white secretions. The skin may show desquamation and erythema.

Laboratory tests. Wet mount with KOH will show fungal pseudohyphae or spores between epithelial cells in cases of candidiasis.

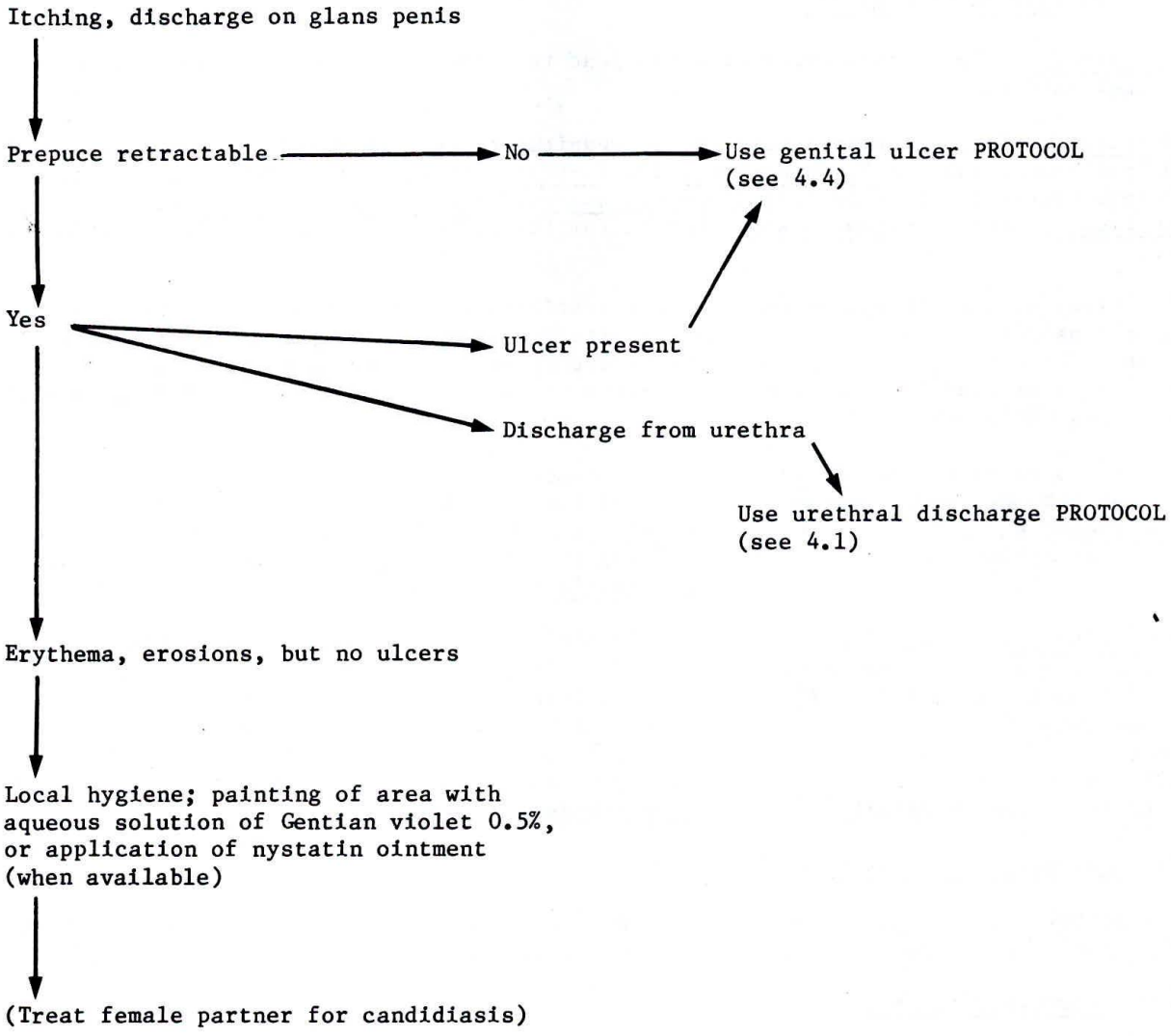
4.6.5 Noteworthy information

The most common cause of severe balanitis is Candida albicans. Some pathological conditions predispose to candidiasis, for example, diabetes. Spread of infection from a female partner is common.

4.6.6 Management plan

Clinical examination and laboratory findings (when available) will guide treatment. If ulcers are present refer to genital ulcer PROTOCOL (see 4.4)

PROTOCOL (Balanitis)



4.7 Ophthalmia neonatorum

4.7.1 Definition

Infection with discharge from the conjunctivae of the newborn (in one or both eyes) in the first month of life.

4.7.2 Background information

Importance. Ophthalmia neonatorum can lead to blindness especially when caused by gonococcal infection.

Etiology. Sexually transmitted micro-organisms to be considered as common causes of ophthalmia neonatorum are N. gonorrhoeae and C. trachomatis. Other common causes of ophthalmia neonatorum include Staphylococcus aureus, Streptococcus pneumoniae, Haemophilus sp. and Pseudomonas spp. Except for the latter, they usually do not endanger sight.

If silver nitrate 1% eye drops have been instilled at birth as a prophylaxis against ophthalmia neonatorum, a chemical conjunctivitis frequently develops within 24 hours. It subsides without treatment. The relative frequency of gonococcal and non-gonococcal ophthalmia neonatorum depends on the prevalence of the infection in pregnant women and on the eventual use of eye prophylaxis.

In developed countries, C. trachomatis is a more frequent cause of ophthalmia neonatorum than N. gonorrhoeae: 1% to 15% of cases coming for care are caused by N. gonorrhoeae and 25% to 50% by C. trachomatis. The remaining 35-65% are due to other causes or are of unknown cause. In developing countries, N. gonorrhoeae still accounts for about 20% to 75% of cases, and C. trachomatis causes 15% to 35%.

Epidemiology. In developing countries in Africa, the incidence of gonococcal ophthalmia neonatorum is estimated between 5 and 50 per 1000 live births; incidence of chlamydial neonatal conjunctivitis is probably comparable. In developed countries, incidence rates for gonococcal ophthalmia neonatorum range between 0.1 and 0.6 per 1000 live births and between 5 and 60 for chlamydial neonatal conjunctivitis. If the mother is infected at birth the risk of transmission of infection from her cervix to the eyes of the neonate is approximately 30% for N. gonorrhoeae and for C. trachomatis.

4.7.3 Subjective complaints

The mother presents her newborn baby because of redness and swelling of palpebrae or "sticky eyes", or because of purulent discharge from the eye(s).

4.7.4 Objective findings

a) Discharge which may be purulent;
b) Redness and swelling of conjunctivae;
c) Oedema and redness of palpebrae;
d) One eye or both eyes affected.

Laboratory. Gram stain or methylene blue stain for intracellular diplococci. A Giemsa stain of conjunctival epithelial cells allows the recognition of intra-cytoplasmtic inclusions of C. trachomatis, but this is a difficult technique to be applied at PHC level. Other laboratory tests are discussed in the laboratory section of this report (see Annex 4).

4.7.5 Noteworthy information

The more severe the conjunctivitis, especially if symptoms of ophthalmia neonatorum develop in the first week of life, the higher the probability that the ophthalmia neonatorum is gonococcal and that it may produce complications.

The conjunctivitis is also a marker of a more generalized neonatal infection; for this reason, systemic treatment should be combined with topical treatment. In cases of gonococcal ophthalmia neonatorum, the gonococcus can be recovered from the nasopharynx or the rectum of the newborn in 25-50% of cases. Transmission of C. trachomatis at birth can produce not only chlamydial neonatal conjunctivitis but also acute respiratory infection in an infant of 1 to 3 months of age.

4.7.6 Management plan

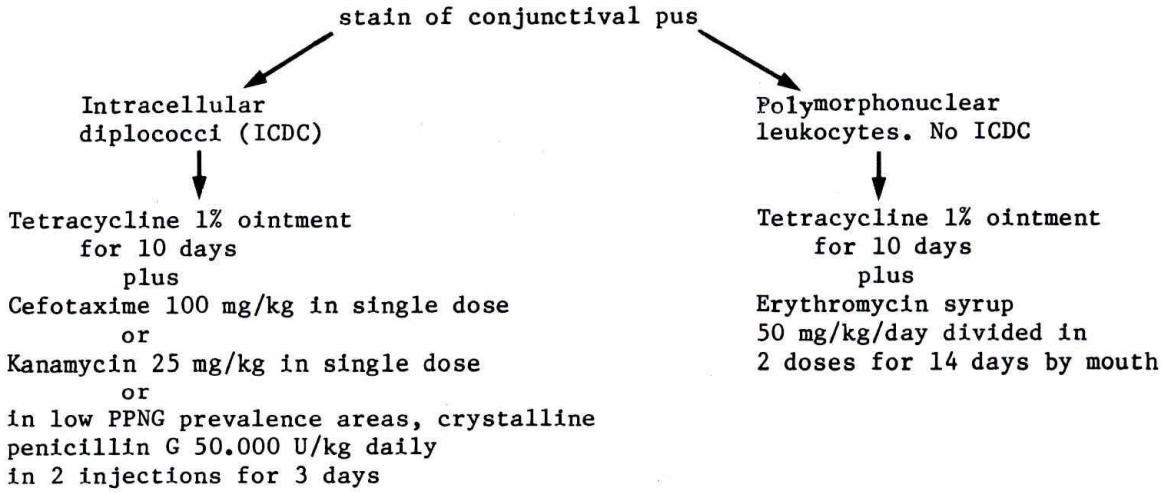
If only clinical assessment is possible, all ophthalmia neonatorum should be managed as gonococcal (apply PROTOCOL 1). If a stained smear (methylene blue, Gram) is performed, the ophthalmia neonatorum can be classified as gonococcal or nongonococcal based on the result (PROTOCOL 2). The mother and her regular sex partner(s) should also be treated with standard regimens. Even if the ophthalmia neonatorum is unilateral, both eyes should be treated.

PROTOCOL 1

Wipe the eyes with a clean cloth and saline or cooled, boiled water
plus
tetracycline ointment 1% on the conjunctivae every hour for 24 hours, afterwards 4 to 8 times a day for ten days,
plus
a systemic antibiotic: cefotaxime 100 mg/kg single dose im
or
kanamycin A 25 mg/kg single dose im
in areas of low prevalence of PPNG, penicillin still can be used:
aqueous crystalline penicillin G, 50.000 units/kg im per day, divided in 2 doses, during 3 days.

If no improvement is noted after 2 full days of systemic treatment REFER.

PROTOCOL 2



Management of mother. Treat for gonorrhoea and/or chlamydial (NGU) infection.

Management of father. Treat as urethritis, even if asymptomatic.

Prophylaxis of ophthalmia neonatorum at PHC level. A policy of neonatal eye prophylaxis should be implemented at PHC level: cleaning of the eyes immediately after birth plus instillation of 1% silver nitrate eye drops or 1% tetracycline ointment.

4.8 Swollen scrotum

4.8.1 Definition

Increase in volume of the scrotal sac, accompanied by oedema and erythema, sometimes associated with pain, urethral discharge or urinary tract symptoms (e.g. frequency, dysuria).

4.8.2 Background information

Importance. STD-related epididymitis and orchitis not treated appropriately may lead to infertility. Acute onset of unilateral swollen scrotum may be due to trauma or testicular torsion requiring immediate referral.

Etiology. Causative sexually transmitted agents are C. trachomatis, N. gonorrhoeae, and very rarely T. pallidum. M. tuberculosis is relatively frequent in some developing countries; Brucella spp. and S. pneumoniae are rare causes. Gram-negative bacilli (especially of the family of Enterobacteriaceae and Pseudomonas aeruginosa) are common causes of this syndrome in patients with complicated urinary tract infections. Mumps virus is an etiological agent in postpuberal males. All these agents produce infection of the epididymis (epididymitis) or the testis (orchitis). A swollen scrotum can also be due to the torsion of a testicle in young males or trauma, testicular tumor, vascular abnormality, or inguinal hernia, which are important etiologies to rule out in all patients. Epididymitis is almost always unilateral and usually relatively acute in onset.

Epididymitis is a rather common disease (634 000 cases in 1977 in the US), although prevalence figures from most countries are not available.

4.8.3 Subjective complaints

The patient presents with a painful or painless swollen scrotum. In the STD-related syndrome (epididymitis) a recent history of urethral discharge can be elicited or urethral discharge can be seen on physical examination. Sudden onset chronicity, trauma, characteristics of the pain or history of recurrent urinary tract infection may help pinpoint other etiologies in some cases (e.g. tuberculosis, cancer, testicular torsion, etc.).

4.8.4 Objective findings

Physical examination. This disease is usually unilateral. The scrotum may appear red and oedematous and is tender to palpation. Evidence of urethral discharge should be sought.

Laboratory tests. When feasible the study of urinary sediment of first voided urine for white blood cells (WBC's) and bacteria, may be helpful to identify a subacute urethritis.

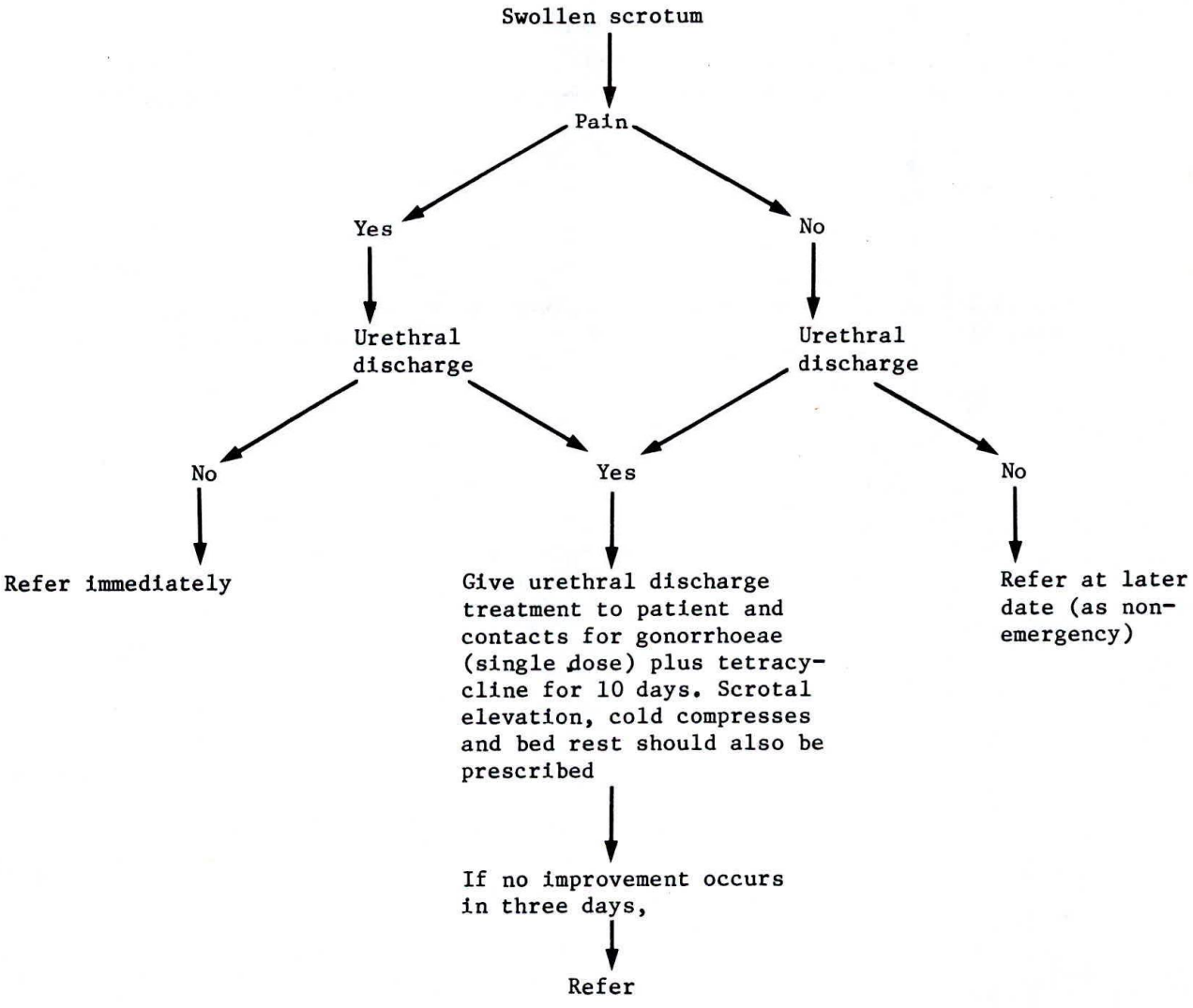
4.8.5 Noteworthy information

The most important concern is to rule out and refer immediately surgical emergencies and severe cases. Sudden onset and rapid progression of unilateral scrotal swelling in a young patient may be indicative of testicular torsion requiring specialized care.

4.8.6 Management plan

Epididymitis should be managed with antibiotics, symptomatic treatment, and supportive measures. Because of the high frequency of underlying urethral infection, urethral discharge treatment is indicated (see 4.1).

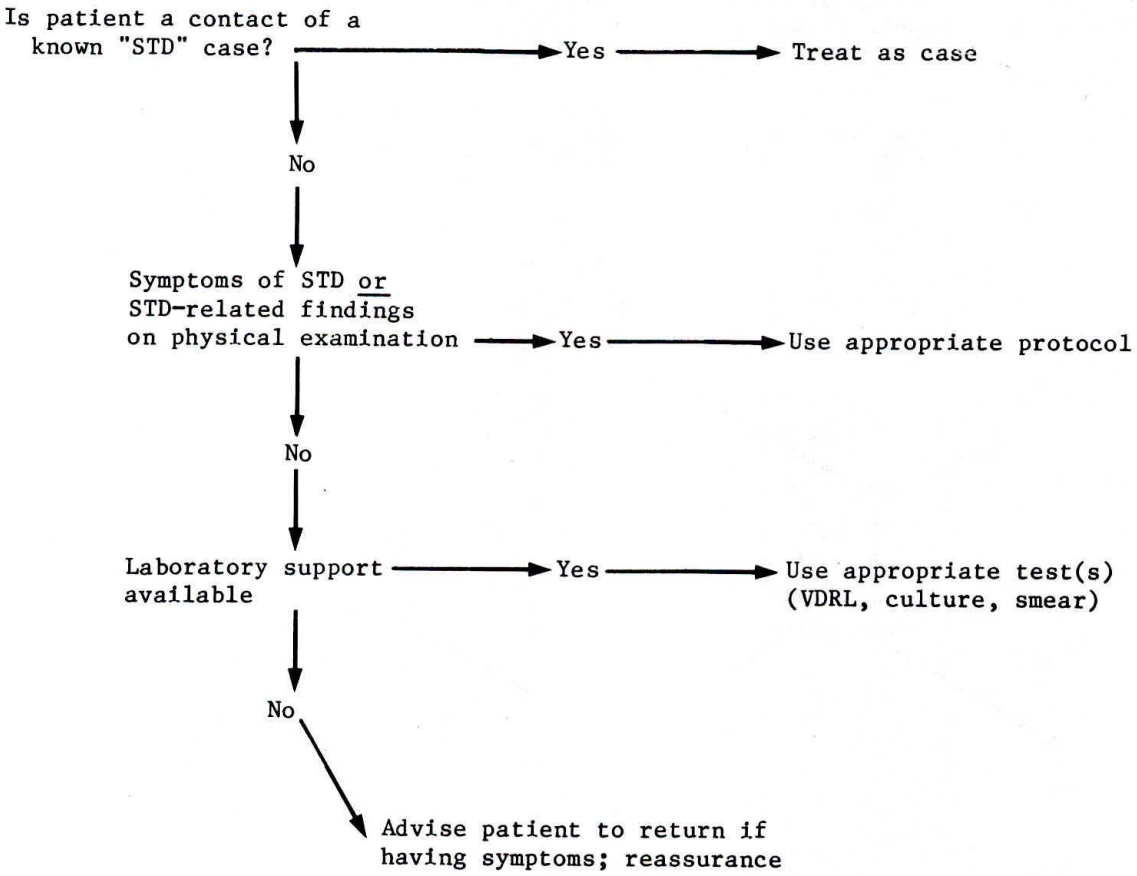
PROTOCOL (Swollen scrotum, no laboratory)



4.9 Suspected Sexually transmitted disease

Often patients may seek advice as they believe to have been exposed to a sexually transmitted disease.

PROTOCOL (suspected STD)



5. THE IMPLEMENTATION OF STD MANAGEMENT PROTOCOLS

Protocol implementation includes: a) training or retraining of health care providers; b) ensuring availability of resources (personnel, drugs and other supplies); c) gathering data to assess protocol effectiveness and to allow modification or adaptation when necessary.

5.1 The setting

The protocol should be as specific as possible to the setting where it will be used. This is not to say that a "borrowed" protocol from another country is useless. In settings with similar epidemiological, cultural and health system characteristics (e.g., some East African neighbouring countries), a patient management protocol designed for one country may assist in providing appropriate management in another. The key words are adaptation, based on local capabilities and circumstances, and evaluation of its effectiveness under field conditions (see 6.).

5.2 The clinician

Depending on the area, the health worker implementing a patient management protocol may be a physician with several years of formal training or a village health assistant who can only read and write. In either case, the clinician is the most important component for successful protocol implementation and should become the starting point of the health information system (see 5.4).

One person should be responsible for "carrying the patient through the protocol". In other words, the clinician charged with implementing the protocol should ensure that the observations and actions required by the protocol are accomplished. It is likely that in most settings the clinician implementing STD management protocols will also perform other tasks and functions, including the application of non-STD protocols. The responsibilities and functions that the worker is expected to perform should be clearly stated.

5.3 Training

Training, either as an initial procedure or an ongoing process of continuing education, should be relevant to the STD health problem and appropriate to the setting and health worker applying the protocol. The clinician should know that the protocol is a problem-solving guide but he should also understand the rationale behind the algorithm approach, i.e., why he should do what the protocol establishes.

The contents and duration of the training activity will vary according to the complexity of the protocols and the skills required for their implementation. Accordingly, the teaching method may range from a face-to-face short discussion of the protocol with an experienced physician to formal training sessions of several days duration required by health auxiliaries.

Similarly, the teaching materials may vary from a sheet of paper outlining the protocol to documents, instruments (e.g., microscope, vaginal speculum), supplies (e.g., dyes for staining, syringes, etc.), audiovisual devices, and the use of supervised practical training.

Rather than using a didactic approach in which the trainee is given a lecture about the protocol, a dialogue providing opportunities for the trainee to explain the steps outlined in the protocol should be encouraged. The most appropriate trainer may well be an experienced clinician or supervisor who is familiar with the protocol.

The location for the training activity should be as similar as possible to the environment where the clinician will practice (or even the same facility). Occasionally, and especially in the case of inexperienced personnel or clinicians working in clinics where few STD patients attend, it may be necessary to provide practical training in a larger clinic with sufficient numbers of STD patients. It is possible, however, that in some instances the training will be a self-teaching exercise. In other words, a clinician will "learn by doing" when applying the protocol.

5.4 Supervision and guidance

The supervisory activities will depend on the managerial and administrative setup of the health system where the clinician is practicing. In general, supervision will be closely linked with the evaluation of the protocol's usefulness (see below), and the clinician's performance may be assessed primarily by his adherence to a useful protocol. In the case of noncompliance or difficulties experienced in the application of the protocol, a satisfactory explanation of the deviation should be sought.

In addition to direct observation of the clinician's performance by a supervisor (when feasible), other mechanisms, such as patient outcome evaluations (including referrals to the next level), drug and supply utilization, patient and community satisfaction, etc., should be explored. The importance of even a rudimentary record keeping system can not be overemphasized; thus, the periodic review of patient records may substitute for direct clinician supervision in remote and smaller communities.

5.5 Laboratory support for protocol implementation

Laboratory services are an integral part of all disease control programmes and the availability of laboratory tests improves considerably the quality of patient care and public health practice. Unfortunately, at the most peripheral levels, laboratory support is practically non-existent and diagnosis is usually made on clinical and/or epidemiological grounds alone. Annex 1 lists the recommended availability of diagnostic tests for STDs by level within the laboratory system. Laboratory services development should be encouraged if at all possible.

5.5.1 Uses of laboratory tests

As a general rule it is preferable to be without laboratory support than to be misled by the results of poorly performed tests. On the other hand, laboratory tests may facilitate the selection of a more specific treatment approach which may be considerably less costly than a sequential treatment or the use of a broad spectrum treatment of the clinical syndrome designed to cover a variety of etiologies. The most important characteristic and justification for the use of a laboratory test is its ability to provide information to assist in patient management. Sometimes, this information may guide the immediate therapeutic decision of the clinician, thus providing a "prescriptive" diagnosis (e.g., to give gonorrhoea treatment to a patient with urethral discharge showing characteristic intracellular diplococci on microscopic examination). In other instances, the laboratory test will help correct an improper management (e.g., in cases of misdiagnosis), or permit patient follow-up (e.g., by monitoring cure). Finally, the laboratory test may serve "statistical" purposes for epidemiology and planning, (e.g., permitting a better classification of disease problems in the community) or serve as a basis for further testing or research (e.g., isolation of organisms for antimicrobial susceptibility testing).

5.5.2 Laboratory tests for simplified STD management protocols

In the STD management protocols presented in section 4, only the laboratory tests providing information useful for immediate decision-making were included since the patient will usually require treatment at the first visit. In many settings, the use of tests providing results which are not immediately available (e.g. culture, serology) but are useful for patient follow-up, may be advisable.

5.6 Protocol implementation and STD information needs

The two main objectives of STD information systems are:

a) to provide epidemiological data to help define the magnitude and trends of the STD problem and its distribution in time, place, and persons; and
b) to generate managerial data to measure activities and the effect of these activities on programme performance and results.

The quantity and quality of data will vary according to the specific health system and its resources. The output of useful and timely information without overburdening already busy practitioners is difficult but necessary in all settings.

The implementation of simplified STD management protocols may result in an improvement of epidemiological and managerial STD information if simple clinician notification forms are designed and used appropriately. An example of such a form appears as Annex 2. If the relative frequencies of the etiologies which contribute to a given clinical syndrome are known it may be possible to translate the reports originating from the primary health care level into causes of morbidity.

5.7 Administration and support

The written management protocol is only the first step to successful patient care and the PHC administrator or person responsible for STD control and/or primary health care should ensure that supplies and support services necessary to implement the protocol are available to the clinician or can be easily obtained by the patient. Drugs are essential. If not available, there is no use for management protocols. Recommended regimens for STD management appear as Annex 3. Annex 4 includes simple laboratory tests useful at the PHC level. The minimum equipment needed is a properly maintained and functioning microscope as well as a few laboratory reagents. When available, this laboratory support will provide an invaluable aid to patient and contact management. Priorities for availability of laboratory tests at the peripheral level are: wet mount, stained smear examination, and a serologiocal test for syphilis (e.g., VDRL, RPR).

6. EVALUATION OF STD MANAGEMENT PROTOCOLS

A good protocol guides the clinician in solving the patient's problem and in interrupting disease transmission in the community. Clinician notification forms, and patient "record" reviews and direct supervision to assess adherence to the protocol are useful indicators of protocol usage and its usefulness to the clinician. Consequently, protocol evaluation must comprise: a) a measurement of protocol usage, and b) the assessment of results. The minimum data required for protocol evaluation include:

a) Numbers of patients presenting with suspected or definite STD problems;
b) Numbers of patients who were "carried through the protocol";
c) Results of these actions (cure, improvement, referral, failure, contacts found, etc.);
d) If desired or possible, costs associated with the protocol's implementation.

Changes in the prevalence of different STD, changes in antimicrobial susceptibility of STD organisms, and other factors, may render today's "perfect" protocol obsolete. For this reason, those designing and using a protocol must devise a system to monitor the protocol's effectiveness and to detect its obsolescence in a timely manner. The "red flag" indication that a protocol is no longer useful should be established in terms easy to understand and follow (e.g., "20% or more of patients failing treatment or requiring referral" or "three or more consecutive patients whose problem is not solved with a particular protocol"). The protocol, however, may be appropriate and other factors, such as lack of treatment compliance, reinfection, etc., may explain an apparent failure in the protocol. Supervision, data review, and/or limited operational research studies may help to clarify this situation.

Finally, evaluations of the impact of appropriate STD protocol implementation on long-term consequences and complications of STD are highly desirable but probably only possible as special research efforts in very few settings.

7. COMMUNITY PARTICIPATION IN STD CONTROL EFFORTS

The "uncontrolled" status of STD in most countries is often blamed on the population at risk engaging in unsafe sexual behaviour, contacts never found or examined, practitioners failing to report STD cases, patients not complying with treatment regimens, health authorities not providing necessary resources, etc. Some of these problems, which at first appear unsolvable, may be overcome at the peripheral level, by using innovative approaches involving community participation in PHC and STD control. People do care about their health. Furthermore, people are willing to contribute financially in order to receive good treatment. In one particular setting, for example, joint government-community financing and management were established to provide health care when the community recognized that governmental institutions were financially unable to obtain enough essential drugs for health care in the community. Some suggestions for outreach and health promotion approaches to obtain community support for PHC and STD control are included as Annex 5.

8. CONCLUSIONS

Demographic and epidemiological trends seem to indicate that the STD problem will increase in magnitude and severity during the next decades. However, in most countries, efforts to counteract this unfortunate trend can and should be initiated now. Improvement of patient and contact management through design and implementation of simplified approaches, such as management protocols at the primary health care level, should be the first step. Outreach activities such as health promotion will ensure that communities are a part of the solution and not a part of the problem.

ANNEX 1

Recommended availability of diagnostic tests by level of the laboratory system

Etiological Agent	Laboratory Test	Level		
		Peripheral	Intermediate	Central
1) Neisseria gonorrhoeae	Smear (Gram or methylene blue stain)	+	+	+
	Culture	-	+	+
	B-lactamase	-	+/-	+
	Antimicrobial susceptibility	-	+/-	+
2) Treponema pallidum	Darkfield microscopy	+/-	+	+
	RPR card test	+/-	+	+
	VDRL, quantitative	+/-	+	+
	TPHA, MHA-TP, AMHA-TP	-	+/-	+
	FTA-ABS	-	-	+
	Specific IgM assays	-	-	+/-
3) Chlamydia trachomatis	Smear (Giemsa)-(eye only)	+	+	+
	CFT (LGV only)	-	+/-	+
	Direct FA	-	+/-	+
	Culture	-	+/-	+
	Micro-IF antibody	-	-	+
4) Haemophilus ducreyi	Culture	-	+	+
	B-lactamase	-	+/-	+
	Antimicrobial susceptibility	-	-	+
5) Calymmatobacterium Granulomatis	Smear (Wright-Giemsa)	+/-	+	+
	Histopathology	-	+/-	+
6) Candida spp	KOH wet mount	+	+	+
	Culture	-	+	+
	Speciation	-	+/-	+
7) Trichomonas vaginalis	Saline wet mount	+	+	+
	Culture	-	+/-	+
9) Herpes simplex Virus	Smear (Pap or Tzanck)	-	+/-	+
	Direct FA	-	+/-	+
	Culture	-	+/-	+
	Neutralizing antibody	-	-	+
9) Bacteria producing vaginosis	Saline wet mount, "Sniff test"	+	+	+

ANNEX 2

Monthly clinician notification form*

Clinician_____ Month_____ Year_____

Location_____

Syndrome	No. of patients treated	No of patients referred
Urethral discharge		
Balanitis		
Swollen scrotum		
Vaginal discharge		
Pelvic Inflammatory Disease		
Conjunctivitis in Newborn		
Genital Ulcer	Men: Women:	Men: Women:
Bubo	Men: Women:	Men: Women:
Suspected STD	Men: Women:	Men: Women:

* More comprehensive forms including data on "Total seen", "Total managed with protocol", "Total not returning to complete protocol", "Total referred", etc. could be designed. Depending on the facility and the clinicians, in some areas, individual patient records containing additional data (age, pregnancy status, etc.) may be available.

ANNEX 3

Therapeutic recommendations*

GONOCOCCAL INFECTIONS

Uncomplicated urogenital infection

GROUP A

The following regimens remain useful in areas in which gonococci are known to have maintained chromosomal sensitivity to antimicrobials and in which beta-lactamase-producing gonococci comprise less than 5% of isolates. (However, patients who are likely to have acquired their gonococcal infections in areas of high resistance should be treated with regimens from GROUP B.)

Amoxycillin, 3.0 g with 1.0 g of probenecid by mouth
or
Ampicillin, 3.5 g with 1.0 g of probenecid by mouth
or
Aqueous procaine penicillin G, 4.8 million units by intramuscular injection, with 1.0 g of probenecid by mouth
or
Aqueous crystalline penicillin G, 5 million units by intramuscular injection, with 1.0 g of probenecid by mouth
or
Tetracycline hydrochloride, 500 mg by mouth, 4 times daily for 7 days
or
Doxycycline, 100 mg by mouth, twice daily for 7 days.

GROUP B

In areas where chromosomal gonococcal resistance has reduced the efficacy of antimicrobial agents such as penicillin G, tetracycline, and trimethoprim/sulfamethoxazole to cure rates below 95% (including areas where beta-lactamase-producing gonococci are significantly prevalent), the following single session regimens remain effective in at least 95% of cases. These regimens may be used also in pregnancy although their safety may not have been established.

Cefotaxime, 1.0 g by intramuscular injection with 1.0 g of probenecid by mouth
or
Cefoxitin, 2.0 g by intramuscular injection with 1.0 g of probenecid by mouth
or
Ceftriaxone, 250 mg by intramuscular injection
or
Spectinomycin, 2.0 g by intramuscular injection.

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* Adapted from a WHO Consultative Group Report on Current Treatments in the Control of Sexually Transmitted Diseases: Unpublished WHO Document WHO/VDT/83.433.

GROUP C

The following regimens show considerable geographic variation in their efficacy, sometimes curing less than 95% of infections. They are active against beta-lactamase-producing gonococci and are often less costly and more widely available (than group B drugs), but are not recommended during pregnancy.

Kanamycin A, 2.0 g by intramuscular injection

or

Thiamphenicol, 2.5 g by mouth

or

Trimethoprim (80 mg)/sulfamethoxazole (400 mg) or a comparable sulfonamide component, 10 tablets by mouth, daily for 3 days.

C. TRACHOMATIS INFECTIONS AND NONGONOCOCCAL URETHRITIS

Uncomplicated urethral, endocervical or rectal infections in adults

Drug regimens of choice

Tetracycline hydrochloride, 500 mg by mouth, 4 times daily for 7 days

or

Doxycycline, 100 mg by mouth, twice daily for 7 days.

Alternative regimens (for patients in whom tetracyclines are contraindicated - pregnancy - or not tolerated)

Erythromycin, 500 mg by mouth, 4 times for 7 days.

Management of sexual partners

All persons exposed to C. trachomatis infection should be examined for STD and promptly treated for exposure to C. trachomatis with one of the above regimens.

Urogenital infections during pregnancy

Treatment should be given to pregnant women who have C. trachomatis infections or, to pregnant women whose sexual partners have non-gonococcal urethritis.

Suggested treatment: Erythromycin, 500 mg by mouth, 4 times daily on an empty stomach for 7 days. For women who cannot tolerate this regimen, a decreased dose of 250 mg by mouth, 4 times daily should be used for 14 days.

EARLY SYPHILIS

Recommended regimens

Benzathine benzyl penicillin G, 2.4 million units in a single session by intramuscular injection

or

Aqueous procaine penicillin G, 600 000 units daily by intramuscular injection for 10 consecutive days.

Penicillin-allergic patients

Tetracycline hydrochloride, 500 mg by mouth, 4 times daily for 15 days

or

Erythromycin, 500b mg by mouth, 4 times daily for 15 days.

CHANCROID (H. DUCREYI INFECTION)

Recommended regimens

Trimethoprim (80 mg)/sulfamethoxazole (400 mg) or a comparable sulfonamide component, 2 tablets by mouth twice daily for 5 days.

or

Erythromycin, 500 mg orally 3 times daily for 7 days.

Limited data also suggest adequate cure rates with single dose regimens consisting of: spectinomycin: 2 g by intramuscular injection; or ceftriaxone: 250 mg by intramuscular injection; or trimethoprim (80 mg)/sulfametrole (400 mg), 8 tablets by mouth; or thiamphenicol, 2.5 g by mouth for two consecutive days.

LYMPHOGRANULOMA VENEREUM

Drug regimen of choice

Tetracycline hydrochloride, 500 mg by mouth, 4 times daily for 2 weeks.

Alternative regimens

The following drugs are active against LGV serotypes in vitro but have not been evaluated extensively in culture-confirmed cases:

Doxycycline, 100 mg by mouth, twice daily for 2 weeks

or

Erythromycin, 500 mg by mouth, 4 times daily for 2 weeks

or

Sulfamethoxazole, 1.0 g by mouth, twice daily for 2 weeks. Other sulfonamides can be used in equivalent dosage.

Lesion management

Fluctuant lymph nodes should be aspirated as needed through healthy adjacent normal skin. Incision and drainage or excision of nodes will delay healing and are contraindicated.

Late sequelae such as stricture and/or fistula may require surgical intervention.

DONOVANOSIS (GRANULOMA INGUINALE)

Treatment of choice

Trimethoprim (80 mg)/sulfamethoxazole (400 mg) or a comparable sulfonamide component, 2 tablets twice daily by mouth for 14 days.

Alternative regimens (regional variation in efficacy)

Tetracycline hydrochloride, 500 mg 4 times daily by mouth for 14 days

or

Chloramphenicol, 500 mg by mouth 4 times daily plus gentamicin 1 mg/kg by intramuscular injection 3 times daily for 3 weeks.

GENITAL HERPES SIMPLEX VIRUS INFECTIONS

Lesions should be kept clean by washing affected sites with soap and water, followed by careful drying.

TRICHOMONAS VAGINALIS INFECTIONS

Recommended regimen

Metronidazole, 2.0 g in a single oral dose.

Management of sexual partners

Male sexual partners of women with trichomoniasis should be treated with metronidazole 2.0 g in a single oral dose.

Trichomoniasis in pregnancy

Metronidazole is contraindicated in the first trimester of pregnancy and should be avoided throughout pregnancy. Clotrimazole 100 mg, intravaginally, at bedtime for 7 days may produce symptomatic improvement and some cures. Other local treatments may be used for symptomatic relief but have low cure rates. In lactating women breast feeding should be interrupted for at least 24 hours after single dose therapy.

GENITAL CANDIDIASIS

Examples of effective regimens - Vaginitis

Clotrimazole, 100 mg intravaginally daily for 7 days

or

Miconazole, 100 mg intravaginally daily for 7 days

or

Nystatin, 100 000-1 000 000 units (depending on geographical area) intravaginally daily for 14 days.

Simultaneous oral therapy with nystatin, attempting to eradicate gut infections, does not reduce the frequency of recurrence.

Balanitis

Topical application of imidazole or polyene creams or lotions twice daily for 7 days. Optimal regimens have not been determined.

BACTERIAL VAGINOSIS (NONSPECIFIC VAGINITIS)

This syndrome consists of non-irritating, malodorous, thin, greyish-white vaginal discharge; elevated vaginal pH (greater than 4.5); and the elaboration of malodorous amines from discharge fluid after alkalinization with KOH. Microscopic examination of a wet mount of vaginal fluid typically reveals the presence of small coccobacillary organisms associated with epithelial cells (so-called "clue cells").

Drug regimen of choice

Metronidazole, 500 mg by mouth twice daily for 7 days.

Alternative regimen

Metronidazole, 2.0 g in a single oral dose is efficacious for most patients.

Pregnancy

Metronidazole is not recommended during the first trimester of pregnancy and should be avoided throughout pregnancy. Ampicillin, 500 mg by mouth, 4 times daily for 7 days may be used, but is less effective than metronidazole.

EPIDIDYMITIS

Drug regimens of choice

Single dose therapy for uncomplicated gonorrhoea
plus either
Tetracycline hydrochloride, 500 mg by mouth, 4 times daily for 10 days
or
Doxycycline, 100 mg by mouth twice daily for 10 days.

Alternative regimens

Patients who cannot tolerate tetracycline should receive a single dose therapy for uncomplicated gonorrhoea
plus
Erythromycin, 500 mg by mouth 4 times daily for 10 days.

Adjuncts to therapy

Bed rest and scrotal elevation until fever and local inflammation have subsided.

Management of sexual partners

Sexual partners of patients with sexually transmitted acute epididymo-orchitis should be examined for STD and promptly treated with one of the regimen above.

Follow-up

Failure to improve within 3 days requires re-evaluation of diagnosis/therapy and consideration of hospitalization. Persistent swelling for longer than 1 month should lead to evaluation for tumour or tuberculosis.

ACUTE PELVIC INFLAMMATORY DISEASE (ENDOMETRITIS; SALPINGITIS, PARAMETRITIS)

Ambulatory treatment

For patients who must be treated on an ambulatory basis, one of the following regimens may be used:

Single dose therapy for uncomplicated urogenital gonorrhoea
plus
Doxycycline, 100 mg twice daily or Tetracycline hydrochloride, 500 mg 4 times daily by mouth for 10 days
plus
Metronidazole, 1.0 g by mouth twice daily for 10 days.

This regimen provides excellent activity against chlamydiae and probably provides good coverage for N. gonorrhoeae or facultative anaerobes. The use of a cephalosporin as the initial gonorrhoeal therapy would increase activity against facultative anaerobes.

Thiamphenicol, 2.5 g by mouth followed by 500 mg orally 4 times daily for 10 days.

This regimen provides excellent activity against N. gonorrhoeae and facultative anaerobes, but its effectiveness against C. trachomatis is unknown.

Intrauterine device (IUD)

The IUD is a risk factor for the development of PID. Although the exact effect of removing an IUD on the response of actue salpingitis to antimicrobial therapy and on the risk of recurrent salpingitis is unknown, removal of the IUD is recommended soon after antimicrobial therapy has been initiated. When an IUD is removed, contraceptive counselling is necessary.

ANNEX 4

Microscopic tests useful at PHC level*

The same specimen (from urethral discharge, vaginal-cervical discharge, etc.) can be used for several tests.

A. Direct microscopy without staining (Wet mount)

Main uses: vaginal discharge (for diagnosis of trichomoniasis, and bacterial vaginosis); occasionally, in urethral discharge (trichomoniasis).

Specimen collection in women

A sample of vaginal secretion is obtained from the posterior fornix with, if possible, a cotton-tipped swab. The sample is then immediately transferred onto a glass slide.

Urethral samples in men

The chances of demonstrating T. vaginalis are optimized if the patient is examined early in the morning before voiding or if he has at least not voided in the two hours preceding sampling. If discharge is present, this may be collected on a sterile bacteriological loop or swab. Otherwise, scrapings can be obtained from the anterior urethra with a loop.

Preparation of a wet mount

The sample is placed immediately onto a glass slide and diluted with a drop of normal saline (Section A). A coverslip is applied on top, and the preparation examined immediately under low power (40 x 10) with reduced illumination.

The morphological details may be enhanced by staining the wet mount with a very dilute (approximately 1:10000) solution of buffered methylene blue. Use of more concentrated stain solution is liable to prove counterproductive by depriving the trichomonads of their motility, an important factor in microscopic identification. However, T. vaginalis is usually easily identifiable without resorting to such complexities.

Microscopic appearance

Trichomoniasis

The striking and diagnostic feature of trichomoniasis in microscopic examination is the characteristic jerky motility exhibited by the organism. T. vaginalis is a clear, pear-shaped organism about the size of a pus cell, with four anterior flagellae and an axostyle that traverses the body to end in a spine (Section B). The organisms will soon lose their jerky movement, and their undulating membranes may become visible, especially under higher magnification.

Bacterial vaginosis

This is defined as "a replacement of the lactobacilli of the vagina by characteristic groups of bacteria accompanied by changed properties of vaginal fluid".

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*Tests included are only those not requiring special laboratory skills (i.e. those which can easily be performed by the clinician) but the availability of reagin tests for syphilis is desirable.

The typical fishy odour will be enhanced by the addition of 1 or 2 drops of 10-20% KOH to the vaginal discharge specimen ("Sniff test"). The features of bacterial vaginosis seen on wet mount examination are illustrated in Appendix B.

Other findings in vaginosis are:

a) The leukocyte count is normal or only slightly elevated, i.e. the number of epithelial cells per microscopic field exceeds the number of leukocytes. (This compares with the massive elevation of the leukocyte count seen in trichomoniasis).
b) A reduction in the numbers of lactobacilli of Döderlein is generally noted.
c) The presence of clue cells: these are cornified squamous epithelial cells, covered by bacilli (making the cell outline indistinct) producing a distinctive granular cytoplasmic appearance.

Other infections

Other pathogens, e.g. Candida albicans may occasionally be seen. However, wet mount is not the best method for detection of candidiasis (see below).

B. Direct microscopy with staining

Main uses: Vaginal discharge (especially discharge due to cervical infection); urethral discharge; ophthalmia neonatorum; balanitis (for diagnosis of candidiasis).

Specimen collection

Specimens are collected for direct examination from the cervix in females; from the urethra in males; from the conjunctivae in cases of conjuctivitis.

Urethral samples in men

A sample from the anterior urethral mucosa is obtained by using a sterile (cool) bacteriological loop or, alternatively, a cotton wool or calcium alginate sampling swab, moistened with saline if available to facilitate its introduction, is passed approximately one to two cm into the urethra and gently rotated.

Cervical samples in women

A sample is obtained by passing a sterile curette, loop or swab into the cervical canal. The sampling instrument is then rotated and moved from side to side for 10 to 30 seconds before withdrawal. Ideally, during this procedure the cervix should be visualized by a speculum (which, if used must be sterilized) with the woman in the lithotomy position. If possible excess cervical mucus should be removed (e.g. with a cotton ball held in ring forceps) before sampling. Sampling from the vagina, including the posterior fornix, should be used only if hysterectomy has been performed. Where the hymen is intact, material is obtained from the vaginal orifice.

Sampling from the eye

Pus is collected from the conjunctiva with a sterile bacteriological loop or swab.

Sampling from glans penis

Use a sterile cotton-tipped swab to collect discharge from the coronal sulcus in men (to detect candidiasis).

Preparation of smears

The specimen is transferred immediately onto a glass slide where a thin and even smear is made by rolling the swab. The smear is air-dried and fixed either by heat (by holding the slide, film upwards, in a flame until just too hot to be borne on the back of the hand) or by a 5-minute immersion in methanol (94%).

Two simple staining procedures, Gram's method (Section C) and methylene blue (Section D), are suitable. The latter should be preferred on the grounds that it renders bacteria more easily recognisable in clinical material, and for use at the peripheral level; it also carries the additional advantage of being a less time-consuming procedure. However, the requirement that the solution must be stored at 4°C may preclude its use in some settings. (The Gram stain has, of course, the advantage that the Gram-staining characteristics of the bacteria can be ascertained).

Microscopic examination

Gonorrhoea

Slides are examined under oil immersion. Gonococci are Gram-negative kidney or coffee bean-shaped diplococci, 0.6 to 0.8 um in size (Section B). Although the presence of these diplococci within polymorphonuclear leukocytes is strongly suggestive of gonorrhoea, absence of this feature does not necessarily exclude the disease.

Nongonococcal urethritis (and cervicitis)

During examination of the slide, attention should be paid to the presence of any other pathological features, e.g., the number of polymorphonuclear leukocytes per field in relation to the number of epithelial elements; whether lactobacilli or coccoid bacteria predominate, the occurence of clue cells (see above); the presence of yeast, fungi, trichomonads, etc. A characteristic feature of nongonococcal urethritis (usually caused by Chlamydia trachomatis) is the presence of pus cells without bacteria.

Candidiasis and fungal infections

C. albicans appears as an oval budding, yeast-like fungus. Despite a lack of experimental substantiation, it is widely held that the presence of pseudohyphae is an indication of tissue invasion. The number of organisms seen does not correlate well with the severity of symptoms. A wet mount preparation treated with 1 or 2 drops of 10-20% KOH and heated (but not boiled) and Gram staining appear approximately equally sensitive. The presence of pseudohyphae suggests that fungus seen is unlikely to be one of the less pathogenic yeasts which do not form pseudohyphae. However, reliable speciation by direct microscopy is usually not possible.

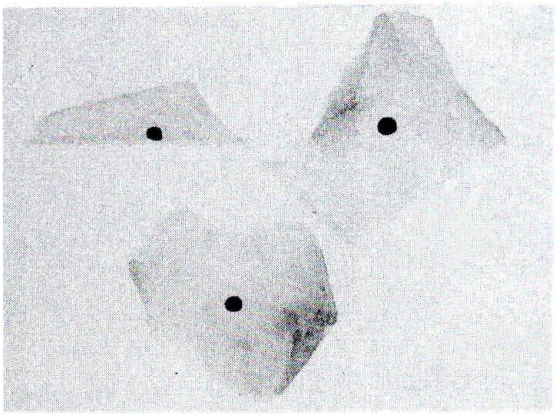
SECTION A - NORMAL SALINE

Normal saline is a 0.85% solution of sodium chloride (NaCl) in water.

(a) Dissolve 8.5 g NaCl in approximately 900 ml water (preferably distilled).
(b) Make up the volume to 1 litre by adding more water.

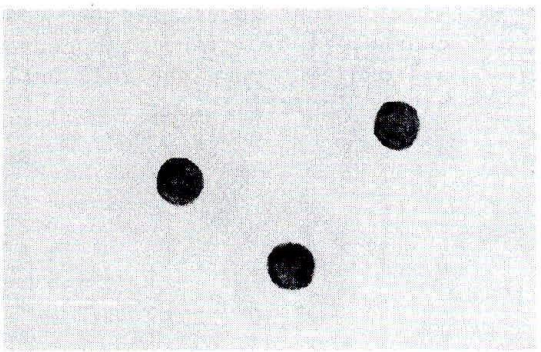
SECTION B - ILLUSTRATIONS

1.1 FEATURES SEEN ON WET SMEAR EXAMINATION



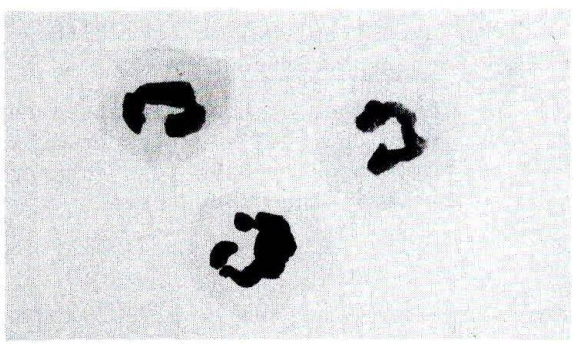
"Ripe" vaginal epithelial cells

Polygonal cells with small nuclei.



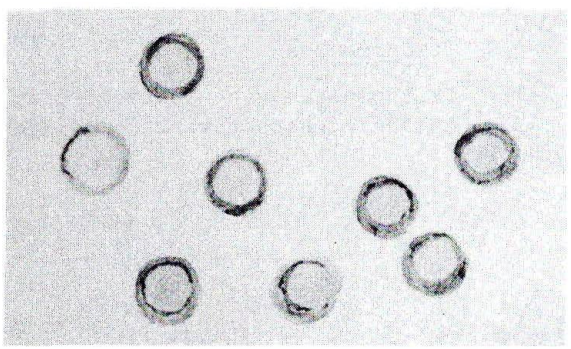
"Unripe" vaginal epithelial

Round cells with relatively large nuclei.



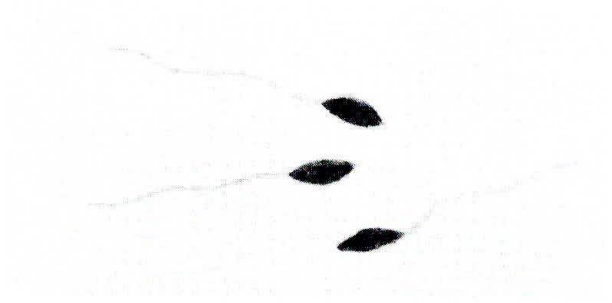
Polymorphonuclear leukocytes

Irregular, multi-lobular nuclei.

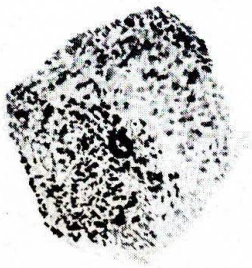


Erythrocytes

Appear as two concentric rings. Greenish-yellow in colour with no nuclei.

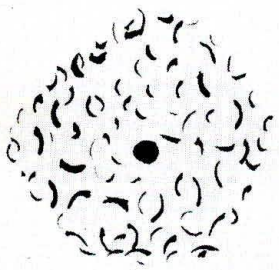


Spermatozoa



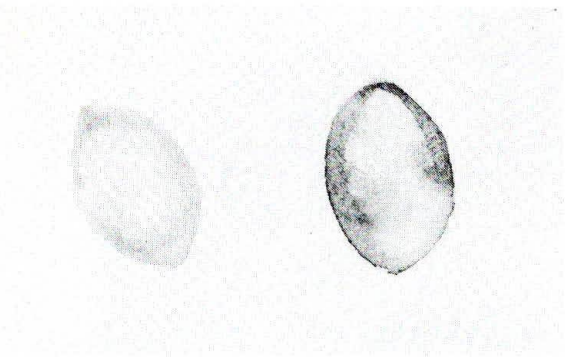
Glue cell

The adherent cocci give the cell a characteristic granular appearance, and can also make the cell outline rather indistinct.



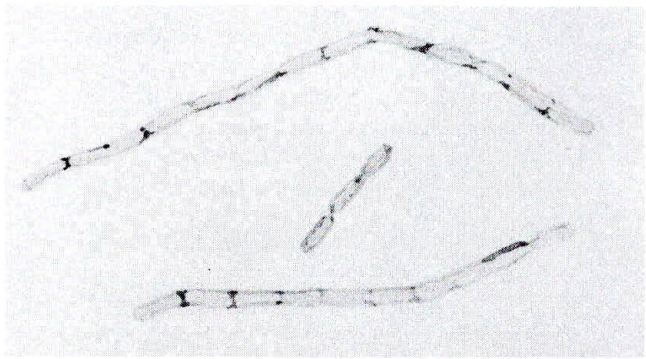
Vaginal epithelial cell with adherent curved rods

The number of bacteria attached to individual cells varies greatly. Cells usually have less adherent bacteria than shown here.



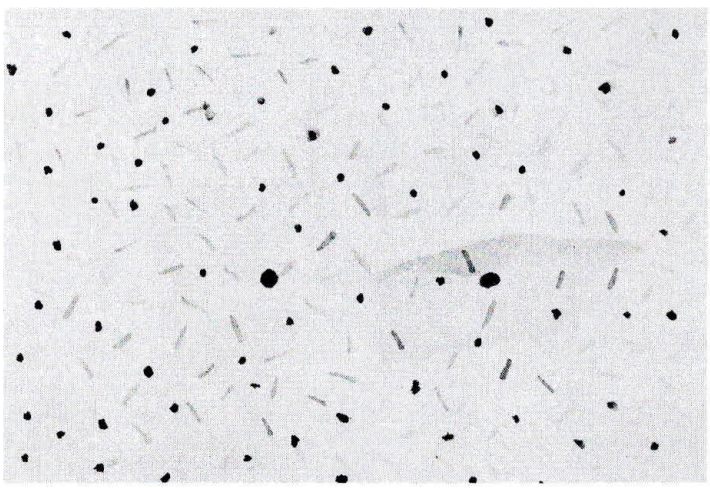
Trichomonads

Trichomonads are easily identified by their characteristic motility.



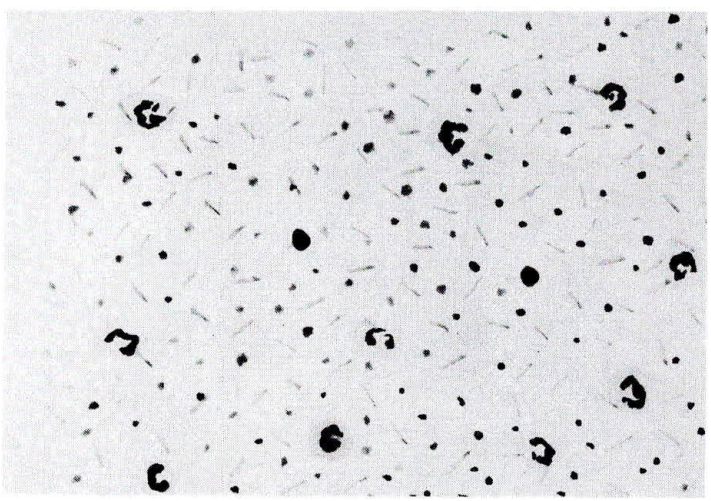
Candida albicans

The fungal elements are rendered more visible by mixing with KOH. Pseudohyphae and blastospores are seen.



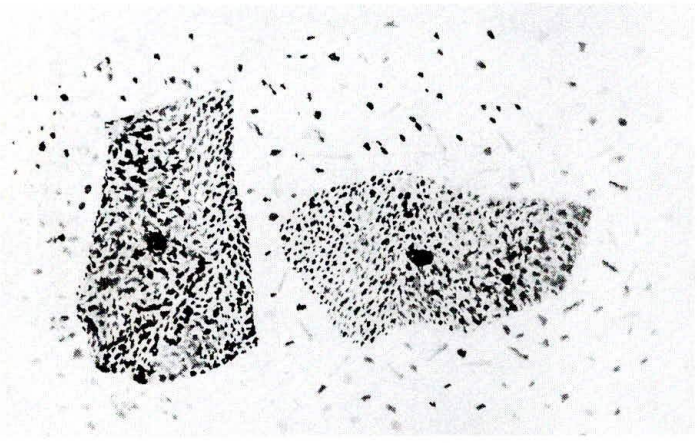
Normal wet smear

The normal coccoid and lacto-bacillary flora is seen. Leukocytes are sparse.



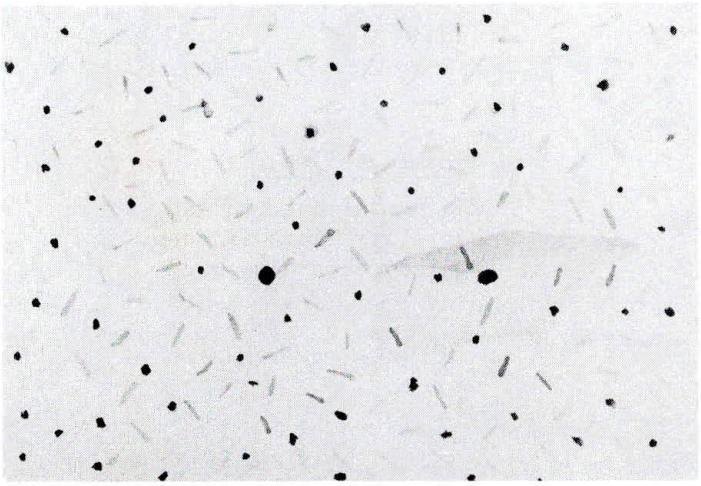
"Inflammatory" wet smear

The field is dominated by leukocytes. This picture is seen in gonococcal, chlamydial and trichomonal infections and may be an indication for cervical sampling for Neisseria gonorrhoeae and Chlamydia trachomatis.



Gardnerella vaginalis - associated bacterial vaginosis

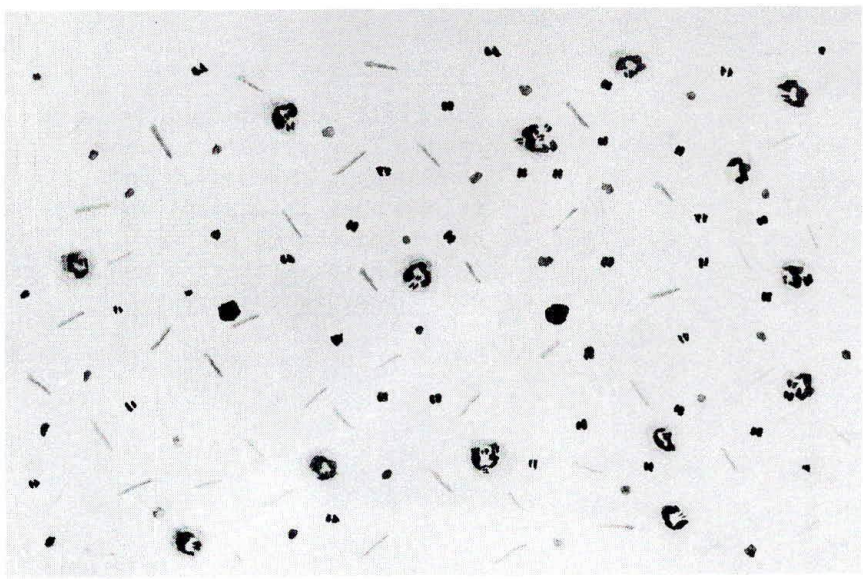
The bacterial flora is dominated by cocci, which can adhere to epithelial cells to form clue cells. Few leukocytes are seen.



Mobiluncus - associated bacterial vaginosis

The bacterial flora is dominated by curved rods and cocci. Some curved rods adhere to epithelial cells. Again, few leukocytes are seen.

1.2 STAINED SMEAR IN GONORRHOEAE



Numerous leukocytes are seen. The characteristic kidney or coffee-bean shaped diplococci are present within leukocytes and epithelial cells and also extra-cellularly.

SECTION C - GRAM'S STAIN

Preparation of reagents

In preparation of the reagents, the use of distilled water is preferred. If unavailable, tap water, if possible, cleaned and purified, e.g., by filtration, will have to be used.

Crystal violet

a) Dissolve 2 g crystal violet in 20 ml 96% ethanol.
b) Then add 80 ml 1% ammonium oxalate.

Iodine solution

a) Dissolve 2 g iodine crystals in 10 ml 1 N NaOH solution.
b) Make up to 100 ml with distilled water.

Decolorizing solution

Acetone per analysis.

Counterstain solution

a) Dissolve 0.3 g basic fuchsin in 10 ml 96% ethanol.
b) Dissolve 5 g phenol in 95 ml distilled water.
c) Mix the two solutions (a) and (b) gradually, under vigorous stirrings.
d) Add 950 ml distilled water.
e) Allow the mixture to stand for 2 to 3 days.
f) If possible, filter (0.22 um) before use.

Method

a) Heat-fixed specimens must be allowed to coof before commencing staining.
b) Flood the slide with crystal violet for one minute, then rinse with water, preferably under a running tap.
c) Cover the slide with iodine solution for 2 minutes, then rinse with water.
d) Before the smear has dried completely, decolorize with acetone until no more colour comes off (this is the critical step in the staining procedure, therefore only one slide at a time should be decolorized).
e) Wash the slide thoroughly with water.
f) Flood the slide with counterstain for 30 seconds, then wash it in water again.
g) Allow the slide to dry, before examination under the microscope. Drying may be hastened by pressing a blotting paper against the slide taking care not to rub off the stain.

SECTION D - METHYLENE BLUE STAINING

Preparation of stain

In preparation of the stain, use of distilled water is preferred. If this is unavailable, tap water, if possible, cleaned and purified, e.g., by filtration, will have to be used.

a) Dissolve 450 mg methylene blue in 30 ml ethanol (99.9%).
b) Dissolve 10 mg KOH in 100 ml distilled water.
c) Mix the two solutions and sterilize, if possible, by filtration (0.22 um).
d) The solution must be kept in darkness at 4°C until use.

Method

a) Cover the air-dried and fixed smear with stain for one minute.
b) Wash the slide in water, preferably under a running tap.
c) Allow the slide to dry and examine it under the microscope.

ANNEX 5

Approaches to obtain community support

1. Raising the community's awareness of the STD problem

a) Informing the community (through health education) about:

- mechnism of transmission of STD to sex partners
- impact of STD on maternal and infant health and on human reproduction and fertility
- effective and ineffective treatment
- difference in cost between treatment of a complicated case and of a non-complicated case.

b) Collecting general data about sexual practices and behaviour in the population which increased risk of STD.

c) Communicating results of data obtained to the community.

An informed public will cooperate actively with the control programme only if the seriousness of the consequences of STD have been clearly understood, identified and assimilated by the community.

2. Community participation

Because of the demographic explosion and the rapid rise in needs and demands for health services, many governments are no longer able to accomplish their tasks. In view of the limited budget of the Ministry of Public Health and the lack of qualified health workers in developing countries, community participation is mandatory.

a) Financial participation

- in rural areas, 2 types are suggested:

  1) patients pay a standard fee-for-service.
  2) production units and social services are integrated into village cooperatives which operate a system of self-finance.

- in urban areas:

The collective system through cooperatives (a2) is difficult to implement in urban areas and patients usually pay a standard fee-for-service.

People prefer the system of individual financial contribution to obtain comprehensive health services instead of "free clinics" providing prescriptions for drug purchase at private pharmacies.

This primary health insurance is an important instrument for economic and social development.

b) Community health workers

The community can select the most appropriate persons for training as community health workers. These health workers would assist the professional health workers (record keeping, distribution of drugs, injections, sexual contact referral) or do themselves the tasks in the absence of better qualified personnel.

3) Community organization: health committees

To enhance communication between the community and the health personnel/administrative authorities, some kind of community organization is necessary.

The health committee is the fundamental structure for community participation. Each health unit (health post, health centre, maternity unit) should have the support by a health committee. The committee is chosen by a general assembly of village representatives in rural areas; in urban areas, it is selected by representatives of different blocks located in catchment areas of the health unit. The committee should have a president, a secretary, a treasurer and eventually an ad hoc sub-committee.

All the committees of a given administrative area may be grouped into an association for health promotion. Tasks of this association are:

a) to regulate the election procedure and the activities of the committees in collaboration with the medical authorities,
b) to coordinate similar activities in different health committees,
c) to supply drugs in collaboration with the medical authorities,
d) to supervise the committees (financial evaluation).

The utilization of financial resources (patient fees) is done by the health committee in collaboration with the nurse of the health unit (= co-management). It is important to determine levels for different types of expenditures: i.e. 60% of the receipts would go for the purchase of drugs, 10% for small medical material, 15% for payment of community health workers, etc. All current expenses are paid by check, co-signed by the committee's president and treasurer. The checkbook stays in the nurses' hands.

Through community participation, a regular supply and distribution of drugs at a low cost is assured. The following sources of supplies may be feasible.

a) government medical stores
b) pharmaceutical companies in the country
c) pharmaceutical companies abroad: imported drugs have to be exempt of import taxes (to be negotiated with the Health Ministry and Ministry of Finance).

The association of health committees should set up a central community store to organize the supplies of drugs, vaccines, disposable medical supplies for all health units of the administrative area. This community store purchases bulk supplies, maintains the inventory, and is responsible for distribution (everything is paid by check).

The association of health committees can establish committees for specific health problems (e.g., a committee for STD). The members of this committee are volunteers from individual health committees and are particularly interested in the subject of STD. This special STD committee can be "the go-between" of the community and the general clinic or specialized centre of STD (depending on the setting).

ANNEX 6

Recommended Reading

World Health Organization. Neisseria gonorrhoeae and gonococcal infections. Report of a WHO Scientific Group. Technical Report Series No. 616, WHO, Geneva, 1978

World Health Organization. Nongonococcal urethritis and other selected sexually transmitted diseases of public health importance. Report of a WHO Scientific Group, Technical Report Series No. 660, WHO, Geneva, 1981

World Health Organization. Treponemal infections. Report of a WHO Scientific Group, Technical Report Series No. 674, WHO, Geneva, 1982

Jancloes M., Seck B. & Kebe M., Autofinancement et autogestion des soins de santé primaires; une expérience au Sénégal. Rev. Int. Educ. Santé, 23, 117-123, 1980.

Meheus A. & Piot P., Lutte contre les MTS dans les pays en développement. Ann. Soc. Belge Méd. trop., 63, 281-311, 1983.

Ministère de la Santé publique - Sénégal. Participation des populations à l'effort de santé publique: principes et directives méthodologiques, 1980.

Essex B.J. Approach to rapid problem solving in clinical medicine. Brit Med J, 3, 34-36, 1975.

Cumper G. The costs of primary health care. Tropical Doctor, 14, 19-22, 1984.

Fendall N.R.E. Training and management for primary health care. Proc R Soc Lond, B209, 97-109, 1980.

Arya O.P. & Bennett F.J. Role of the medical auxiliary in the control of sexually transmitted disease in a developing country. Brit J Vener Dis, 52, 116-121, 1976.

Essex B. A new approach to decision making in primary health care. Proc R Soc Lond, B209, 89-96, 1980.

Arya O.P. & Lawson J.B. Sexually transmitted diseases in the tropics. Epidemiologic, diagnostic, therapeutic, and control aspects. Tropical Doctor, 7, 51-56, 1977.

Stocking B. & Smith C.E.G. National policies and national experts. Basic requirements in developing countries. Lancet 1(8212), 144-145, 1981.

Reisman A. & Duran L. Designing primary health care teams for developing countries. Publ Hlth Rep, 98, 184-189, 1983.

McCord C. & Kielmann A.A. A successful programme for medical auxiliaries treating childhood diarrhoea and pneumonia. Tropical Doctor, 8, 220-225, 1978.

Nchinda T.C. The propharmacy as a means of meeting chronic drug shortages in rural health centres in rural African communities. Tropical Doctor, 8, 225-228, 1978.

Pillsbury B.L.K. Policy and evaluation perspectives on traditional health practitioners in national health care systems. Soc Sci Med, 16, 1825-1834, 1982.

Bestane W.J. A gonorreia e outras uretrites na cidade de Santos, Estado de Sao Paulo. Rev Ass Med Brasil, 24, 133-138, 1978.

Rein M.F. Therapeutic decisions in the treatment of sexually transmitted diseases: an overview. Sex Transm Dis, 8, 93-99, 1981.

Rhodes A., McCue J., Komaroff A.L. & Pass T.M. Protocol management of male genitourinary infections. J Amer Vener Dis Assoc, 2, 23-30, 1976.

Meheus A. Chapter 81. Practical approaches in developing nations. In: Sexually Transmitted Dieases, Holmes K.K., Märdh P.H., Sparling P.F., Wiesner P.J. (eds). McGraw Hill Book Company, New York, 1984.

World Health Organization. Training and utilization of auxiliary personnel for rural health teams in developing countries. Tech Rep Series No. 633, 1979, WHO, Geneva.

World Health Organization. The traditional birth attendant in seven countries: case studies in utilization and training. Mangay-Maglacas A, Pizurki H. (eds). Publ Hlth Papers No. 75, 1981, WHO, Geneva.

World Health Organization. The primary health worker. Working guide, guidelines for training, guidelines for adaptation. 1980, WHO, Geneva.

World Health Organization. Control of sexually transmitted diseases. Report of a scientific working group. WHO, Geneva, 1985.

Ofosu-Amaah V. National experience in the use of community health workers. WHO offset publication No. 71, WHO, Geneva.

Kirkpatrick D.L. How to improve performance through appraisal and coaching. AMACOM, New York, N.Y., 1982.

World Health Organization. Laboratory services at primary health care level. Unpublished document. LAB/79.1.

World Health Organization. Manual on methods for the diagnosis of gonorrhoea in general laboratories. Unpublished document LAB/80.2.

World Health Organization. Protocol for clinical and laboratory studies of genital ulcer disease. Unpublished document INT/VDT/83.406.